



Applying Smart Growth Principles and Strategies to Resolving Land Use Conflicts Around Airports



MTI

Mineta
Transportation
Institute

Created by
Congress in 1991



MINETA TRANSPORTATION INSTITUTE

The Norman Y. Mineta International Institute for Surface Transportation Policy Studies (MTI) was established by Congress as part of the Intermodal Surface Transportation Efficiency Act of 1991. Reauthorized in 1998, MTI was selected by the U.S. Department of Transportation through a competitive process in 2002 as a national “Center of Excellence.” The Institute is funded by Congress through the United States Department of Transportation’s Research and Innovative Technology Administration, the California Legislature through the Department of Transportation (Caltrans), and by private grants and donations.

The Institute receives oversight from an internationally respected Board of Trustees whose members represent all major surface transportation modes. MTI’s focus on policy and management resulted from a Board assessment of the industry’s unmet needs and led directly to the choice of the San José State University College of Business as the Institute’s home. The Board provides policy direction, assists with needs assessment, and connects the Institute and its programs with the international transportation community.

MTI’s transportation policy work is centered on three primary responsibilities:

Research

MTI works to provide policy-oriented research for all levels of government and the private sector to foster the development of optimum surface transportation systems. Research areas include: transportation security; planning and policy development; interrelationships among transportation, land use, and the environment; transportation finance; and collaborative labor-management relations. Certified Research Associates conduct the research. Certification requires an advanced degree, generally a Ph.D., a record of academic publications, and professional references. Research projects culminate in a peer-reviewed publication, available both in hardcopy and on *TransWeb*, the MTI website (<http://transweb.sjsu.edu>).

Education

The educational goal of the Institute is to provide graduate-level education to students seeking a career in the development and operation of surface transportation programs. MTI, through San José State University, offers an AACSB-accredited Master of Science in Transportation Management and a graduate Certificate in Transportation Management that serve to prepare the nation’s transportation managers for the 21st century. The master’s degree is the highest conferred by the California State University system. With the active assistance of the California Department of Transportation, MTI delivers its classes over a state-of-the-art videoconference network throughout the state of California and via webcasting beyond, allowing working transportation professionals to pursue an advanced degree regardless of their location. To meet the needs of employers seeking a diverse workforce, MTI’s education program promotes enrollment to under-represented groups.

Information and Technology Transfer

MTI promotes the availability of completed research to professional organizations and journals and works to integrate the research findings into the graduate education program. In addition to publishing the studies, the Institute also sponsors symposia to disseminate research results to transportation professionals and encourages Research Associates to present their findings at conferences. *The World in Motion*, MTI’s quarterly newsletter, covers innovation in the Institute’s research and education programs. MTI’s extensive collection of transportation-related publications is integrated into San José State University’s world-class Martin Luther King, Jr. Library.

DISCLAIMER

The contents of this report reflect the views of the authors, who are responsible for the facts and accuracy of the information presented herein. This document is disseminated under the sponsorship of the U.S. Department of Transportation, University Transportation Centers Program and the California Department of Transportation, in the interest of information exchange. This report does not necessarily reflect the official views or policies of the U.S. government, State of California, or the Mineta Transportation Institute, who assume no liability for the contents or use thereof. This report does not constitute a standard specification, design standard, or regulation.

MTI REPORT 06-05

**APPLYING SMART GROWTH PRINCIPLES AND
STRATEGIES TO RESOLVING LAND USE
CONFLICTS AROUND AIRPORTS**

September 2008

Richard W. Lee, Ph.D.,
Geoffrey D. Gosling, Ph.D.,
and Katja Irvin

a publication of the
Mineta Transportation Institute
College of Business
San José State University
San José, CA 95192-0219
Created by Congress in 1991

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. FHWA/CA/OR 2006123	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Applying Smart Growth Principles and Strategies to Resolving Land Use Conflicts Around Airports		5. Report Date September 2008	
		6. Performing Organization Code	
7. Authors Richard W. Lee, Ph.D., Geoffrey D. Gosling, Ph.D., Earl Bossard, Ph.D., and Katja Irvin		8. Performing Organization Report No. 06-05	
9. Performing Organization Name and Address Mineta Transportation Institute College of Business San José State University San José, CA 95192-0219		10. Work Unit No.	
		11. Contract or Grant No. DTRT07-G-0054	
12. Sponsoring Agency Name and Address California Department of Transportation Sacramento, CA 95815 U.S. Department of Transportation Research and Innovative Technology Administration 1200 New Jersey Avenue SE, Rm.E33 Washington DC 20590-0001		13. Type of Report and Period Covered	
		14. Sponsoring Agency Code	
15. Supplementary Notes			
<p>16. Abstract</p> <p>This report presents the findings and conclusions from a research project to explore how the principles and strategies of smart growth can be applied to resolving land use conflicts around airports. The study entailed a literature review, interviews with airport and planning agency staff and others involved in airport land use planning decisions and detailed case studies. The work involved in performing the case studies constituted most of the research effort and the case study analysis and findings comprise the largest part of this report.</p> <p>Based on the research, nine specific recommendations are made. Key among these are that Caltrans Division of Aeronautics should work to ensure adequate funding, staffing and training for planners charged with land use planning around airports. Airport Land Use Commissions should also be encouraged (and provided with incentives) to better disseminate their policies and decisions, and to track and report changes in land use within Airport Influence Areas on an annual basis. Caltrans Division of Aeronautics should also coordinate with other relevant state agencies to develop explicit guidelines that address smart growth planning in the vicinity of airports.</p>			
17. Keywords Airports; Airport facilities; Airport planning; Land use, Land use planning	18. Distribution Statement No restriction. This document is available to the public through the National Technical Information Service, Springfield, VA 22161		
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 468	22. Price \$15.00

Copyright © 2008
by Mineta Transportation Institute

All rights reserved

Library of Congress Catalog Card Number: 2007923886

To order this publication, please contact the following:

Mineta Transportation Institute

College of Business

San José State University

San José, CA 95192-0219

Tel (408) 924-7560

Fax (408) 924-7565

E-mail: mti@mti.sjsu.edu

<http://transweb.sjsu.edu>

ACKNOWLEDGMENTS

The authors of this report would like to acknowledge and thank the sponsors of this research, the California Department of Transportation, Division of Aeronautics and the Mineta Transportation Institute (MTI). We would also like to express our gratitude to all the case study interviewees at airports and at the local jurisdictions that they are embedded in, as well as the authors of the many articles that contributed to our understanding of the issues, both global and local.

We gratefully acknowledge the contributions of Professor Earl Bossard, who collaborated with us during the early stages of the project and provided constructive comments at many points along the way. Special thanks are due to MTI's Director of Research Trixie Johnson for her assistance and patience as the case studies grew in number and complexity, making both the process longer and report longer than anticipated, but also, we hope, better. Fehr & Peers Associates provided material support for Richard Lee's contributions. Very importantly, we wish to acknowledge the support of our families throughout the course of the study.

Thanks are also offered to MTI staff, including Communications Director Donna Maurillo, Research and Publications Assistant Sonya Carter-Cardenas (posthumously), Research Support Manager Meg Fitts and Publication Assistant Sahil Rahimi. Editing and publication services were provided by Catherine Frazier, Irene Rush and Tricia Lawrence.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
INTRODUCTION	1
AIRPORT LAND USE PLANNING IN CALIFORNIA	2
SMART GROWTH IN RELATION TO AIRPORT LAND USE PLANNING	4
RELATED RESEARCH ON AIRPORT ENVIRONS PLANNING	5
CASE STUDY APPROACH	6
CASE STUDY RESULTS	7
RECOMMENDATIONS	14
FINAL THOUGHTS	15
 INTRODUCTION	 17
BACKGROUND	17
SCOPE OF THE CURRENT RESEARCH	20
RESEARCH APPROACH	20
STRUCTURE OF THIS REPORT	21
 AIRPORT LAND USE PLANNING IN CALIFORNIA	 23
POWERS AND DUTIES OF THE AIRPORT LAND USE COMMISSIONS	24
GUIDANCE FOR AIRPORT LAND USE COMPATIBILITY PLANNING	24
IMPLEMENTATION OF AIRPORT LAND USE COMPATIBILITY PLANS	26
MEASURING AIRCRAFT NOISE FOR LAND USE COMPATIBILITY	26
 SMART GROWTH IN RELATION TO AIRPORT LAND USE AND TRANSPORTATION PLANNING	 29
SMART GROWTH DEFINED	29
POTENTIAL GOALS FOR SMART GROWTH AROUND AIRPORTS	30
INDICATORS FOR MEASURING THE TRANSPORTATION EFFECTS OF SMART GROWTH STRATEGIES	31
FACTORS INCREASING TRANSIT USE AND REDUCING VEHICLE TRAVEL	32
RAPID TRANSIT ACCESS LINKS TO AIRPORTS	33
NONCOMMUTE TRAVEL IN SMART GROWTH PLANNING CONSIDERATIONS	34

CONCLUSION: SMART GROWTH PLANNING OBJECTIVES FOR AIRPORT-AREA TRANSPORTATION	34
RELATED RESEARCH ON AIRPORT AREA PLANNING	37
AIRFRONT PLANNING	37
THE AEROTROPOLIS CONCEPT	39
LITERATURE REVIEW FINDINGS	43
EVOLVING FOCUS OF AIRPORT LAND USE PLANNING	47
CASE STUDY ANALYSIS	49
SUMMARY OF INDUSTRY DISCUSSIONS	49
SELECTION OF CASE STUDY AIRPORTS	50
CASE STUDY METHODOLOGY	53
CASE STUDY RESULTS	56
CONCLUSIONS AND RECOMMENDATIONS	79
OVERALL STUDY FINDINGS	79
RECOMMENDATIONS	85
FINAL THOUGHTS	91
APPENDIX A: CASE STUDY—SACRAMENTO INTERNATIONAL AIRPORT	93
INTRODUCTION	93
AIRPORT LAND USE PLANNING	94
POTENTIAL ROLE AND IMPACT OF SMART GROWTH	107
EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS	111
SUMMARY	112
APPENDIX B: CASE STUDY—MATHER AIRPORT	115
INTRODUCTION	115
AIRPORT LAND USE PLANNING	117
SUMMARY: EFFECTIVENESS OF THE AIRPORT PLANNING PROCESS	134
APPENDIX C: CASE STUDY—CONTRA COSTA AIRPORTS (BUCHANAN FIELD AND BYRON)	137
INTRODUCTION	138

AIRPORT LAND USE COMPATIBILITY PLAN	142
ROLE OF SURROUNDING JURISDICTIONS	143
THE PROPOSAL TO RELOCATE BUCHANAN FIELD	146
NOISE ISSUES	148
NEARBY COMMUNITY DEVELOPMENT ISSUES AND PLANS	151
POTENTIAL ROLE AND IMPACT OF SMART GROWTH	155
EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS	156
SUMMARY	157
APPENDIX D: CASE STUDY—OAKLAND INTERNATIONAL AIRPORT	159
INTRODUCTION	159
AIRPORT LAND USE PLANNING	161
POTENTIAL ROLE AND IMPACT OF SMART GROWTH	177
CHANGES IN LOCAL LAND USE	179
EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS	180
SUMMARY	181
APPENDIX E: CASE STUDY—LIVERMORE MUNICIPAL AIRPORT	183
INTRODUCTION	183
AIRPORT LAND USE PLANNING	185
POTENTIAL ROLE AND IMPACT OF SMART GROWTH	198
CHANGES IN LOCAL LAND USE	200
EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS	203
SUMMARY	206
APPENDIX F: CASE STUDY—SAN FRANCISCO INTERNATIONAL AIRPORT	209
INTRODUCTION	210
AIRPORT LAND USE PLANNING	212
POTENTIAL ROLE AND IMPACT OF SMART GROWTH	220
CHANGES IN LOCAL LAND USE	221
EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS	221
SUMMARY	222
APPENDIX G: CASE STUDY—SOUTH COUNTY AIRPORT	225
INTRODUCTION	225

AIRPORT LAND USE PLANNING	227
POTENTIAL ROLE AND IMPACT OF SMART GROWTH	240
CHANGES IN LOCAL LAND USE	243
EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS	244
SUMMARY	245
APPENDIX H: CASE STUDY—SAN LUIS OBISPO COUNTY REGIONAL AIRPORT	247
INTRODUCTION	247
AIRPORT LAND USE PLANNING	249
POTENTIAL ROLE AND IMPACT OF SMART GROWTH	262
EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS	263
SUMMARY	264
APPENDIX I: CASE STUDY—LONG BEACH AIRPORT	265
INTRODUCTION	265
AIRPORT LAND USE PLANNING	268
ROLE OF SURROUNDING JURISDICTIONS	275
POTENTIAL ROLE AND IMPACT OF SMART GROWTH	279
CHANGES IN LOCAL LAND USE	284
EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS	286
SUMMARY	287
APPENDIX J: CASE STUDY—JACQUELINE COCHRAN REGIONAL AIRPORT	289
INTRODUCTION	289
AIRPORT LAND USE PLANNING	291
POTENTIAL ROLE AND IMPACT OF SMART GROWTH	298
CHANGES IN LOCAL LAND USE	298
EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS	299
SUMMARY	301
APPENDIX K: CASE STUDY—FRENCH VALLEY AIRPORT	303
INTRODUCTION	303
AIRPORT LAND USE PLANNING	304

POTENTIAL ROLE AND IMPACT OF SMART GROWTH	308
CHANGES IN LOCAL LAND USE	308
EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS	310
SUMMARY	311
APPENDIX L: CASE STUDY—MCCLELLAN-PALOMAR AIRPORT	313
INTRODUCTION	313
AIRPORT LAND USE PLANNING	317
POTENTIAL ROLE AND IMPACT OF SMART GROWTH	320
CHANGES IN LOCAL LAND USE	323
EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS	324
SUMMARY	325
APPENDIX M: CASE STUDY—SAN DIEGO INTERNATIONAL AIRPORT	327
INTRODUCTION	327
AIRPORT LAND USE PLANNING	330
POTENTIAL ROLE AND IMPACT OF SMART GROWTH	351
CHANGES IN LOCAL LAND USE	355
EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS	366
SUMMARY	368
APPENDIX N: COMMENTS FROM INDUSTRY DISCUSSIONS	371
ENDNOTES	375
ABBREVIATIONS AND ACRONYMS	411
BIBLIOGRAPHY	415
ANNOTATED BIBLIOGRAPHY—AIRPORT LAND USE PLANNING	439
ANNOTATED BIBLIOGRAPHY—SMART GROWTH	453
ABOUT THE AUTHORS	465
PEER REVIEW	467

LIST OF FIGURES

1. Sacramento International Airport	59
2. Oakland International Airport	61
3. Livermore Valley	61
4. Buchanan Field Airport	64
5. Byron Airport	64
6. San Francisco International Airport Environs	66
7. South County Airport	69
8. San Luis Obispo County Regional Airport	70
9. Long Beach Airport	72
10. Jaqueline Cochran Regional Airport	74
11. Aerial View of Airport and Naval Training Center Site	77
12. Sacramento International Airport Vicinity	95
13. Draft Sacramento International Airport Planning Policy Area Map	99
14. Draft Composite Regional Airport Planning Policy Area Map	100
15. 1993 City General Plan and Airport Influence Area	101
16. City of Sacramento Natomas Joint Vision	103
17. Locally Preferred Alternative for the Downtown Natomas Airport Line	109
18. Maher Airport Vicinity	116
19. Mather Airport Planning Policy Area	123
20. Sacramento County Airport System Airport Planning Policy Areas	124
21. Rancho Cordova General Plan Area	128
22. Sacramento Light Rail System 20-Year Plan	134
23. Buchanan Field Vicinity	139
24. Byron Airport Vicinity	141
25. Buchanan Field Land Use in 2002	144
26. Oakland International Airport Vicinity	160
27. Oakland Airport North Field Land Use in 2002	166
28. Alameda General Plan Land Uses and Airport Influence Area	171
29. Oakland General Plan Land Use and Airport Influence Area	173
30. San Leandro General Plan Land Uses and Airport Influence Area	176
31. Livermore Municipal Airport Vicinity	184
32. Livermore Existing Land Uses and Airport Influence Area	194

33. Livermore Municipal Airport Land Use in 2002	201
34. Pleasanton Commercial/Office/Industrial Developable Lot Map	203
35. Dublin Planned Development Projects	205
36. San Francisco International Airport Vicinity	210
37. Noise Monitoring System Microphone Locations	216
38. South County Airport Vicinity	226
39. South County Airport Land Use in 2002	228
40. South County Airport Influence Area	233
41. San Martin Area Land Use	236
42. North Gilroy Land Use	241
43. South Morgan Hill Land Use	242
44. San Luis Obispo County Regional Airport Vicinity	248
45. Fly Quiet Diagram	251
46. San Luis Obispo General Plan Land Use	256
47. Margarita Area Airport Relationship	257
48. Margarita Area Airport Compatibility Features	258
49. Airport Planning Area Zoning	261
50. Long Beach Airport Vicinity	267
51. Long Beach Airport Influence Area	276
52. Representative Long Beach Land Use Districts	277
53. Representative Long Beach Zoning Districts	278
54. Project Location of PacifiCenter/Douglas Park	280
55. Conceptual Land Use Plan—Reduced-Intensity Alternative	282
56. Aerial Rendering of Douglas Park	283
57. Revised Conceptual Land Use Plan of Douglas Park	285
58. Jacqueline Cochran Regional Airport Vicinity	290
59. Surrounding Cities and Communities	292
60. Airport Land Use Compatibility Map	296
61. Noise Compatibility Contours	297
62. Location of Kohl Ranch Specific Plan	299
63. Kohl Ranch Specific Plan	300
64. French Valley Airport Vicinity	304
65. Airport Land Use Compatibility Map	306
66. Noise Compatibility Contours	307
67. City of Murrieta Zoning Map	309

68. Approved Specific Plans in the French Valley Area	310
69. McClellan-Palomar Airport Vicinity	314
70. McClellan-Palomar Airport Noise Abatement Procedures	316
71. Recent Trends in Airport Noise Complaints	317
72. McClellan-Palomar Airport Land Use 2003	318
73. Jurisdictions Affected by McClellan-Palomar Airport Operations	321
74. City of Carlsbad Zoning Map	322
75. Bressi Ranch Site Plan	324
76. San Diego International Airport Vicinity	328
77. San Diego Community Planning Areas	343
78. Land Use Zoning in Nearby Areas to the West of SDIA	347
79. Land Use Zoning Color Codes	348
80. Land Use Zoning in Nearby Areas to the East of SDIA	349
81. Naval Training Center Redevelopment Planning Areas	353
82. Aerial View of Airport and Naval Training Center Site	354
83. Land Use Classification Categories	356
84. Airport Vicinity Land Use 1990—West of Airport	357
85. Airport Vicinity Land Use 1990—East of Airport	358
86. Airport Vicinity Land Use 2003—West of Airport	359
87. Airport Vicinity Land Use 2003—East of Airport	360

LIST OF TABLES

1. Vehicle Trip Elasticities with Standard Land Use Measures	33
2. Selection of Case Study Airports	51
3. Comparison of Base Case vs. Blueprint Preferred Scenario	111
4. Rancho Cordova Community Blueprint Scenario Comparison	131
5. Land Use Within CNEL Noise Contours—1990 and 2003	361
6. Change in Land Use from 1990 to 2003 Within CNEL Noise Contours	362
7. Change in Land Use from 1990 to 2003 Within AIA	362
8. Change in Land Use within the 1990 65 dB CNEL Contour from 1990 to 2003	364
9. Recent Trends in Incompatible Land Use at SDIA	366
10. Comments From Industry Discussions	371

EXECUTIVE SUMMARY

This report presents the findings and conclusions from a research project to explore the extent to which the principles and strategies of smart growth have been applied in land use planning around airports in California, and to examine the effectiveness of existing airport land use compatibility planning in the state from the perspective of smart growth. The premise of this research is that applying the principles and strategies of smart growth can reduce the potential for conflicts around airports. The study entailed a literature review, interviews with airport and planning agency staff and others involved in airport land use planning decisions, and detailed case studies of 14 California airports. The work involved in performing the case studies constituted most of the research effort, and the case study analysis and findings comprise the largest part of this report.

INTRODUCTION

Airports are vital transportation and employment hubs that can generate significant economic activity as well as a variety of impacts on the surrounding environment, including aircraft noise, surface traffic, and ancillary development. The importance of appropriate land use planning around airports to avoid incompatible land uses has long been recognized. To date, efforts have been directed at preventing such uses as new residential development in areas experiencing high levels of aircraft noise or the construction of schools under aircraft flight paths. In California, this process has been formalized through the creation of county Airport Land Use Commissions (ALUCs). The success of these commissions at preventing incompatible development has varied widely, and relatively little attention has been given to changing existing land uses to achieve a more compatible pattern of land use around airports, as distinct from preventing new incompatible development. Indeed, the legislation establishing the ALUCs explicitly prohibits them from addressing existing land uses. Furthermore, efforts to achieve a more compatible pattern of land use often are complicated by resistance on the part of communities near airports toward the type of land use changes or development that would result in greater compatibility between airport activities and the surrounding land uses.

At the same time, there is a growing interest in land use and transportation planning circles in pursuing development strategies that have come to be known as “smart growth.” This term refers to a suite of design, land use planning, and infrastructure investment policies that aim to create more livable, equitable, and economically vital urban neighborhoods and regions while minimizing environmental costs. It is now a mainstream political movement—driven by both environmental and fiscal concerns—that seeks to implement principles of sustainable development, which is now a prominent urban and regional planning paradigm in California and elsewhere. Smart growth principles emphasize more compact development and better integration of interdependent land uses within metropolitan areas. To date, these have largely

been applied at the neighborhood level, and typically entail efforts to create livable residential developments with increased travel choices, thereby reducing dependence on automobiles and the ensuing need to expand roads.

Although the goals of smart growth policies and airport land use compatibility planning are commonly seen as different issues, there are at least three reasons to consider how they can be better linked:

- to explore how land use planning strategies that are being pursued to respond to smart growth policies can be adapted to meet airport land use compatibility goals;
- to identify ways in which smart growth policies might adversely affect airport land use compatibility planning (for example, infill development on land near airports could result in an increase in residential units near the airports); and
- to understand how longer-term airport development strategies, such as expanding or constructing airports on the perimeter of an urban region or encouraging associated commercial development on adjacent land, could conflict with smart growth policies.

The objective of the research described in this report is to examine the potential role of smart growth principles to enhance airport land use compatibility planning and the implementation of regional airport development strategies, as well as to identify potential conflicts between smart growth principles and projects and airport land use planning. The overall aim is to identify how the existing airport land use compatibility planning process can be strengthened in order to better achieve compatible land uses near airports.

Through a series of case studies, the research attempted to identify and document the extent to which the principles of smart growth have been applied to airport system planning in the state, either explicitly or by implication from the land use planning strategies adopted, and to explore the effectiveness of existing airport land use compatibility planning procedures in California from the perspective of smart growth policies.

An important goal of the research was to identify and document cases where the existing airport land use planning process appears to have been successful in achieving compatible land use near airports and cases in which it has not, and to develop recommendations for legislative or policy changes that may be required to strengthen this process.

AIRPORT LAND USE PLANNING IN CALIFORNIA

For almost 40 years, the state of California has established a formal, statewide process to undertake land use planning for areas surrounding public use airports in the state. Originally enacted in 1967, and subsequently amended from time to time, the *California Public Utilities Code* authorizes the creation of ALUCs and defines their powers and duties. The legislation requires every county in the state in which there is an airport served by a scheduled airline to establish an ALUC or designate an alternate body to perform the function of the commission. Other counties in which there is an airport operated for the benefit of the general public shall

establish such a commission or designate an alternate body to perform the function, unless the county board of supervisors determines that there are no noise, public safety, or land use issues affecting any airport in the county. In 1994, the legislation was amended to allow an “alternative process” by which a county and each affected city within it establish a planning process to prepare, adopt, and amend a land use compatibility plan for each public use airport in the county; adopt processes to mediate disputes regarding the preparation, adoption, and amendment of these plans; and update the general plans and specific plans, where necessary, to ensure that they are consistent with the land use compatibility plan. This alternative process shall include the designation of an agency responsible for the required actions.

State legislation defines two specific duties for each ALUC or other body acting in that capacity. The first is to prepare and adopt an airport land use plan for each airport within its jurisdiction. These are referred to as a Comprehensive Land Use Plan (CLUP) or Airport Land Use Compatibility Plan (ALUCP). The second duty is to review the plans, regulations, and other actions of local agencies and airport operators regarding consistency of local agency general plans or specific plans, or publicly owned airport master plans, with the commission’s airport land use plan. The legislation defines the process to be followed if the ALUC determines that an incompatibility exists or will exist between local agency plans and the airport land use plan. A local agency may vote to overrule the commission, but this requires a public hearing, a determination of specific findings that the proposed action is consistent with the purpose of the legislation, and a two-thirds vote by the governing body. If the ALUC has determined that an inconsistency exists, and the local agency has not voted to overrule this determination, the ALUC may require the local agency to submit all subsequent actions, regulations, and permits to the commission for review until its general plan or specific plan is revised or the specific findings are made.

The legislation explicitly limits the authority of ALUCs in two important respects: they have no jurisdiction over existing land uses, no matter how incompatible they may be with the operation of nearby airports, and they have no jurisdiction over the operation of an airport.

The legislation defining the powers and duties of the ALUCs requires the California Department of Transportation (Caltrans) to provide training to ALUC staff and to publish an *Airport Land Use Planning Handbook* to provide guidance to ALUCs in the performance of their duties. The most recent update of this handbook was published in January 2002. The contents of the handbook address two broad concerns for airport land use compatibility planning—aircraft noise and safety.

Aircraft noise is addressed by defining land uses that are considered to be compatible with different levels of aircraft noise and attempting to restrict development to compatible land uses. Since aircraft noise is typically a significant, if not the most important, concern of communities located near airports, and a major consideration in airport land use compatibility planning, the way in which aircraft noise is measured and the associated criteria for what are considered compatible uses are significant determinants of the success of the airport land use planning process. California’s method for measuring aircraft noise differs somewhat from the

method adopted in most other states and recommended by the Federal Aviation Administration (FAA) in its guidance material on airport land use planning. The California noise metric, termed the Community Noise Equivalent Level (CNEL), provides a threefold weighting for evening events occurring between 7 p.m. and 10 p.m., in addition to a tenfold weighting for nighttime events between 10 p.m. and 7 a.m. that corresponds to the federal noise metric of Day-Night Average Sound Level (DNL). The evening and night weighting of aircraft operations are intended to compensate for people's greater sensitivity of noise at those times.

The *California Airport Land Use Planning Handbook* does not provide uniform criteria for what ALUCs should consider to be compatible land uses for a given level of aircraft noise, but rather states that these should be established taking into consideration the characteristics of the airport and its environment. However, the handbook notes that a CNEL of 65 dB or higher is generally not appropriate for most new residential development; a CNEL of 60 dB is recommended by the California Office of Planning and Research as the maximum "normally acceptable" noise exposure for residential areas, with a CNEL of 55 dB as a recommended noise standard for quiet suburban or rural locations.

The second broad concern is the safety of those on the ground and aircraft operating in the vicinity of the airport. The safety of those on the ground is addressed by restricting land uses in areas that are deemed to present an undue risk of fatalities or injuries from an aircraft crash, typically the areas adjacent to the ends of the runways. The safety of aircraft operating in the vicinity of the airport is addressed by establishing airspace protection surfaces that limit the height of buildings or other obstacles that could present a hazard to aircraft, as well as providing appropriate open land areas near the airport to accommodate forced landings by aircraft and ensuring that the land immediately beyond the ends of the runways is free of obstacles.

SMART GROWTH IN RELATION TO AIRPORT LAND USE PLANNING

The Smart Growth Network—a joint activity of the U.S. Environmental Agency (EPA) and several nonprofit and government organizations that has been established to promote smart growth practices—identifies 10 strategic principles of smart growth:

1. Create a range of housing opportunities and choices.
2. Create walkable neighborhoods.
3. Encourage community and stakeholder collaboration in the development process.
4. Foster distinctive, attractive communities with a strong sense of place.
5. Make development decisions predictable, fair, and cost effective.
6. Mix land uses.
7. Preserve open space, farmland, natural beauty, and critical environmental areas.
8. Provide a variety of transportation choices.

9. Strengthen and direct development toward existing communities.
10. Take advantage of compact building design.

These strategic principles address the goals of creating vital, livable urban neighborhoods within the existing urban area in order to reduce sprawl, and countering the adverse environmental impacts of automobile use and an increasingly dispersed pattern of urban trips. These goals are different from those of airport land use compatibility planning, which are to reduce adverse impacts of airport operations on surrounding communities and avoid creating safety hazards around airports, either to aircraft or those on the ground. However, these two sets of goals are not inherently inconsistent, and both form aspects of sound land use planning.

From the perspective of airport land use planning, housing is generally viewed as incompatible with many areas in the immediate vicinity of airports, particularly near the runway ends or under aircraft flight paths, and the densities and mixed uses associated with walkable neighborhoods may be unsuitable with both the noise environment and safety criteria in areas close to airports. However, not all areas around airports are equally affected by aircraft noise or safety concerns, and to the extent that housing development can be located away from aircraft flight paths and land adjacent to the airport can be used for more compatible uses, appropriate application of smart growth strategies can address both sets of goals. Airports tend to attract a wide variety of related land uses in their immediate environs, but also can attempt to preserve open space or agricultural uses in the areas adjacent to runway ends. Airports often were located away from existing communities originally, but subsequently proved to be magnets for development in the surrounding area. Directing this development, particularly housing, toward existing communities located farther from the airport is consistent with the principles of both smart growth and airport land use compatibility planning.

In addition to using smart growth planning principles to encourage and achieve a pattern of compatible land use around the airport, the development of attractive, livable communities that draw their economic vitality from activities associated with the airport can help create a synergistic relationship between the airport and surrounding communities that can help minimize tensions between those communities and the flight and other activity generated by the airport.

RELATED RESEARCH ON AIRPORT ENVIRONS PLANNING

Land use planning in the area surrounding airports has been the subject of extensive study since the introduction of commercial jet aircraft and the resulting growth in both aviation activity and noise impacts on surrounding communities. The primary focus of these efforts has been to prevent incompatible land uses near the airport, particularly residential development under the approach and departure flight paths. The development patterns that have emerged are often dominated by airport-related activities, such as hotels, parking lots, air freight forwarders, and strip development along access roads leading to the airport. However, local communities recently have begun to encourage the development of office and industrial parks

aimed at tenants who find proximity to the airport attractive. As a result, there has been a growing interest in proactive policies to encourage development in the airport environs to take place in a more strategic way that is responsive to the goals of both the airport and the adjacent communities.

In 2004, the American Planning Association (APA) launched a multiyear research initiative titled *Airports in the Region*. In the May 2004 edition of *Planning*, the motivation for the study was described as follows:

Airports and their surrounding commercial districts are playing an increasingly important role in shaping urban and regional growth patterns.... a new term, “the airfront,” [may be] defined as the myriad commercial, industrial, and transportation facilities and services intrinsically tied to the airport.¹

The study attempts to define the requirements for a successful airfront district plan that would organize land use, environmental, and transportation systems for the entire airport district, address economic development and marketing considerations, and create an appropriate governance framework.

Along similar lines, Professor John Kasarda of the University of North Carolina, Chapel Hill, has developed an airport area planning concept that he terms “Aerotropolis.” This concept views the airport and its surrounding development as forming a major center of economic activity in the urban area, comparable to the traditional role of the central business district. This development could include aviation-related industry; freight-forwarding, logistics, and e-commerce activities; high-tech industries; and time-critical manufacturing.

CASE STUDY APPROACH

To help identify potential case study airports, a series of focused interviews were conducted with planning staff at Caltrans Division of Aeronautics, consultants involved in airport land use planning, and planning staff from selected ALUCs and regional planning agencies. These interviews explored the extent to which smart growth principles have been applied in airport land use planning and identified ALUCs that have successfully achieved or maintained compatible land uses near airports in their jurisdiction. This resulted in the selection of seven commercial service and six general aviation airports, located in six different areas of the state.

The approach followed in the case studies involved a review of publicly available documents, including Airport Land Use Plans prepared by the relevant ALUC; minutes of ALUC meetings; general plans of adjacent communities; reports and other information posted on airport or community web sites; and newspaper articles pertaining to airport development and land use issues. This review was supplemented by personal interviews with staff at the responsible agencies, including local and regional planning agencies, ALUCs, and

airport managers, as well as with relevant elected and appointed officials with policy authority over land use decisions.

CASE STUDY RESULTS

The case studies provided diverse perspectives on the wide range of issues confronted by different ALUCs in addressing airport land use compatibility planning for airports of widely different functions and sizes in different geographical situations. Although these represent only a sample of the ALUCs in California, the airports included in the case studies ranged from the second-largest airport in the state to small rural general aviation airports. Although the case study results are not statistically representative of all airport land use compatibility planning activities in the state, they give a reasonable overall profile of the types of issues being faced.

Application of Smart Growth Principles

The case studies found no explicit consideration of smart growth principles to date in the airport land use compatibility planning approaches adopted by the ALUCs. Where local jurisdictions had smart growth policies or programs, there had been no consideration of how to merge these with airport land use compatibility planning. In San Mateo County, the City/County Association of Governments (C/CAG) had a successful smart growth program and also is the ALUC for the county. Yet in this county the two functions had not been brought together, although discussions with the responsible C/CAG staff members indicated that they recognized the need for better coordination between the two activities.

Several of the case studies identified proposed or active projects near the airports in question that were explicitly designated as smart growth development. In the core of the San Francisco Bay Area, redevelopment of the Oakland Coliseum area to the east of Oakland International Airport is being planned as a “transit village” as part of the City of Oakland’s smart growth policies. Also in the Bay Area, the cities of Millbrae and San Bruno have approved transit-oriented development (TOD) around the Caltrain commuter rail stations that comprise mixed use with a strong residential component. Several of these developments are quite close to San Francisco International Airport, although not directly under the flight paths.

Elsewhere in the Bay Area, smart growth and airport planning collided head on in Contra Costa County with a proposal to close and relocate Buchanan Field adjacent to Concord and other fully developed lands and replace it with a mixed-use community designed along smart growth principles. The county’s other airport, in still-rural Byron, has sought air freight and other airport-related development, but its efforts have not been fruitful because of the airport’s relative isolation and lack of infrastructure to support development. Two other Bay Area airports, Livermore and Santa Clara County’s South County Airport, illustrate the challenges of airport planning in the path of suburban growth.

In San Luis Obispo on the Central Coast, serious conflict between the City of San Luis Obispo and the county-owned airport over development around the airport—much of it nominally smart growth—has generated a dialogue that has resulted in approved development plans agreeable to both parties.

In Southern California, the City of San Diego has pursued smart growth policies for some time, with a particular emphasis on infill residential development in the downtown area through the efforts of the Centre City Development Corporation (CCDC). Many of these developments are close to the primary arrival flight path to San Diego International Airport. The pace and extent of this development has become an issue of concern for the Regional Airport Authority, acting as the ALUC for San Diego County.

Some of the case studies identified development plans or projects that could potentially be regarded as smart growth, even if not formally designated as such. These included the Metro Air Park business park under development immediately to the east of Sacramento International Airport; the industrial and office development that has occurred around McClellan-Palomar Airport in Carlsbad, San Diego County; and the proposed Kohl Ranch development to the south of Jacqueline Cochran Regional Airport near Thermal in eastern Riverside County. The first two do not include residential uses but provide a buffer between the airport and planned or existing residential areas, while creating local employment and improving the jobs-to-housing balance in the area. The Kohl Ranch development is envisaged as a mixed-use development that would include both employment and housing.

In two cases, planned mixed-use development close to airports has generated controversy over potential compatibility problems with airport operations. The proposed Douglas Park development on the site of the former McDonnell-Douglas Aircraft Company plant adjacent to Long Beach Airport, which would include both commercial and residential uses, has been vigorously opposed by existing airport users because of the proximity of the residential uses to the primary runway and the flight path to and from a secondary runway. The redevelopment of the former Naval Training Center adjacent to San Diego International Airport also has raised concerns about the proximity of the planned residential areas to the runway and primary departure flight path. In both cases, the residential uses comply with existing compatibility criteria on the basis of established aircraft noise contours. Whether the occupants of these residences will find the noise levels acceptable is another question.

Airport Land Use Planning

Although there has been some experience with smart growth in the vicinity of the case study airports, the primary focus of airport land use compatibility issues identified in the case studies has been over conventional residential development in the vicinity of the airports and associated airport planning and development considerations. The following discussion summarizes some of the principal findings in each of the counties and multicounty regions included in the case studies.

The case studies provide a fairly comprehensive overview of the current state of airport land use compatibility planning in California and have identified several critical issues that will shape the future effectiveness of this process in the years ahead. This study appears to be the first formal attempt to examine how well this process has worked to date. Although the scope has been limited to a sample of airports, these are sufficiently diverse to draw useful conclusions and formulate recommendations on how to strengthen the process.

Overall Study Findings

The current process for airport land use planning in California has steadily evolved over almost 40 years, and a well-defined set of policies, procedures, and institutional relationships has developed at the county level, focusing on the role of the ALUCs and other agencies performing the same function. There is a growing body of guidance material on airport land use compatibility planning at the federal level, and other states have recently been moving in similar directions, but in this area, as in many others, California has been well ahead of the state of practice not only at the federal level but also in most other states. Even so, this has not been a panacea—land use compatibility conflicts continue to occur, hampering the development of the California airport system, and subjecting many of its residents to what they perceive as unacceptable levels of aircraft noise. Although this process appears to have worked well in many cases, in others it has failed to prevent incompatible development, often through no fault of the parties involved. It is time to reassess the ability of the current process, policies, and regulations to meet the challenges that will arise in meeting the future development needs of both the California airport system and the surrounding communities.

The evolution of the paradigm that has come to be termed smart growth is more recent, although it has become widely accepted and its principles and strategies are forming a key component of urban planning throughout the state. Little consideration has been given to how smart growth principles and strategies should be addressed in airport land use planning, and vice versa, and there is an urgent need to rectify this situation. Although the literature on smart growth and airport land use planning is only beginning to intersect, useful lessons can be drawn from the existing material.

More specifically, the study made the following observations:

1. Smart growth and airport land use planning (ALUP) have evolved separately. This study appears to be the first to consider their relationship and potential confluence.
2. Smart growth has three potential relationships with ALUP:
 - a. **Conflicting.** For example, a prototypical smart growth project (higher density/mixed-use) is proposed near an airport without adequately considering safety and noise issues.
 - b. **Complementary.** For example, smart growth projects draw residential and residential supportive uses away from airports, reducing pressure to develop incompatible uses near airports.

- c. Transforming. The smart growth concept of Transit-Oriented Development (TOD) is extrapolated and expanded into a concept of Airport-Oriented Development.
3. Under the third of these relationships, smart growth concepts would actively help realize ALUP goals by establishing comprehensive planning around airports. The goal of such planning would be to assure that land near an airport is reserved and actively planned for uses that benefit from (and are not threatened by) being in close proximity to the airport. The literature review revealed two efforts in this direction:
 - a. the Aerotropolis concept developed by Professor John Kasarda at the University of North Carolina
 - b. the American Planning Association's *Airports in the Region* initiative
4. The specific plan is a useful tool for California planning agencies to undertake comprehensive, proactive and positive ALUP.
5. ALUC staffs are overtasked, isolated, and undertrained. Most ALUCs do not have the equivalent of even one full-time planner; most of those planners report that they had to learn their jobs "on the fly," and most want more forums for education and exchange with other ALUC planners.
6. We actively sought, but could not find, any ALUC (or other agency) that maintains records of changes in actual land use over time (either electronic or hard copy). Maps showing how the land use in the vicinity of an airport today compares with some years ago would be useful in assessing the effectiveness of ALUP procedures. In the major metropolitan regions of the state, the data and appropriate geographical information system (GIS) tools exist to track airport area land use over time, but no one is doing this at present.
7. Certain trends—quieter commercial jets, technological improvements enhancing both air navigation and aircraft noise monitoring and management, increasing noise complaints related to overflights rather than take-offs and landings—suggest that the basic framework of ALUP in California since the 1960s (exemplified by basing land use compatibility on a specific CNEL contour) needs rethinking.
8. The term "smart growth" is entering the lexicon of airport executives and planners. One aspect of what may be termed smart air traffic growth is using technology to make maximum use of existing airport infrastructure, saving on the need for costly and contentious airport expansion, which, even if approved by all the concerned agencies, takes a great deal of time and resources to implement. Another aspect of smart air traffic growth is shifting general aviation and shorter commercial flights to other airports in a region to accommodate growth in other types of traffic at the busier airports
9. One clear opportunity for joint smart growth and airport planning is in planning for major transit links to serve large airports. Ground access travel at large airports by both air passengers and airport employees may justify the provision of improved transit services for a number of reasons: reducing vehicle traffic volumes generated by the airport, often through a congested corridor, and providing an alternative to the cost involved in parking

a private car at the airport, especially for longer trips. Even so, the transit ridership generated by the airport is likely to be relatively low, and smart growth planning can ensure that other stations on the airport line produce ridership to make the line more cost-effective.

Effectiveness of the Current Airport Land Use Planning Process in California

Various conflicts identified in the case studies provide one perspective on the effectiveness of the current airport land use planning process in California and its ability to prevent incompatible development from limiting the ability of the airport system to meet future demands for air transportation. A second perspective can be obtained from the analysis of land use changes in the vicinity of those airports where suitable data is available.

The *California Airport Land Use Planning Handbook* provides detailed guidance to ALUCs in the preparation of the ALUCP. However, the extent to which the ALUCs have been able to translate this guidance into effective land use plans varies widely. Many ALUCPs are significantly out of date and have not been updated since the *Handbook* was last revised, limiting their value in shaping local general plans and associated zoning and other regulations. In spite of this, safety issues involving building heights and development density are generally well handled, in part because the relevant federal standards for airport protection have not changed in some time. However, aircraft noise issues are often a continuing source of controversy. The noise contours that form the basis of many of the older ALUCPs have not been updated since the phase-out of the Stage 2 jet aircraft in 2000, and thus may not reflect current conditions.

It is clear from many of the case studies that there are two very different situations. The first is where community expansion or other development forces are resulting in new development being proposed in the immediate vicinity of airports that will result in residential and other noise-sensitive uses (such as schools and churches) occurring in areas that do not already have these uses or that significantly increase the amount of these uses. The other situation is where changes in airport activity, such as the construction of new runways, reuse of former military bases, or changes in the traffic level or composition of the aircraft fleet using the airport, result in changes to the noise levels experienced by existing land uses near the airport. The distinction between these two situations is important, both because the options available to address the resulting or potential problems are different in the two cases and because there are issues of social justice in the latter case that do not arise in the former. However, the differences between these two situations are not well addressed in the current guidelines.

The other important observation from the case studies is that most airport land use compatibility problems, primarily involving issues of aircraft noise, arise in areas that are not subject to existing development restrictions. Thus, even if the ALUC is deeply concerned about the potential future problems that are likely to arise from a proposed development, they are often powerless to prevent the development from being approved. Aircraft noise impacts outside the 65 dB CNEL contour are often a major concern in nearby communities,

particularly with general-aviation airports, where the noise contour rarely extends far from the airport property. The *Airport Land Use Planning Handbook* allows adjustments to the noise levels used in setting development restrictions, termed normalization, to tailor the restrictions to better reflect local conditions. However, ALUCPs typically do not take advantage of these opportunities.

Improving the Airport Land Use Planning Process

There appear to be significant opportunities to improve the airport land use planning process. Perhaps the most important is to strengthen the ALUCs through increased staffing and enhanced training opportunities. In many cases, the ALUC is assigned one person who combines the ALUC duties with other responsibilities. These planners have limited opportunities to interact with staff at other ALUCs and typically are expected to learn their skills on the job. Similarly, ALUC commissioners often have no formal training in airport land use planning practice and limited opportunities to exchange ideas with other ALUCs.

Consequently, the ALUCs typically focus on preparing the ALUCP and reviewing specific development proposals, rather than developing a broader strategy. ALUCs generally do not have the staff resources, nor perceive the need, to monitor land use changes around the airports in their jurisdiction and work proactively with relevant local planning agencies to define a common vision of future land use patterns around the airport that meets both airport and local needs. The case studies found no ALUCs that routinely track land use changes around the airports in their jurisdiction, apart from the quarterly reports prepared by noise-problem airports that are required by state law to obtain a variance from the California Department of Airports.

The other aspect of ALUC activities that presents opportunities for improving the visibility of the airport land use planning process is the extent to which information about airport land use planning issues and ALUC actions is readily available to interested stakeholders. ALUC web sites vary widely in quality and content. Several web sites do not even have the latest version of the ALUCP available. While many post the agenda and minutes of ALUC meetings, the minutes often lack sufficient detail for a reader to understand the basis for decisions or perform retrospective analysis of the overall effectiveness of the airport land use planning process. None of the ALUCs studied in this research produced an annual report that summarized land use decisions by the ALUC or relevant local agencies affecting development in the Airport Influence Area.

Beyond ways to increase the effectiveness of the ALUCs, there is a need to rethink the basic approach to airport land use planning that has evolved over more than 30 years. Many of the principles are still valid, but some of the underlying assumptions have been overtaken by events or are of questionable validity in the current (and likely future) environment. Trends in aircraft technology have changed the issues that need to be addressed. Quieter aircraft engines and the introduction of regional jets have changed the nature of the noise impact for many communities. At the same time, increased use of jet aircraft for business has resulted in a

significant increase in jet aircraft activity at some general-aviation airports. Noise complaint data and information from aircraft flight tracking systems show that CNEL is a poor predictor of community annoyance; in particular, 65 dB CNEL is an unacceptable criterion of compatibility for many communities. Finally, the current approach ignores the development pressures that many local jurisdictions are trying to resolve, particularly the need for tax base and affordable housing. Effective airport land use planning needs to grapple with these issues and have the tools to do so, and not be constrained to applying simplistic criteria without regard to local circumstances. Perhaps the most obvious limitation of the existing process is that ALUCs are only authorized to address changes in land use, not to address compatibility with existing land uses. As development continues around the state's airports, the opportunities to achieve land use compatibility through restrictions on new uses will steadily diminish, and community concerns will increasingly result from existing land uses.

Incorporating Smart Growth Considerations

A number of steps can be taken to begin to incorporate smart growth considerations in airport land use planning in a more integrated way. Perhaps the most significant is to develop explicit guidelines on how to address smart growth planning in the vicinity of airports. These guidelines should be developed in coordination with state and interested local agencies involved in land use planning as well as other relevant Caltrans divisions and district offices.

A second useful step would be to incorporate economic planning considerations into airport land use planning guidance. This would begin to move the focus of the airport land use planning process beyond simply preventing incompatible development near airports to actively promoting compatible development and to viewing the airport as a community asset that needs to be protected and taken advantage of, rather than a locally unwanted land use that has to be protected from encroachment.

As part of this approach, there needs to be a proactive coordinated effort to addressing regional housing needs. ALUCs need to work with local jurisdictions to develop joint strategies to meet their housing needs in a way that is compatible with airport activities before projects are proposed to locate new housing close to airports. In many communities, the pressure to develop new housing is sufficiently intense that once plans are proposed to locate major new housing developments in the vicinity of an airport, the ALUC will be fighting an uphill battle to stop or scale back the project.

Future Research Needs

Although this research project has developed a significant amount of information about the current state of airport land use planning in California, much more could be done. Further research to expand the information on airport land use planning in other counties or at other airports would be desirable. That research could extend the findings of a recent study of airport land use planning in the state by the California Research Bureau² and include additional surveys of ALUC staff to develop a more detailed quantitative profile of ALUC

activities. The outcomes of several of the airport land use planning issues identified in these case studies are subject to continuing activity by the ALUCs and airport sponsors, so it would be useful to update the case study information from time to time to ensure that the research findings do not become obsolete. Beyond this type of follow-on activity, many research activities could generate specific information to enhance the airport land use planning process.

The first of these activities is to obtain a better understanding of how community attitudes to aircraft noise vary with local conditions. The normalization adjustments permitted by current guidelines would more defensible (and more likely to be used) if there were a well-developed body of evidence that shows how the type of surrounding communities—urban, suburban, or rural—and the type and frequency of aircraft operations influence community attitudes and response. This research also could address the distinction between changes in the community and changes in airport activity by examining differences between the attitudes of established residents and those of newcomers to the area.

A third research topic would be to identify professional development needs for ALUC staff and commissioners, identify existing opportunities, and develop a program plan and curricula for new courses, workshops, or symposia. An additional research activity would be to work with ALUC staff to identify and document best practices in airport land use planning. These could address such aspects as coordination with local planning jurisdictions, development of airport area specific plans, monitoring land use changes and community attitudes, and successful efforts at community outreach and information dissemination.

RECOMMENDATIONS

Based on the research findings, particularly the case studies, the following recommendations are made to facilitate and strengthen the airport land use planning process in California:

1. Caltrans should work with the FAA and the California legislature to develop an adequate source of funding to support appropriate levels of ALUC staff and activities.
2. The Caltrans Division of Aeronautics should work with ALUC staff to develop recommended standards of practice regarding how ALUCs document their land use decisions and what information they post on their web sites.
3. The Caltrans Division of Aeronautics web site should provide a single point of access to information on all ALUCs in the state.
4. The Caltrans Division of Aeronautics should work with ALUC staff to track and report changes in land use within Airport Influence Areas on an annual basis.
5. The Caltrans Division of Aeronautics should take the lead in improving the specialist training and professional interaction of ALUC commissioners and staff.
6. Caltrans should work with the state legislature to ensure appropriate levels of representation of both local communities and aviation interests on all ALUCs.

7. The Caltrans Division of Aeronautics should review the guidelines contained in the *California Airport Land Use Planning Handbook* to ensure that they adequately reflect the changing context of airport land use planning and are based on sound technical analysis of community response to aircraft noise and the safety risks posed to both aircraft and those on the ground by land uses and development adjacent to airports.
8. The Caltrans Division of Aeronautics should coordinate with other relevant state agencies, particularly the Department of Housing and Community Development and the Governor's Office of Planning Research (OPR), to develop explicit guidelines that address smart growth planning in the vicinity of airports.
9. To ensure that Caltrans and the ALUCs within the state are basing their regulations, guidelines, and decisions on the best available information, the Caltrans Division of Aeronautics should undertake an ongoing research program to better understand the issues that should be addressed to achieve effective airport land use planning in the state.

FINAL THOUGHTS

Effective airport land use planning will be an essential component in the future development of the California aviation system. Allowing incompatible land uses to develop around airports creates conflicts between the airports and the surrounding communities that constrains the ability of the airport system to meet future aviation needs and discourages other communities from allowing airport development in their vicinity. As with the motivation to develop smart growth policies in general, there is an increasing recognition that the land around airports is limited resource, and that continuing existing patterns of development is not sustainable in the long term. New solutions are needed that balance the interests of all involved.

INTRODUCTION

This report presents the findings and conclusions from a research project to explore the extent to which the principles and strategies of smart growth have been applied in land use planning around airports in California and to examine the effectiveness of existing airport land use compatibility planning from the perspective of smart growth. The premise of this research is that application of the principles and strategies of smart growth can reduce the potential for conflicts around airports. The study entailed a literature review, interviews, and case studies. Detailed case studies of 14 California airports constituted the bulk of the investigation.

BACKGROUND

Airports are vital transportation and employment hubs that can generate not only significant economic activity but also a variety of impacts on the surrounding environment, including aircraft noise, surface traffic, and ancillary development. The importance of appropriate land use planning around airports to avoid incompatible land uses has long been recognized.³ Efforts to date have been directed at preventing such uses as new residential development in areas experiencing high levels of aircraft noise or the construction of schools under aircraft flight paths. In California, this process has been formalized through the creation of county Airport Land Use Commissions (ALUCs). However, the success of these commissions at preventing incompatible development has varied widely, and relatively little attention has been given to changing existing land uses to achieve a more compatible pattern of land use around airports, as distinct from preventing new incompatible development. The legislation establishing the ALUCs explicitly prohibits them from addressing existing land uses. Efforts to achieve a more compatible pattern of land use are often complicated by resistance on the part of communities near airports toward the type of land use changes or development that would result in greater compatibility between airport activities and the surrounding land uses.

As the demand for air transportation continues to recover from the drop in air travel after September 2001, there will be a corresponding growth in aircraft activity at the nation's airports. According to a recent aviation forecast by the Federal Aviation Administration (FAA), by 2025 the number of commercial aircraft operations at a national level will be 50 percent higher than in 2000.⁴ The ability of the airport system to handle this growth in air traffic will depend on the ability to develop new and expanded facilities.

However, these projects are often the source of considerable opposition by surrounding communities, opposition that can be exacerbated by incompatible land uses near the airport or the impact of increased airport-generated vehicle trips on the street and highway system near the airport. In many large metropolitan areas, these concerns impose significant constraints on the ability to further expand the existing commercial airports,⁵ and renewed consideration will have to be given to developing new airports on greenfield sites or providing commercial

service at former military airfields or general aviation airports.⁶ Since feasible sites are likely to be in relatively undeveloped areas some distance from existing urban development, such a strategy is likely to have important implications for land use planning in the vicinity of the new airports and significant impacts on urban growth patterns.

At the same time, there is a growing interest in land use and transportation planning circles in pursuing development strategies that are known as smart growth. This term refers to a suite of design, land use planning, and infrastructure investment policies that aim to create more livable, equitable, and economically vital urban neighborhoods and regions while minimizing environmental costs. It is now a mainstream political movement—driven by both environmental and fiscal concerns—that seeks to implement principles of sustainable development, which has become a prominent urban and regional planning paradigm in California and elsewhere, and its principles increasingly inform transportation planning.⁷

As Bossard et al. note, there is no single definition of smart growth. In general, it emphasizes more compact development and better integration of interdependent land uses within metropolitan areas.⁸ Smart growth has largely been applied at the neighborhood level; these applications typically entail efforts to create livable residential developments with increased travel choices, thereby reducing dependence on automobiles and the ensuing need to expand roads. Proponents argue that the same principles can and should be applied to all elements of a metropolitan system, not just residential neighborhoods.⁹ Infill development, including reuse of previously developed land, is another key smart growth strategy. In the words of a leading advocacy organization, smart growth questions the “economic costs of abandoning infrastructure...only to rebuild it further out.”¹⁰ From this perspective, smart growth can be defined as a set of policies for achieving an optimal use of existing urban infrastructure and limiting the need for new infrastructure—policies with clear implications for airport system planning.

The alternative development strategies that could be pursued as part of the regional airport system planning process will need to balance the trade-offs between continued expansion of existing airports on constrained sites surrounded by established residential communities, with development of new airports that will tend to stimulate growth in less-developed parts of the region. To date, there has been little effort to understand the nature of these trade-offs in the context of the principles of smart growth and associated regional development policies.

Although the goals of smart growth planning and airport land use compatibility planning are generally seen as separate, it may be argued that they have a common enemy in urban sprawl. Urban sprawl may be identified as disjointed low-density development at the edge of metropolitan areas, comprised mainly of single-use development—housing, retail, and basic employment uses are separated from one another. This separation of uses, combined with low density and lack of planning, means that automobiles are often the only viable mode of transportation. Planning for more space- and energy-efficient transportation modes, such as walking, cycling, and public transportation, is typically neglected. From the standpoint of smart growth advocates, sprawl uses more resources per capita—notably land and

transportation energy—and has more environmental impacts (for example, air pollution) per capita than would more compact, better-integrated development of an equivalent size.

Where airports are surrounded by largely undeveloped land, planners view urban sprawl as a threat because its extensive use of land will put development pressure on land in the vicinity of these airports sooner rather than later. However, larger commercial airports traditionally have been (and increasingly are) attractive to uses that require or benefit from proximity to the air transportation system. Even development projects with little need for proximity to the airport are frequently attracted to the freeways and other physical infrastructure built to serve the airport. Thus, while sprawl is a problem for continued airport activities, airport activities themselves are a stimulus to development near the airport, some of which may prove to be incompatible with airport operations. For airports already surrounded by urban uses, concerns about infill development may be greater than concerns about sprawl.

There are at least three reasons to consider how airport area planning and smart growth planning can be better linked:

- to explore how land use planning strategies that are being pursued to respond to smart growth policies can be adapted to meet airport land use compatibility goals
- to identify ways in which smart growth policies might adversely affect airport land use compatibility planning (for example, infill development on land near airports could result in an increase in residential units near the airports)
- to understand how longer-term airport development strategies, such as expanding or constructing airports on the perimeter of an urban region or encouraging associated commercial development on adjacent land, could conflict with smart growth policies

In 2005 there were 254 public use airports in California;¹¹ this means that approximately 4,000 square miles of California are within two miles of a public-use airport—an area eight times that of the city of Los Angeles. The geographic scope of the interface between airports and their surroundings is considerable.

In summary, it is clear that the continued development of the airport system to meet the future air transportation needs of society will require a sustained effort to achieve compatible land uses in the areas impacted by airport activity and to ensure that airport development occurs within a broader planning framework that integrates this development with efforts to address changing patterns of land use and surface transportation requirements at a regional level. Thus, the potential exists for airport development plans to take advantage of efforts to implement principles of smart growth in land use planning activities in surrounding communities and to be an engine for smart growth through the location of both airport activity within the region and airport-related development adjacent to the airport itself.

SCOPE OF THE CURRENT RESEARCH

The objective of the research described in this report is to examine the potential role of smart growth principles to enhance airport land use compatibility planning and the implementation of regional airport development strategies. Potential conflicts between smart growth principles and projects and airport-compatible land use planning are also discussed. The overall aim is to identify how the existing airport land use compatibility planning process can be strengthened to better achieve compatible land uses near airports.

Through the case studies, the research attempted to identify and document the extent to which the principles of smart growth have been applied to airport system planning in the state, either explicitly or by implication from the land use planning strategies adopted, and to explore the effectiveness of existing airport land use compatibility planning procedures in California from the perspective of smart growth policies.

The research also examined how existing airport land use planning efforts can be linked to smart growth planning initiatives at the federal, state, regional, and local levels, and developed recommendations on how these linkages can be improved.

An important goal of the research is to identify and document which airport land use planning strategies appear to be successful in achieving compatible land use near airports and which do not, and to develop recommendations for legislative or policy changes that may be required to strengthen this process.

RESEARCH APPROACH

Two primary methods were employed to meet the foregoing objectives. The first part of the research explored the current thinking on the application of smart growth principles to planning in general, and to airport land use planning in particular, through a review and synthesis of the existing literature on both airport land use planning and planning for smart growth, and a series of focused interviews. The review included existing legislative requirements in California and planning guidelines for airport land use planning. The reviewed research and interviews explored such issues as how current efforts by different federal, state, regional, and local agencies to address smart growth and airport land use are related and where gaps exist; what incentives could be used to encourage communities to promote smart growth and compatible airport land use planning; and which airports could benefit the most from such an approach.

The second part of the research comprised case studies to examine the effectiveness of different airport land use planning approaches at a sample of California airports from the perspective of the principles of smart growth. The airports chosen for the case studies reflect a range of size, function, geographical location, and planning opportunities. They include six general aviation airports, three smaller commercial airports, two medium-sized commercial airports, and three major international airports. These airports also were selected to include several airports from

the northern, southern, and central regions of the state, so as to examine the varying effectiveness of land use planning at different airports within the same region. The general aviation airports chosen include airports of varying size and function, and included three types of general aviation airport identified in the California Aviation System Plan: metropolitan, regional, and community. Five airports are surrounded by fully developed urban areas, and five airports are located on the suburban fringe, where new development is occurring or has been proposed on undeveloped land near the airport.

The effectiveness of land use planning strategies was addressed in two ways. The first was the subjective assessment of the planners and policymakers involved in the process, identified through the case study interviews. When possible, this was supplemented by more objective measures of changes in the extent of incompatible land use adjacent to each airport over time, as well as changes in land use zoning classification or other development restrictions.

STRUCTURE OF THIS REPORT

The remainder of this report consists of six sections, plus supporting materials.

“[Airport Land Use Planning in California](#)” reviews current airport land use planning policies and procedures in California.

“[Smart Growth in Relation to Airport Land Use and Transportation Planning](#)” discusses the relationship between airport land use planning and smart growth principles and strategies. It reviews smart growth strategies and policies as they have been developed in other applications and their potential application to airport land use planning. It also addresses economic development considerations.

“[Related Research on Airport Area Planning](#)” discusses recent research on two aspects of proactive land use planning in the airport environs: an initiative by the American Planning Association and an approach to land use development around airports that has been termed the “Aerotropolis” concept.

“[Literature Review Findings](#)” summarizes the findings from the literature review and discusses the implications for the remaining research tasks.

“[Case Study Analysis](#)” describes the key findings from the case studies undertaken as part of the research. It summarizes discussions held with a number of airport industry experts familiar with airport land use planning issues in California, describes the process that was followed to select the case study airports, presents a brief overview of the selected airports, and discusses the key findings from the case studies. Detailed case study summaries are appended to the report.

“[Conclusions and Recommendations](#)” presents the project’s overall conclusions and recommendations.

[Appendix A](#) through [Appendix M](#) contain the detailed findings of the case studies; [Appendix N](#) contains comments from industry discussions. Each case study begins with a table summarizing the airport(s) examined, enabling readers concerned with a particular airport or issue to identify quickly the relevance of the case study to their situation and interests.

A general bibliography is followed by two annotated bibliographies, which respectively address the literature on airport land use planning, and the literature on planning for smart growth.

The final sections present the authors' professional biographies and describe the peer review procedure.

AIRPORT LAND USE PLANNING IN CALIFORNIA

Over a period of nearly 40 years, the State of California has established a formal, statewide process to undertake land use planning for areas surrounding public use airports in the state. Originally enacted in 1967, and subsequently amended from time to time, a part of the *California Public Utilities Code* designated the State Aeronautics Act authorizes the creation of Airport Land Use Commissions (ALUCs) and defines their powers and duties. The state legislation defines the purpose of these commissions as follows:

1. It is in the public interest to provide for the orderly development of each public use airport in this state and the area surrounding these airports so as to promote the overall goals and objectives of the California airport noise standards adopted pursuant to Section 21669 and to prevent the creation of new noise and safety problems.
2. It is the purpose of this article to protect public health, safety, and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses.¹²

The legislation requires that each ALUC define the boundary of an Airport Influence Area (AIA) for each airport addressed by the ALUC within which land use restrictions apply. An ALUC typically defines areas within the AIA within which different restrictions apply.

In 1994, the legislation was amended to provide for what has come to be called an “alternative process,” by which the county and each affected city within it establishes a planning process to prepare, adopt, and amend a land use compatibility plan for each public use airport in the county; mediate disputes regarding the preparation, adoption, and amendment of these plans; and amend general plans and specific plans to be consistent with the compatibility plans. In such cases, an airport land use commission need not be created. However, an agency needs to be designated to be responsible for these activities. As of September 2001, San Francisco, Inyo, Kings, and San Bernardino counties had elected to follow this alternative process. Finally, the legislation provides specific exceptions that apply to Los Angeles, Kern, and Santa Cruz Counties, and designates the process by which airport land use compatibility planning will be conducted in those counties.

As of September 2001, 27 counties had established single-purpose ALUCs, and 20 counties had designated other bodies to serve in this capacity. These other bodies included regional planning agencies, airport commissions, planning commissions, and the county board of supervisors.

POWERS AND DUTIES OF THE AIRPORT LAND USE COMMISSIONS

State legislation defines two specific duties for the ALUC in a county (or other body acting in that capacity): to “prepare and adopt an airport land use plan” for each of the airports within its jurisdiction (Section 21674(c) and Section 21675(a)); and to “review the plans, regulations, and other actions of local agencies and airport operators” (Section 21674(d)) regarding consistency of local agency general plans or specific plans, or publicly owned airport master plans, with the commission’s airport land use plan. The legislation defines the process to be followed if the ALUC determines that an incompatibility exists or will exist between local agency plans and the airport land use plan. The ALUC does not have the final say. A local agency may vote to overrule the commission, but this requires a determination of specific findings that the proposed action is consistent with the purpose of the legislation, a public hearing, and a two-thirds vote by the governing body.

If the ALUC has determined that an inconsistency exists and the local agency has not voted to overrule this determination, the ALUC may require the local agency to “submit all subsequent actions, regulations and permits to the commission for review until its general plan or specific plan is revised or the specific findings are made” (Section 21676.5). Thus, the ALUC does not have the power to prohibit any development action, but it can require local agencies to make any development approval decisions involving incompatible land uses in an explicit and public manner, thereby providing an opportunity for opponents of the development to air their concerns and potentially opening the local agency to liability regarding future complaints about aircraft noise or safety hazards by occupants of any such development.

The legislation explicitly limits the authority of ALUCs in two important respects: they have no jurisdiction over existing land uses, no matter how incompatible they may be with the operation of nearby airports, and they have no jurisdiction over the operation of an airport. Although the exact meaning of “operation of an airport” is not defined in the legislation, it is generally regarded as prohibiting any actions affecting the day-to-day operations of the airport or the manner in which aircraft are operated.¹³ Thus, the primary focus of ALUCs is on preventing new incompatible development near airports rather than pursuing strategies to reduce the adverse impacts of aircraft activity on existing land uses. Although this focus is a worthy goal, it leaves the ALUCs powerless to address the problems that arise when established residential areas lie close to airport runway ends or the nature or level of aircraft activity at an airport changes in a way that increases the adverse impacts on surrounding communities.

GUIDANCE FOR AIRPORT LAND USE COMPATIBILITY PLANNING

The legislation defining the powers and duties of the ALUCs provides little guidance on how they should perform these duties. However, since 1994 it has required the California Department of Transportation to provide training to ALUC staff and to publish an *Airport*

Land Use Planning Handbook to provide guidance to ALUCs in the performance of their duties. The most recent update of this handbook was published in January 2002.¹⁴

The handbook comprises nine chapters with ten supporting appendices. The first five chapters discuss ALUC procedures and plans, and address the following topics:

- establishment of Airport Land Use Commissions
- preparation and adoption of compatibility plans
- formulating airport land use compatibility policies
- ALUC review of local actions
- responsibilities of local agencies

The remaining four chapters address specific airport land use compatibility issues:

- measuring airport noise
- establishing airport noise compatibility policies
- aircraft accident characteristics
- establishing airport safety compatibility policies

It is clear from the contents of the handbook that there are two broad concerns for airport land use compatibility planning: aircraft noise and safety.

Aircraft noise is addressed by defining land uses that are considered to be compatible with different levels of aircraft noise and attempting to restrict development to compatible land uses.

Safety involves both those on the ground and aircraft operating in the vicinity of an airport. The safety of those on the ground is addressed by restricting land uses in areas that are deemed to present an undue risk of fatalities or injuries from an aircraft crash, typically the areas adjacent to the ends of the runways. Since this risk is a function of both the location relative to the runway ends and the number of people who might be gathered at that location, the land use compatibility criteria consider not only the type of use but also the intensity of use in terms of the number of people per acre who are likely to be present at the location.

The safety of aircraft operating in the vicinity of an airport is addressed by establishing airspace protection surfaces that limit the height of buildings or other obstacles that could present a hazard to aircraft, as well as providing appropriate open land areas near the airport to accommodate forced landings by aircraft that are unable to reach the airport and ensuring that the land immediately beyond the ends of the runways is free of obstacles in case of an aircraft undershoot or overrun. Consideration also should be given to controlling land uses in the vicinity of the airport that could attract wildlife or present other hazards to airport operation.

IMPLEMENTATION OF AIRPORT LAND USE COMPATIBILITY PLANS

The fundamental approach taken in California to achieve compatible land uses around airports is to rely on the zoning powers of local agencies as expressed through their general plans and area specific plans, and associated zoning maps and development permit approval processes. The role of the ALUCs is to ensure that these plans and decisions are consistent with established criteria for compatible land uses, as defined in the *Airport Land Use Planning Handbook* and expressed through the Airport Land Use Compatibility Plans (ALUCPs) developed by each ALUC.

The legislation defining the duties of the ALUCs requires that each ALUCP defines the boundary of an Airport Influence Area (AIA) for each airport addressed by the ALUCP within which land use restrictions apply. An ALUCP typically defines areas within the AIA within which different restrictions apply.

Although the ALUCs may be involved in reviewing specific development proposals if the local planning agency's general or specific plans are not consistent with the ALUCs land use compatibility plan, the preferred approach is to ensure that the general and specific plans are consistent with the airport land use compatibility plan and then leave decisions on specific development applications to the local agency approval process. If the local agency decides to approve a development or other land use action that is inconsistent with the land use criteria in its own plans, such as by issuing a variance to its zoning ordinance, that decision must be referred to the ALUC for review before final approval.

MEASURING AIRCRAFT NOISE FOR LAND USE COMPATIBILITY

Aircraft noise is typically a significant, if not the most important, concern of communities located near airports, and a major consideration in airport land use compatibility planning. The way in which aircraft noise is measured and the associated criteria for what are considered compatible uses are significant determinants of the success of the airport land use planning process.

California's method for measuring aircraft noise differs somewhat from that adopted in most other states and recommended by the FAA in its guidance material on airport land use planning. Both methods measure the sound level of each noise event (aircraft operation) using the A-weighted decibel (dB) sound level scale. They calculate an average noise level over the entire day that takes account of both the number of noise events and the loudness of each, with a tenfold weighting for nighttime events between 10 p.m. and 7 a.m. (that is, each event at night is considered to be the same as ten identical events during the day when calculating the daily average level).

The California noise metric, the Community Noise Equivalent Level (CNEL), also includes a threefold weighting for evening events that occur between 7 a.m. and 10 p.m. The noise

metric used by the FAA, the Day-Night Average Sound Level (DNL), is thus slightly lower than the CNEL value for any given situation.

The night and evening weighting of aircraft operations in these noise metrics are intended to compensate for the greater sensitivity of people to noise at those times.

Because of the averaging of the sound energy produced by each individual event over the day, there may be a significant difference between the sound level of the loudest events during any period of time and the resulting CNEL value. This can become a particular issue of concern to residents of communities near general aviation airports, where there may be relatively few operations by particularly loud aircraft on any given day, and thus the CNEL value is quite low, although the sound level during each overflight event by those aircraft can be quite high. For this reason, communities are often more concerned about single-event noise levels than average sound levels over the day. However, most established criteria for airport land use compatibility planning are expressed in DNL or CNEL.

The *California Airport Land Use Planning Handbook* does not provide uniform criteria for what ALUCs should consider to be compatible land uses for a given level of aircraft noise, but rather states that these should be established taking into consideration the characteristics of the airport and its environment. However, the handbook notes that a CNEL of 65 dB or higher generally is not appropriate for most new residential development, while a CNEL of 60 dB is suggested by the California Office of Planning and Research General Plan Guidelines as the maximum “normally acceptable” noise exposure for residential areas and a CNEL of 55 dB may be suitable for airports in quiet, rural locations (Caltrans 2002, Table 7C).

SMART GROWTH IN RELATION TO AIRPORT LAND USE AND TRANSPORTATION PLANNING

This section provides a definition and some general background on fundamental smart growth concepts. It also draws relationships with, and defines implications for, airport land use compatibility planning.

This section draws in part on information posted at key web sites that focus on smart growth. The reader seeking more detail on the topics discussed in this chapter is encouraged to visit the following web sites. The first two focus on smart growth in general; the last site focuses on the urban transportation aspects of smart growth.

- United States Environmental Protection Agency (www.epa.gov/piedpage/)
- Smart Growth Network (www.smartgrowth.org/)
- Fehr & Peers Associates (www.smartgrowthplanning.org/)

SMART GROWTH DEFINED

The Smart Growth Network—a joint activity of the U.S. Environmental Protection Agency and several nonprofit and government organizations that has been established to promote smart growth practices and develop and share information on smart growth—identifies 10 strategic principles of smart growth:¹⁶

1. Create range of housing opportunities and choices.
2. Create walkable neighborhoods.
3. Encourage community and stakeholder collaboration in the development process.
4. Foster distinctive, attractive communities with a strong sense of place.
5. Make development decisions predictable, fair, and cost effective.
6. Mix land uses.
7. Preserve open space, farmland, natural beauty, and critical environmental areas.
8. Provide a variety of transportation choices.
9. Strengthen and direct development toward existing communities.
10. Take advantage of compact building design.

These strategic principles address the goals of smart growth, namely to create vital, livable urban neighborhoods within the existing urban area in order to reduce sprawl and counter the adverse environmental impacts of automobile use and an increasingly dispersed pattern of urban trips. These are different goals from those of airport land use compatibility planning, which are to reduce adverse impacts of airport operations on surrounding communities and avoid creating safety hazards around airports, either to aircraft or those on the ground.

Nonetheless, these two sets of goals are not inherently inconsistent, and both are aspects of sound land use planning.

At first glance, the first two principles appear quite different from the established approach to airport land use compatibility planning as it is currently practiced. Housing is generally viewed as incompatible with many areas in the immediate vicinity of airports, particularly near the runway ends or under aircraft flight paths, and the densities and mixed uses associated with walkable neighborhoods may be incompatible with both the noise environment and safety criteria in areas close to airports. Nevertheless, not all areas around airports are equally affected by aircraft noise or safety concerns, and to the extent that housing development can be located away from aircraft flight paths and land adjacent to the airport used for more compatible uses, appropriate application of smart growth strategies can address both sets of goals. Moving down the list, strategic principles three through five would appear completely relevant and worthy aims for both airport land use planning and smart growth planning.

Principles six and seven are entirely consistent with current airport land use planning processes: airports attract a wide variety of related land uses in their immediate environs, and also attempt to preserve open space or agricultural uses in the areas adjacent to runway ends. Principle eight is also consistent with airport ground access planning principles, particularly at major metropolitan airports where there are frequently policies to encourage access trips by means other than private vehicles. Development of ground transportation services at larger airports, such as an extension of regional rail systems to the airport, can also improve transportation choices in areas around the airport that can also be served by the same systems. At smaller airports, which typically do not have enough traffic to justify a significant level of public transit service, development of transit-oriented activity centers near the airport may enable the provision of a level of transit service at the airport that would not otherwise be possible.

Regarding the final two principles, airports historically have been located away from existing communities, but have often been magnets for development in the surrounding area. Directing this development, particularly housing, toward existing communities located further from the airport is clearly consistent with the goals of both smart growth and airport land use planning. While compact building design does not have any particular advantage for airport land use planning, it is not inherently inconsistent and may allow desired levels of development to be concentrated in areas that are less exposed to aircraft noise. Multistory construction techniques also offer greater opportunities for sound insulation.

POTENTIAL GOALS FOR SMART GROWTH AROUND AIRPORTS

The experience of many metropolitan areas is that there is growing market interest in smart growth development. In California there is a substantial market premium for land zoned for higher-density mixed land uses, particularly when near rail transit. However, the type of transit-oriented development that is typically pursued in such projects, with a significant

component of high-density housing, is generally not appropriate in close proximity to airports.

Therefore, airport land use planning should seek to locate such development some distance from the airport in areas away from the arrival and departure flight paths, while creating a buffer of more compatible uses between such developments and the airport itself.

In addition to using smart growth planning principles to encourage and achieve a pattern of compatible land use around the airport, the development of attractive, livable communities that draw their economic vitality from activities associated with the airport can help create a synergistic relationship between the airport and surrounding communities that can help minimize tensions between those communities and flight and other activity generated by the airport. Planning for the surrounding communities should strive to accomplish the following:

- Make the airport environs a nexus of mutually compatible activities rather than a barrier between the airport and larger community.
- Create aesthetically attractive corridors radiating from the airport that are both functional and project a positive image that orients travelers.
- Make such corridors multimodal: improve mobility and safety for autos, trucks, transit, pedestrians, and bicyclists.
- Design local streets that serve nonmotorized traffic in communities near the airport so that drivers will drive at safe speeds and not exceed the speed limit or use the streets as shortcuts to access the airport.
- Design arterial streets so that traffic flows at a consistent speed and travel time is maintained through the corridor. (Predictable travel times are crucial around airports.)
- Develop housing for airport-related employees that is sufficiently close to the airport to facilitate nonautomobile access but far enough away and appropriately located to avoid unacceptable levels of aircraft noise.

INDICATORS FOR MEASURING THE TRANSPORTATION EFFECTS OF SMART GROWTH STRATEGIES

The following indicators are typical measures of the relative impacts on the transportation system and environment of smart growth projects compared to more conventional urban development patterns:

1. Proximity of employment and residential units to transit
2. Transit and nonmotorized share of travel
3. Person-hours of delay
4. Private vehicle miles traveled per capita
5. Private vehicle hours traveled per capita
6. Travel cost (dollars/year/capita)

7. Air pollution measures (for example, pounds/year/capita for key pollutants)

Smart growth seeks to increase the first two measures and decrease the latter five. These are generally wide-area measures that reflect the long-term effects of different development strategies. They are less well suited to measure the effect of a specific project, since they depend heavily on mode choice decisions by those making trips to and from the development, which in turn are influenced by many factors beyond the design of the project.

FACTORS INCREASING TRANSIT USE AND REDUCING VEHICLE TRAVEL

Four key factors have been shown to increase transit use and reduce vehicle travel: land use density, diversity of uses, urban design that is transit- and pedestrian-oriented, and proximity to a broad range of destinations that are well served by transit. The first three of these so-called “D” factors (density, diversity, and design) relate to the urban form of the area around the airport or activity center; the fourth “D” factor, destinations, is measured by the relative proximity of the activity center to other activities and attractions in the region that are well served by transit.

Decades of research on the influence of land use patterns suggests the following minimum thresholds for the development density needed to ensure feasible transit service:¹⁷

- ten dwelling units per acre for rail transit; six dwelling units per acre for bus transit
- a floor area ratio of 1.0 for nonresidential uses (this corresponds to roughly 100 employees per acre for office uses)

Other key factors influencing the use of transit and other nonauto modes include parking costs and transit service frequency and quality.

Research on the use of heavy rail BART (Bay Area Rapid Transit) service and Caltrain (commuter rail) in the San Francisco Bay area indicates a strong relationship between transit ridership using a given station and the amount of development within 1/2 mile of the station.¹⁸ Ridership levels at a given station were found to be directly related to the population and employment within 1/2 mile of the station. Research on suburban light rail in Sacramento revealed similar results.¹⁹

Research by Fehr & Peers on the four D factors mentioned above indicates that each 100 percent increase in standard measures of density, diversity, or design reduces vehicle trips per capita by between one and 12 percent, and reduces VMT per capita by 1 to 17 percent (see [Table 1](#)). The effect of placing development at infill locations (closer to more destinations) is more variable, with a reduction of 5 to 29 percent in vehicle trips per capita and 20 to 51 percent in VMT per capita, and its impact is best addressed by using four-step travel models to project changes in trip-making.²⁰

Table 1 Vehicle Trip Elasticities with Standard Land Use Measures

A doubling in the land use measures below...	...leads to the following reductions in vehicular travel:	
	Percent Vehicle Trips per Capita	Percent VMT per Capita
Density Households/acre	4–12	1–17
Diversity Index (Land use mixture)	1–11	1–13
Design Index (Sidewalk connectivity)	2–5	2–13
Destinations Index (Overall accessibility to regional destinations)	5–29	20–51

RAPID TRANSIT ACCESS LINKS TO AIRPORTS

While there are many examples of rail transit extensions to airports (for example, BART to San Francisco International), and plans for future rail connections (for example, at Sacramento International), rail is not the only possible rapid transit access mode for airports and other major activity centers. The Federal Transit Administration (FTA) has in recent years acknowledged that bus rapid transit (BRT), given the correct system design, can move people as effectively as rail. Additionally, the incremental design characteristics allow the flexibility to later convert BRT lines on dedicated right-of-way (ROW) into rail lines. Bus rapid transit can be designed to offer performance similar to other “premium” urban travel modes, for example:

- limited-stop buses or trams—when a BRT system operates on city streets with little or no signal priority or dedicated lanes
- light rail transit (LRT)—when a BRT system operates with a combination of exclusive ROW, bus lanes, median lanes, and mixed-flow traffic
- commuter rail—when a BRT system operates almost exclusively on freeway bus or high-occupancy vehicle (HOV) lanes between transit stations with adequate parking and a major activity center
- rail rapid transit—when a system operates completely on exclusive ROW with feeder transit service

A more fundamental question is whether an airport can support rail or BRT transit service at all. Only the largest airports generate enough trips to justify the costs involved in providing dedicated access links, except in the case where a transit line would go past the airport anyway and can include the airport for little additional cost. The introduction of transit-oriented development in the airport vicinity might be used to create such a situation, although the need to keep the development at some distance from the airport could limit the application of this approach. Since airports serve trips from a broad geographic area, the effectiveness of any transit access system will depend far more on the regional coverage provide by the transit network than the operational characteristics of the particular link serving the airport.

The term “rapid transit” also needs to be qualified. These systems are typically only rapid relative to traditional bus services on local streets. Even heavy rail systems on their own right-of-way rarely provide faster door-to-door times than private automobiles or on-demand public modes, except in heavily congested corridors at peak times. What they can provide is an assurance of travel time reliability and a significant saving in travel cost or convenience by eliminating the need to park a vehicle at the airport or having others make a two-way trip to the airport to pick up or drop off air travelers.

NONCOMMUTE TRAVEL IN SMART GROWTH PLANNING CONSIDERATIONS

Noncommute travel (trips for purposes other than travel to and from work, such as personal business, social, or recreation) is becoming increasingly important, and not only around airports. Nationwide, commute travel has reduced from 31 percent of household vehicle trips in 1969 to 15 percent in 2001. Trip chaining, off-peak travel, and other complex patterns represent increasing percentages of travel. The vast majority of travel generated in airport areas comprises trips that do not correspond to traditional commute patterns. However, many of these trips do not correspond to typical local travel patterns in a traditional high-density, mixed-use environment either. Therefore, attention needs to be given toward understanding the nature of the trip-making associated with land uses in the airport environment before appropriate smart growth strategies can be devised to address these needs.

Smart growth planning principles, including development density, diversity, and design, are most effective at shortening noncommute trips and translating them from auto trips to walking trips. Although the creation of high-density, mixed-use development can reduce the need for automobile trips by allowing travel needs to be satisfied within walking or bicycling distance, care needs to be taken to ensure that such development is not located so close to an airport that these advantages are offset by the adverse environmental impacts of proximity to the airport.

CONCLUSION: SMART GROWTH PLANNING OBJECTIVES FOR AIRPORT-AREA TRANSPORTATION

Based on the foregoing, the following objectives are offered as a tentative summary of the aims of smart growth planning with regard to the airport-area transportation system:

- accommodation of multiple modes, including transit, bicycles, and walking
- managing traffic speeds and volumes, balancing access with livability concerns
- seeking good transit accessibility to a wide range of destinations
- surrounding the airport with compatible land uses that protect and support airport activities and reduce travel for airport-related uses by locating these close to the airport
- sensitivity to the constraints imposed by nearby airport activities

The term “constraints” in this last bullet should not be interpreted to mean no development. A hallmark of smart growth is maximizing use of urban infrastructure through infill development and integration of interrelated land uses. From a smart growth perspective, sensitivity to constraints means mitigating and accommodating adverse impacts from proximity to an airport, for example, by placing housing in the least impacted areas in the airport vicinity.

The smart growth development paradigm has evolved over the past decade largely without reference to airports and airport planning. Considerable thought has been given to transit oriented development (TOD) in smart growth circles, but there is a need to develop airport-oriented development principles that advance smart growth objectives. Two recent planning concepts—the airfront and Aerotropolis concepts—that begin to outline the elements of airport-oriented development are discussed in the next section.

RELATED RESEARCH ON AIRPORT AREA PLANNING

Land use planning in the area surrounding airports has been the subject of extensive study since the emergence of modern air transportation with the introduction of commercial jet aircraft and the resulting growth in both aviation activity and noise impacts on surrounding communities. The primary focus of these efforts has been to achieve compatible land uses and, in particular, to prevent residential development in proximity to the airport under the approach and departure flight paths. Where these efforts have been successful, the resulting development patterns that have emerged have tended to do so by default rather than as a deliberate strategy, and are often dominated by airport-related activities, such as hotels, parking lots, air freight forwarders, and strip development along access roads leading to the airport.

More recently, businesses that need good air transportation connections have begun to locate in the vicinity of airports, leading to the development of office and industrial parks aimed at tenants who find the proximity to the airport attractive. These developments are often encouraged by the local communities, who see them as offsetting some of the disadvantages of being adjacent to the airport, as well as meeting compatible land use goals. As a result, there has been a growing interest in proactive policies to encourage development in the airport area to take place in a more strategic way that is responsive to the goals of both the airport and the adjacent communities.

AIRFRONT PLANNING

The American Planning Association (APA) is engaged in a multiyear research initiative titled “Airports in the Region” (AIR). In the May 2004 edition of *Planning*, Whit Blanton, one of the leaders of the initiative, puts the study in context:²¹

Airports and their surrounding commercial districts are playing an increasingly important role in shaping urban and regional growth patterns.... a new term, “the airfront,” [may be] defined as the myriad commercial, industrial, and transportation facilities and services intrinsically tied to the airport.

According to Blanton, airport area planning needs to become more positive and proactive:

...[O]ften, planning efforts focus on impacts, particularly airport noise and land use compatibility, as required by federal law. While extremely important, and often steeped in years of conflict, the federal requirements are limited.... designed to minimize conflicts relating to airport expansion and to identify mitigation strategies.

Blanton sees the following as basic requirements for a successful airfront district plan:

- good regional highway and transit access to other regional centers
- room for expansion, both for airport and airport-related facilities
- land use, environmental, and transportation systems organized for the entire airport district
- addressing economic development and marketing for the district
- creating a governance framework that facilitates communication between the public and private sector and promotes a shared sense of responsibility and purpose

Blanton cites Gainesville, Florida, and the city of SeaTac (adjacent to the Seattle-Tacoma International Airport) as examples of creative airfront planning.²²

Progress of the AIR Initiative

The AIR initiative was originally a project of the APA's Transportation Division.²³ By 2005, the APA Divisions Council (which draws representation from across the organization and its 18 specialized divisions) had assumed sponsorship of AIR. This move indicates that the APA now recognizes airport planning as major issue for the entire planning profession.

APA acknowledges that airports and adjacent airfront areas play an increasing and important role at the regional level, even at the national and international levels, depending on the airport type and size. The AIR initiative seeks better mutual understanding and dialogue between airport planners and other planning professionals, given past conflicts that have arisen as a consequence of failure to adequately coordinate airport development and land use planning in the surrounding areas.

The multiyear research and development program of the AIR entails a comprehensive examination of the regional implications of airports and their adjacent airfront districts, and provision of guidance to the planning profession and other interested organizations. APA divisions that will be actively involved include Transportation Planning, Economic Development, Environmental Planning, Intergovernmental Affairs, Small Town & Rural, and Federal Planning.

The APA intends to accomplish this program in collaboration with partners, including the FAA, American Association of Airport Executives (AAAE), the Airports Council International—North America (ACI-NA), and the American Society of Civil Engineers (ASCE). The APA has been an active charter member of the FAA's Airport Land Use Compatibility Planning Committee.

Objectives for the initiative include:

- providing increased and consistent communications opportunities between airport and urban and regional planners

-
- enhancing training opportunities on airport and airfront planning for those in the planning profession
 - providing best practices guidance on airport and airfront planning issues
 - partnering with federal and state agencies to fund planning support and training grants to local agencies on airport and airfront planning issues
 - initiation of new methods for collaborative airport planning between airport and other planning professionals

Current AIR workplan items include:

- preparing presentations and briefings on airport and airfront planning issues with outside organizations
- participating with FAA, AAAE, ACI-NA, and other aviation-related organizations on airport and airfront planning issues at airport planning conferences and other forums
- writing articles for *Planning* (APA's professional journal) and other publications to disseminate information on airport and airfront planning issues
- conducting a survey of Metropolitan Planning Organizations (MPO) policies and studies on airports
- identifying best practices on airport and airfront planning issues
- writing an APA Policy Guide on airport and airfront planning to be published as an APA Planners Advisory Service report
- developing audio conferences, white papers, and so on on specific airport or airfront planning issues

Subcommittees are also being developed within the APA Division Council to address the following specific topics from the perspective of airport area planning:

- defining the airfront district
- airport growth and capacity
- economic development
- intergovernmental relationships
- compatibility, noise, and environmental impacts
- transportation access
- military base encroachment, closures, and conversions

THE AEROTROPOLIS CONCEPT

Professor John Kasarda of the University of North Carolina, Chapel Hill, has developed an airport-area planning concept that he terms "Aerotropolis." This concept views the airport and its surrounding development as forming a major center of economic activity in the urban area,

comparable to the traditional role of central business districts, many of which grew up around ports or rail terminals.

Echoing John Borchert and other classical transportation geographers, Kasarda sees transportation infrastructure as one of the principal shapers of urban form and urban systems throughout history. Cities first developed along water routes, then railways, and most recently highway systems. Now, access to airports and the air transport system is crucial for growing, economically healthy urban centers.

Kasarda sees the following “drivers” that make for airport-centered cities or Aerotropoli:

- high-capacity, high-speed aircraft
- advanced telecommunications, especially the Internet
- globalization (both for sourcing and sales)
- time-based competition
- corporate site connectivity
- production flexibility and mass customization
- increases in perishable goods (economic and well as physical)
- market turbulence and uncertainty
- new supply chain management systems (networks as principal economic units)

What are the components and other characteristics of airport-linked commercial districts? Besides aviation-related industry, Kasarda outlines the following:²⁴

- freight-forwarding and third-party logistics firms
- e-commerce fulfillment centers
- product transformation firms (kitting, subassembly, sequencing, and flow-through facilities)
- time-critical or just-in-time (JIT) manufacturing
- wholesale merchandise marts and distributions centers
- high-tech industries
- business services and regional headquarters offices
- hotels, recreation, and tourist attractions

When interviewed for the current study, Kasarda noted that as of 2003, more than half of the value of U.S. exports goes by air.²⁵ Two-fifths of world trade by value travels by air (although it represents less than two percent by weight).

Within California, Kasarda views the Los Angeles International Airport (LAX) area as an existing, if challenged, Aerotropolis. According to recent economic impact studies cited by Kasarda, LAX is the source of 400,000 jobs in the five-county Southern California region (including five percent of all jobs in Los Angeles County). It generates \$60 billion in regional economic activity annually.

Kasarda cited Amsterdam Schipol Airport in the Netherlands as the most fully developed Aerotropolis in the world, although he also noted that neither Schipol nor any other airport area has come close to supplying housing to balance more than a small fraction of the jobs generated. An ongoing urban design project in Australia is attempting to incorporate higher density and mixed uses close to international airports but removed from both flight paths and high-traffic roadways—that is, in the interstices of the high-speed approaches to the airport.²⁶

Most existing Aerotropoli are around major international gateway airports, but Kasarda notes that Ontario and Sacramento are two medium-traffic airports with good prospects for developing regional Aerotropoli in the area around their facilities.

One unresolved question is the degree to which the Aerotropolis concept can be applied to smaller and general aviation airports. To the extent that the concept is premised on the air transport connectivity provided by commercial air service, it would seem unlikely that firms requiring such services would choose to locate adjacent to a facility that does not provide them. On the other hand, smaller airports may well attract businesses that make extensive use of corporate aircraft and value the less congested environment around smaller airports. Whether such businesses can generate enough activity to qualify as an Aerotropolis is another matter.

LITERATURE REVIEW FINDINGS

This section provides a summary of the intersection of the literature on airport land use planning and on planning for smart growth. (For a more extensive discussion of the literature on both airport land use planning and smart growth, see “[Annotated Bibliography—Airport Land Use Planning](#),” beginning on [page 439](#) and “[Annotated Bibliography—Smart Growth](#),” beginning on [page 453](#)). The most striking finding of the literature review is that for the most part, the smart growth literature does not mention airports or airport planning, and the airport planning literature does not mention smart growth.

One exception is *Smart Growth Transportation Guidelines: An ITE Proposed Recommended Practice*. The ITE *Guidelines* illustrate both the compatibilities and the contradictions between these planning approaches. The following smart growth planning goals appear applicable to airport planning:

- balanced, complementary mix of land uses consistent with community and regional needs
- economic vitality
- attractive aesthetics created through high-quality urban design, architecture, and landscape design
- environmentally sensitive design and the conservation of natural features
- mobility choices that are efficient and accessible
- building upon existing infrastructure where possible to provide sufficient but not excess capacity

However, the goal of achieving a compact mix of land uses is not viewed by ITE as compatible with airport planning. The ITE *Guidelines* actually state that development near airports should be restricted to commercial, industrial, distribution, and low-intensity uses.

The ITE *Guidelines* also say that pedestrian, bicycle, public transportation, personal vehicles, freight vehicles, and aviation (commercial and general) should be considered when applying smart growth transportation principles. Additional guidelines that apply to airports include:

- “smart” parking plans that seek to optimize the use of a constrained supply
- locating intermodal facilities convenient to regional transportation facilities
- facilitating freight movement by improving rail-freight service and commercial vehicle access, circulation, loading, and unloading.²⁷

Although almost never discussed in relation to airports, several general smart growth goals might be applicable to “smart” airport area development. Urban design measures that could apply to areas around airports include layout and design considerations (especially for pedestrian and bicycle use), achieving a mix of land uses, and appropriate provision of parking. Implementation tools suggested in the guidelines include agency policies, official adopted plans, development codes and ordinances, and incentives.

In “Smart Growth Transportation Tools,” Bochner recommends the following tools, many or all of which could be applied to airport area planning:

- Including a transportation component in comprehensive plans. The plan should include local county and regional scales and be multimodal, if applicable.
- Developing regulations and ordinances. The best results are achieved with a performance-based approach to zoning.
- Implementing extraterritorial jurisdiction.
- Forming intergovernmental coalitions and agreements.
- Analyzing system capacity to determine the development “holding capacity” for transportation purposes.
- Providing pedestrian, bicycle, and transit-oriented amenities.
- Providing pedestrian and bicycle networks.
- Providing pedestrian, bicycle, and transit-oriented links to major destinations (this would include airports).
- Preserving rights-of-way.
- Acquiring land in advance through dedications or purchase.
- Locating freight terminals near system interchanges near the periphery of urban areas.
- Facilitating financing through tax credits, tax increment financing, and special bonding.
- Providing incentives and disincentives such as development bonuses or exemptions, tax credits, special use accommodations.
- Ending free/subsidized parking.
- Developing “official maps” for land use and zoning that are used in the development review process.
- Developing a smart growth rating system.²⁸

Many of the tools recommended for smart growth transportation planning are also identified in a trenchant dissertation by Leora Waldner on the influence of regional plans on local airport land use planning. In addition, her recommendations include:

- having regional agencies facilitate interjurisdictional communication and “help identify areas of mutual gain and joint incentives”
- zoning changes
- noise overlay zoning
- transfer of development rights
- subdivision regulation changes
- building code changes
- noise or aviation easements
- disclosure regulations

- comprehensive planning
- capital improvement programming measures

Waldner found that airport land use ordinances were not influenced by regional plans. Instead, such “ordinances were inspired by high-profile crashes, citizen pressure, military and Federal Aviation Administration influence, and redevelopment plans.” Ordinances were difficult to implement because of “property rights concerns, fear of lawsuits, developer power, homeowner opposition, and desire to increase the tax base.” Industrial zones established to protect airport uses often were eroded through later rezoning decisions. The problem is “misaligned incentives”—airports want to promote compatible land uses but they have no authority over land use, and local governments that have authority over land use have little incentive to promote compatible uses. This matter is complicated by the fact that airport impacts almost always affect more than one jurisdiction.²⁹

Waldner also cites FAA studies of communities attempting to regulate land use near airports through zoning and building code regulations. The studies identified the following 10 roadblocks to implementation:

1. Noise zones that encompass more than one jurisdiction
2. Absence of cooperative relationships between the jurisdictions
3. Lack of local government awareness about the ill effects of airport noise and the benefits of compatible land uses
4. Frequent changes in local government administration
5. Small amounts of vacant or developable land around an airport
6. Low market demand for residential construction near an airport
7. Low priority of airport noise problems compared to the economic advantages of residential development
8. Need for additional housing stock
9. Organized opposition from property owners (claiming that the zoning is a threat to private property rights or that monetary compensation is needed to offset property devaluation)
10. Fear of facing lawsuits³⁰

These roadblocks apply to coordination of land use planning around airports in general, and therefore apply to the coordination of airport and smart growth planning as well.

Literature that addresses ground transportation planning for airports makes similar recommendations. For example, Humphreys and Ison identify the following market-based and command-and-control instruments for dealing with surface access to airports:

Short-Term

- a closer analysis of the current situation to understand travel patterns and behavior
- improved public transport information

- improved public transport bus services in terms of frequencies and new routes
- provision of facilities to enable cycle access
- encourage walking
- raise car parking fees
- examine and implement car sharing schemes
- improved public transport marketing, through ticketing and staff concessions, often in the form of travelcards
- video conferencing

Long-Term

- develop rail links
- improve rail, bus, and coach services
- consider busway development
- develop ground transport interchanges
- get employers to sign on to and implement travel demand management plans

Humphreys and Ison question the development of ground transport interchanges that provide services beyond those intended for airport employees and patrons. They ask:

- Is the ground interchange concept the way to reduce vehicle trips to airports?
- What will be the consequences of raising the number of total trips to reduce the percentage by car?
- Is this the desired outcome of the government's policy?

Notably, Humphreys and Ison promote cycling and walking as modes to access the airport. Although the average distance to off-site origins and destinations tend to be too long, these modes seem particularly promising for transport within the airport area.

One problem appears to be the lack of sharing of best practices between airports. Therefore, Humphreys and Ison propose a “forum of forums” to provide the local Airport Transport Forums that have been set up at airports in the United Kingdom (UK) with information about processes for implementation of different initiatives.³¹

In *The Role of Airports and Airlines in an Integrated UK Transport Policy*, Graham discusses the UK government white paper titled “A New Deal for Transport.” Graham cites Black’s definition of sustainable transport: “satisfying current transport and mobility needs without compromising the ability of future generation to meet these needs.”³² He also notes that the relationship between airports and regional economic growth is not well understood. Therefore, Graham proposes a series of studies to determine the developmental role of UK airports, under the assumption that airports both compete with and complement each other, and cannot be viewed in isolation. Lastly, Graham says that a policy that more effectively integrates sustainability, modal integration, and regional growth is needed.³³

General smart growth literature expresses smart growth goals more broadly. In Chapter 5 of *Smart Growth: Form and Consequences*, Nelson identifies these five goals for smart growth:³⁴

- preserve public goods
 - prevent expansion on the urban fringe
 - use a systems approach to environmental planning (rather than a development-driven approach)
 - preserve contiguous areas of high-quality habitat
 - design to conserve energy
- minimize adverse land use impacts
 - prevent negative externalities between land uses
 - separate auto-related uses from pedestrian-oriented uses
- maximize positive land use impacts
 - achieve jobs/housing balance within three to five miles of development
 - design the street network with multiple connections
 - provide networks for pedestrians and bicyclists that are as good as networks for cars
 - incorporate transit oriented design features
 - achieve an average residential density of six to seven units per acre
- minimize public fiscal costs
 - channel development into areas that are already disturbed
- maximize social equity
 - provide for affordable single-family and multifamily homes for low- and moderate-income households
 - provide life-cycle housing

Overall, current research related to smart growth and airport planning shows more relationship in the area of transportation planning than in the area of land use planning. A strong general theme in the literature is the need for a more regional and interagency cooperation in planning around airports. The literature review revealed a lack of, and clear need for, improved guidance for comprehensive airport area planning that both provides for airport requirements and addresses local and regional planning goals, including smart growth goals.

EVOLVING FOCUS OF AIRPORT LAND USE PLANNING

The importance of appropriate land use planning around airports to avoid incompatible land uses has long been recognized, primarily to regulate the adverse impact of aircraft noise.³⁵ These efforts have been directed at preventing such uses as new residential development in areas experiencing high levels of aircraft noise or the construction of schools under aircraft

flight paths. In California, this process has been formalized through the creation of county Airport Land Use Commissions (ALUCs) that are responsible for developing airport land use compatibility plans.³⁶ However, the success of these commissions at preventing incompatible development has varied widely, and relatively little effort has been directed at changing existing land uses to achieve a more compatible pattern of land use around airports, as distinct from preventing incompatible development. This process is often complicated by resistance on the part of communities near airports toward the type of land use changes or development that would result in greater compatibility between airport activities and the surrounding land uses.

The impact of aircraft noise on the communities surrounding airports has been the subject of considerable research, which has pursued three broad aspects. The first aspect is the characterization of the noise levels at a given location from a particular pattern of aircraft activity.³⁷ The second aspect is the measurement of the resulting annoyance in the community and its effect on property values, such as studies by Uyeno, Hamilton and Biggs,³⁸ Gillen and Levesque,³⁹ and Feitelson, Hurd and Mudge.⁴⁰ The third aspect is the use of land use planning and controls to minimize the occurrence of incompatible land uses, as discussed by Zambrano.⁴¹

More recently the focus has been broadened to include safety aspects, such as a study of aircraft accident locations in the vicinity of airports by Cooper and Chira-Chavala⁴² as well as a wider range of environmental considerations. A study by the Natural Resources Defense Council examined land use, water quality and air pollution around airports,⁴³ while surface traffic congestion has been addressed by Janic⁴⁴ and the annual Airport Noise Symposium organized by the University of California has been expanded in recent years to address airport air quality issues.⁴⁵

Several states have attempted to integrate the results of this research into a comprehensive approach to airport land use planning that addresses both aircraft noise and safety considerations, and examples of the resulting guidance on airport land use planning includes the California Airport Land Use Planning Handbook⁴⁶ and an introduction to land use compatibility planning for local decision makers developed by the Washington State Department of Transportation.⁴⁷ However, this guidance has generally focused on preventing incompatible land uses that expose residents to unacceptable levels of aircraft noise or create undue hazards either for occupants of areas near an airport or to aircraft using the airport, rather than how to address the needs of surrounding communities for housing and economic activities in a way that takes advantage of the proximity to the airport while remaining compatible with the operation of the airport.

A recent study by the California Research Bureau reviewed the effectiveness of the current airport land use compatibility planning process in the state and found that conflicts over airport noise and other impacts continue to affect the operation and development of airports in California. The findings also indicate that many ALUCs lack adequate funding and staffing to update their airport land use compatibility plans on a regular basis.⁴⁸

CASE STUDY ANALYSIS

The principal focus of the research comprises a series of case studies at selected airports in California that examined the effectiveness of different airport land use planning approaches at these airports from the perspective of the principles of smart growth. These case studies examine the changes in land use that have occurred around the selected airports and the roles of the ALUC, airport authority, and local land use planning agencies in addressing land use development decisions.

The case studies addressed three aspects of land use planning in the airport environs: the impact of aircraft noise on surrounding communities and noise-sensitive activities (such as schools); other environmental effects, such as surface vehicle traffic generated by the airport; and surrounding land uses and economic development considerations. To do this effectively, the case studies paid particular attention to the larger regional context of the land use decisions around each airport.

This section describes the planned approach to conducting the case studies, the process that was followed to identify and select the case study airports, and summarizes the findings of the case studies.

SUMMARY OF INDUSTRY DISCUSSIONS

To help identify potential case study airports, a series of focused interviews were conducted with planning staff at Caltrans Division of Aeronautics, consultants involved in airport land use planning, and planning staff from selected ALUCs and regional planning agencies to explore the extent to which smart growth principles have been applied in airport land use planning and to identify ALUCs that have been successful in achieving or maintaining compatible land uses near airports in their jurisdiction. The agencies and staff involved in the discussions are listed in [Appendix N](#).

Potential Case Study Airports

The discussions provided background information about recent land use planning issues at a number of California airports, as well as suggestions for potential airports to consider for the case studies. The comments on each airport varied in level of detail but generally gave a good feel for the type of issues being faced by ALUCs across the state. The comments are summarized in [Appendix N](#).

Smart Growth Projects Near Airports

The discussions identified only four projects or planning studies near California airports that have involved explicit consideration of smart growth principles:

- The City of San Luis Obispo has developed an Airport Area Specific Plan using smart growth principles.
- The Boeing Company has proposed developing the site of the former McDonnell Douglas aircraft plant adjacent to the Long Beach Airport with a combination of commercial and residential uses.
- Planned development to the east of the Sacramento International Airport includes a mixed-use business park (Metro Air Park) and transit oriented development in the Natomas Joint Vision area to the east of the business park.
- The City of Oakland had been pursuing a large transit oriented development project in the Coliseum area to the east of Oakland International Airport.

None of those involved in the discussions were aware of any more general efforts to apply smart growth principles to the development of airport land use plans in the state.

SELECTION OF CASE STUDY AIRPORTS

Based on the information obtained from the industry discussions, a list of potential case study airports was prepared, and each airport was classified using the following five criteria:

1. region of the state (north, south, and central)
2. metropolitan area location: core, suburban, or exurban
3. ease of access by the study team (extent of travel involved for field visits)
4. land use jurisdiction authority: whether the airport is owned by the same agency with surrounding land use planning jurisdiction, or the surrounding land use involves multiple jurisdictions
5. whether the industry discussions had identified any known issues at the airport

The results of this process are summarized in [Table 2](#), which also indicates the relevant ALUC for each airport and any other factors or considerations that might influence the selection.

On the basis of these considerations, 14 airports were selected for inclusion in the case studies: eight commercial service airports and six general aviation airports. The choice of airports attempted to include airports in several different regions of the state, airports of widely different size and function, and several airports within the jurisdiction of the same ALUC. The inclusion of different airports within the jurisdiction of a single ALUC was intended to provide an opportunity to examine how local circumstances and conditions at a specific airport affect the strategy and effectiveness of the ALUC.

Of the 14 selected airports, six are in the San Francisco Bay Area. While it might have been desirable to have a broader geographical coverage, this decision was partly influenced by budgetary considerations involved in travel to perform field visits in other parts of the state. Nonetheless, the selected Bay Area airports provide a wide diversity of airport characteristics that are representative of many airports elsewhere in the state.

Table 2 Selection of Case Study Airports

CASE STUDIES: Applying Smart Growth Principles and Strategies to Resolving Land Use Conflicts Around Airports							
	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	ALUC	Other Factors
	Region of State	Metropolitan Area Location	Accessibility	Land Use Jurisdiction Authority	Known Issues		
PRIMARY/COMMERCIAL							
<i>Proposed Case Study Airports:</i>							
San Francisco International	North	Core	H	multiple	Yes	San Mateo	Community Noise Roundtable
Oakland International	North	Core	H	multiple		Alameda	North Field general aviation
Sacramento International	North	Exurban	M	same	Yes	SACOG	Planned Metro Air Park
Sacramento Mather	North	Suburban	M	different	Yes	SACOG	Predominantly air cargo
San Diego International	South	Core	L	different	Yes	San Diego RAA	Regional Airport Authority
Long Beach	South	Core	L	same	Yes	Los Angeles	Adjacent site development
San Luis Obispo	Central	Exurban	L	different	Yes	San Luis Obispo	Smart growth specific plans
McClellan-Palomar	South	Suburban	L	different	Yes	San Diego RAA	
<i>Other Airports Considered:</i>							
Los Angeles International	South	Core	L	multiple	Yes	Los Angeles	Master Plan update underway
Ontario International	South	Core	L	different		San Bernadino	
Santa Barbara Municipal	Central	Exurban	L	different	Yes	SBCAG	
Stockton Metropolitan	Central	Exurban	M	same	Yes	San Joaquin	
Chico	Other	Exurban	L	same	Yes	Butte	
Lake Tahoe	Other	Exurban	L	same	Yes	El Dorado	
Modesto	Central	Suburban	M	multiple	Yes	Stanislaus	
Monterey	Central	Suburban	M	multiple	Yes	Monterey	
Oxnard	South	Suburban	L	different	Yes	Ventura	
GENERAL AVIATION							
<i>Proposed Case Study Airports:</i>							
Livermore	North	Suburban	High	same	Yes	Alameda	Master Plan update underway
Buchanan Field (Concord)	North	Suburban	High	different		Contra Costa	Airport reuse study proposed
Byron	North	Exurban	High	same		Contra Costa	
South County (San Martin)	North	Exurban	High	different	Yes	Santa Clara	

Table 2 Selection of Case Study Airports (Continued)

CASE STUDIES: Applying Smart Growth Principles and Strategies to Resolving Land Use Conflicts Around Airports							
	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	ALUC	Other Factors
	Region of State	Metropolitan Area Location	Accessibility	Land Use Jurisdiction Authority	Known Issues		
Jacqueline Cochran (Thermal)	South	Exurban	Low	same	Yes	Riverside	
French Valley	South	Exurban	Low	multiple	Yes	Riverside	
<i>Other Airports Considered</i>							
Riverside Municipal	South	Suburban	Low	same		Riverside	
Santa Monica Municipal	South	Core	Low	multiple		Los Angeles	
Apple Valley	South	Suburban	Low	different		San Bernadino	
Camarillo	South	Suburban	Low	different	Yes	Ventura	
Chino	South	Suburban	Low	different	Yes	San Bernardino	
Gillespie	South	Suburban	Low	multiple	Yes	San Diego RAA	
Los Banos	Central	Suburban	Medium	same	Yes	Merced	
Marina	Central	Suburban	Medium	same		Monterey	
Nut Tree	North	Suburban	Medium	different		Solano	
Oceanside	South	Suburban	Low	same	Yes	San Diego RAA	
Petaluma	North	Suburban	High	same		Sonoma	
Reid Hillview (San Jose)	North	Core	High	different	Yes	Santa Clara	
Rio Vista	North	Exurban	High	same	Yes	Solano	
San Carlos	North	Core	High	different		San Mateo	
Sonoma County *	North	Exurban	High	same	Yes	Sonoma	
Tracy Municipal	Central	Exurban	Medium	same	Yes	San Joaquin	
Truckee-Tahoe	Other	Exurban	Low	multiple	Yes	Nevada	
Watsonville	Central	Suburban	Medium	same	Yes	Santa Cruz	
Yuba County	North	Suburban	Medium	different	Yes	SACOG	
*At the time this study commenced, commercial sservice has since resumed							

CASE STUDY METHODOLOGY

The approach followed in the case studies involves both a review of publicly available documents, including Airport Land Use Plans prepared by the relevant ALUC; minutes of ALUC meetings; general plans of adjacent communities; reports and other information posted on airport or community web sites; newspaper articles pertaining to airport development and land use issues; and personal interviews with staff at the responsible agencies, including local and regional planning agencies, ALUCs, airport managers, and relevant elected and appointed officials with policy authority over land use decisions. The airports studied and the factors related to their being chosen are detailed in [Table 2](#). Criterion definitions for [Table 2](#) are listed below.

Criterion Definitions	
<i>Region of the State</i>	
North	Northern California
South	Southern California
Central	Central Coast
<i>Metropolitan Area Location</i>	
Core	Established mixed-use land use patterns
Suburban	Predominantly residential/continuing development
Ex-urban	Beyond existing urban development
<i>Accessibility (ease of conducting field visits)</i>	
H	High
M	Medium
H	High
<i>Land Use Jurisdiction Authority</i>	
Same	The airport owner has jurisdiction over adjacent land use
Different	The airport owner does not have adjacent land use jurisdiction
Multiple	There are multiple agencies with adjacent land use jurisdiction
<i>Known issues</i>	
Yes	Specific issues have been identified in discussions

The land use planning strategies followed by the various agencies were identified from the interview responses and by inference from the agency decisions on specific development applications. These were characterized in terms of their consistency with smart growth principles and their effectiveness at achieving compatible land use near the airport. The study attempted to develop a set of performance measures to determine whether land use planning strategies, including those based on smart growth principles, have been effective in achieving a desirable pattern of land use development. These performance measures include both those that have been traditionally used to measure the impact of airport operations on surrounding communities, such as the population within the 60 and 65 dB CNEL (Community Noise Equivalent Level) contours, and those oriented to economic development and transportation considerations, such as employment density, land value, contribution to local tax revenues, vehicle trip generation rates, and traffic levels of service. The case studies explored the

availability of existing data to support these measures and the extent to which the local planning agencies attempt to track these or other performance measures.

In evaluating the effectiveness of different land use planning strategies, an attempt was made to characterize changes in land use at a sufficiently generic level to be able to draw generally transferable conclusions. The economic viability of a particular type of development depends on a wide range of factors that vary from location to location, and is significantly influenced by existing development that has already occurred both in the immediate area and the surrounding region. Thus the objective of the research is not to try to determine what type of development would be “smart” for a given location, but rather to understand how particular land use planning strategies have influenced the type of development that has occurred, and the extent to which that development pattern is consistent with airport compatibility and smart growth principles.

Case Study Protocol

The following protocol was developed to guide the case study fieldwork and analysis, although in practice it was not possible to perform each step at each airport. For example, many ALUCs do not maintain a dedicated web site.

1. Check ALUC web site for relevant information
 - a. Download ALUCP, if available online
 - b. Download minutes of meetings during past year, if available online
2. Contact ALUC staff planner
 - a. Determine willingness to participate in case study
 - b. Obtain contacts at airport and cities adjacent to case study airport
 - c. Request copy of previous CLUPs (if not available online) and minutes of meetings during past year (if not available online)
 - d. Discuss availability of current and historical land use information adjacent to airport (within two miles)
 - e. Identify elected officials or community groups with particular interest in airport land use issues at case study airport
3. Obtain map of surrounding area
 - a. Identify adjacent cities and unincorporated county land within two miles of airport
4. Prepare summary of newspaper articles relevant to land use planning issues at airport
5. Review CLUP and minutes of ALUC meetings during past year, if available
6. Check airport web site for relevant information
 - a. Airport/community noise forum
 - b. Airport noise-monitoring programs
 - c. Airport noise complaint programs

-
- d. Status of any master plan update
 7. Contact airport manager or ALUC representative
 - a. Discuss scope of project and solicit input
 - b. Identify chronology of airport master plan updates over past 10 years
 8. Check surrounding city web sites for general plan information
 - a. Download general plan map and any airport area specific plans, if available online
 9. Contact planning department at adjacent cities and/or counties
 - a. Identify appropriate staff person if contact not provided by ALUC staff
 - b. Discuss scope of project and airport land use issues and what efforts have been made to promote compatible land uses around the airport
 - c. Identify any completed or planned smart growth projects in airport vicinity (within two to three miles), and how these projects were influenced by proximity to the airport
 - d. Discuss availability of current and historical land use information adjacent to airport (within two miles)
 - e. Request copies of general plan map and any relevant specific plans (if not available online)
 - f. Identify chronology of general plan revisions affecting land use in airport vicinity over past 10 years
 - g. Identify elected officials or community groups with particular interest in airport land use issues
 10. Check relevant community group web sites (where they exist)
 - a. Download any relevant information
 11. Plan field visit(s)
 - a. Schedule meetings with ALUC and airport staff
 - b. Schedule meetings with planning department staff at selected adjacent cities and counties
 - c. Prepare list of materials to be collected during visit(s)
 12. Conduct field visit(s)
 13. Conduct telephone interviews with selected elected officials and representatives of relevant community groups
 14. Analyze land use changes adjacent to airport over past 10 years
 15. Prepare summary of land use planning issues at airport over past 10 years and role of ALUC and adjacent jurisdictions in addressing these issues
 16. Prepare summary of completed or planned smart growth projects in airport vicinity

Each case study was documented using a standard format, modified in some instances to accommodate unique aspects of the case. The case study findings, contained in [Appendix A](#)

through [Appendix M](#), describe the recent land use planning experience at each airport, including the strategies followed by the ALUC and the resulting changes in land use around the airport. They also assess the effectiveness of the airport land use planning activities from the perspectives of achieving both compatible land uses adjacent to the airports and smart growth principles.

CASE STUDY RESULTS

The case studies provided diverse perspectives on the wide range of issues confronted by different ALUCs in addressing airport land use compatibility planning for airports of widely different functions and sizes in different geographical situations. Although these represent only a sample of the ALUCs in California, the airports included in the case studies ranged from the second-largest airport in the state to small rural general aviation airports. Therefore, the case study results, while not statistically representative of all airport land use compatibility planning activities in the state, give a reasonable overall profile of the types of issues being faced.

[Appendix A](#) through [Appendix M](#) describe the recent land use planning experience at each airport, including the strategies followed by the ALUC and the resulting changes in land use around the airport. They also assess the effectiveness of the airport land use planning activities from the perspectives of achieving both compatible land uses adjacent to the airports and smart growth planning. These appendices each begin with a table summarizing the airport(s) examined, enabling readers concerned with a particular airport or issue to identify quickly the relevance of the case study to their situation and interests.

Application of Smart Growth Principles

The case studies found no explicit consideration of smart growth principles to date in the airport land use compatibility planning approaches adopted by the ALUCs. Where local jurisdictions had smart growth policies or programs, there had been no consideration of how to merge these with airport land use compatibility planning. In San Mateo County, the City/County Association of Governments (C/CAG) has a successful smart growth program and also served as the ALUC for the county. Yet in this county the two functions had not been brought together, although discussions with the responsible C/CAG staff members indicated that they recognized the need for better coordination between the two activities.

Several of the case studies identified proposed or active projects in the vicinity of the airports in question that were explicitly designated as smart growth development. In the core of the San Francisco Bay Area, redevelopment of the Oakland Coliseum area to the east of Oakland International Airport is being planned as a “transit village” as part of the City of Oakland’s smart growth policies. Also in the Bay Area, the cities of Millbrae and San Bruno have approved transit oriented development (TOD) around the Caltrain commuter rail stations that combine mixed use with a strong residential component. Several of these developments are

quite close to San Francisco International Airport, although not directly under the flight paths.

Elsewhere in the Bay Area, smart growth and airport planning collided head-on in Contra Costa County with a proposal to close and relocate Buchanan Field adjacent to the city of Concord and other fully developed lands and replace it with a mixed-use community designed along smart growth principles. Meanwhile, the county's other airport, in still-rural Byron, has sought air freight and other airport-related development, but these efforts have not been fruitful because of the airport's relative isolation and lack of infrastructure to support development. Two other Bay Area airports, Livermore and Santa Clara County's South County Airport, illustrate the challenges of airport planning in the path of suburban growth.

In San Luis Obispo on the Central Coast, serious conflict between the City of San Luis Obispo and the county-owned airport over development around the airport—much of it nominally smart growth—generated a dialogue that has resulted in approved development plans agreeable to both parties.

In Southern California, the City of San Diego has been pursuing smart growth policies for some time, with a particular emphasis on infill residential development in the downtown area through the efforts of the Centre City Development Corporation (CCDC). Many of these developments are close to the primary arrival flight path to San Diego International Airport. The pace and extent of this development has become an issue of concern for the Regional Airport Authority, acting as the ALUC for San Diego County.

Some of the case studies identified development plans or projects that could potentially be regarded as smart growth, even if not formally designated as such. These included the Metro Air Park business park under development immediately to the east of Sacramento International Airport, the industrial and office development that has occurred around McClellan-Palomar Airport in Carlsbad, San Diego County, and the proposed Kohl Ranch development to the south of Jacqueline Cochran Regional Airport near Thermal in eastern Riverside County. The first two of these developments do not include residential uses but provide a buffer between the airport and planned or existing residential areas while creating local employment and improving the jobs-to-housing balance in the area. The Kohl Ranch development is envisaged as a mixed-use development that would include both employment and housing.

In two cases, planned mixed-use development close to airports has generated controversy over potential compatibility problems with airport operations. The planned Douglas Park development on the site of the former McDonnell-Douglas Aircraft Company plant adjacent to Long Beach Airport, which would include both commercial and residential uses, has been vigorously opposed by existing airport users because of the proximity of residential uses to the primary runway and flight path to and from a secondary runway. The redevelopment of the former Naval Training Center adjacent to San Diego International Airport also has raised concerns about the proximity of the planned residential areas to the runway and primary

departure flight path. In both cases, the residential uses comply with existing compatibility criteria on the basis of established aircraft noise contours. However, whether the occupants of these residences will find the noise levels acceptable is another question.

Airport Land Use Planning

Although there has been some experience with smart growth in the vicinity of the case study airports, the primary focus of airport land use compatibility issues identified in the case studies has been over conventional residential development in the vicinity of the airports and associated airport planning and development considerations. The following discussion summarizes some of the principal findings in each of the counties and multicounty regions included in the case studies.

Sacramento Area

The case studies examined two airports in the Sacramento area: Sacramento International Airport and Sacramento Mather Airport. The Sacramento region represents an ideal institutional arrangement from the perspective of airport land use planning: a single agency (the county) owns and manages the major airports in the region as a system, and the ALUC duties are handled by the regional planning agency, the Sacramento Area Council of Governments (SACOG), which has responsibilities for both comprehensive transportation and land use planning. The ALUC is in the process of revising the CLUPs for its three airports that serve large jets; these CLUP updates will go beyond the minimum requirements in that they will consider airport activity levels at build-out rather than using the standard 20-year forecast of growth. The CLUPs will include a “no new residential” policy within the 60 dB CNEL noise contours for airports serving commercial passenger and cargo jets. The Sacramento County Airport System, the county department responsible for operating the airports, has proposed establishing Airport Planning Policy Areas (APPAs) that will apply where aircraft regularly operate at less than 3,000 feet above ground level. Disclosure and aviation easements will be required for all new residential development within these areas. The proposed APPAs were adopted by the Sacramento County Board of Supervisors in April 2006 as applicable to land under county jurisdiction.

Sacramento International Airport is located in a currently rural area known as the Natomas Basin. The county is planning industrial development (Metro Air Park) immediately east of the airport as a driver for economic development. The plan has aspects of Kasarda’s Aerotropolis concept, in which major airports become the focal point for commercial and industrial development, although this is not the central concept. Land use within the Airport Influence Area is mostly agricultural, including large areas of more than 5,000 acres owned by the airport itself, as shown in [Figure 1](#).

Planned residential development is encroaching from Sacramento to the south and from Sutter County to the north as well. A proposed light-rail line from downtown Sacramento to the airport will provide focal points that the city intends to develop as nodes of higher-density,



Figure 1 Sacramento International Airport

(looking north)

Source: Tom Bukowski, 2004, www.tombukowski.smugmug.com/keyword/aviation/9/7533699 (accessed August 24, 2006).

mixed use—that is, smart growth. In 2002, Sacramento City Planning Director Gary Stonehouse said that recent housing developments about two miles east-southeast of the airport’s runway were about as close to the airport as the city wants to allow homes to be built.

While some more recently approved residential development (just east of Metro Air Park) is closer, it is outside the 60 dB CNEL contour, and both Sacramento City and County have adopted smart growth policies that respect the airport’s CLUP. The *Natomas Joint Vision Plan* is a joint city-county plan for the Natomas Basin. The plan represents a strong effort by the city and the county to balance agriculture, open space, and habitat conservation with airport-compatible land use to protect the airport. Joint planning accomplished the county’s goal of protecting Sacramento International Airport from encroaching uses and community noise impacts that might eventually limit its operation or future expansion. The “Vision” is a well-defined plan for controlled development that complies with the city’s smart growth principles.

Sacramento Mather Airport is an example of an airport both attracting development to its periphery while also drawing complaints from well beyond its 55 dB CNEL contour. This conflict results from an unfortunate intersection of nighttime freight operations and high-income areas in the city of Folsom and the hills of western El Dorado County under the flight path of the airport. Mather has proven attractive to air cargo carriers because it offers plentiful space for the construction of new facilities. The airport also offers a full-service fixed base operator (FBO), 24-hour air traffic control, and one of the longest runways in California.

The former Mather Air Force Base had a 60,000-acre buffer zone between the airfield and residential development. However, the county has reduced the buffer zone to 12,000 acres since opening Mather Airport for civilian use in 1995.⁴⁹ There has been much controversy about what to do with the newly available land, large areas of which are dotted with vernal pools. Environmentalists would like much of the area to be preserved in its natural state, while others would like a regional park to be developed. Interest in new subdivisions on and near the former base is high, driven by the area's relatively affordable housing and its proximity to booming job centers. Land use conflicts are developing as Mather and its environs grow.⁵⁰

In particular, school site selection has been an issue for developments near Mather Airport. The Caltrans Division of Aeronautics opposed several school sites at Zinfandel Village, a new subdivision next to Mather. Although a site was eventually approved, the situation is not ideal. In addition, Rosemont High School (built in 2002) was finally approved after being found to meet the minimum levels of safety for a school site, given current *Airport Master Plan* limits, but the facility could again become controversial if further growth is called for in the future. However, residents of new subdivisions directly adjacent to the airport seem to accept the planes—most complaints come from those on the approach path for cargo jets landing at night, and many originate in El Dorado Hills and Folsom more than five miles away, where many residents moved into their homes during the years Mather sat relatively idle.⁵¹

The Mather Airport Aircraft Overflight Noise Group, created in August 2002 by the Board of Supervisors, is charged with finding ways to lessen the noise impacts to the areas underneath the flight paths. The committee, consisting of area residents and representatives from the FAA, UPS, and the Sacramento County Airport System, delivered a set of recommendations in January 2003.⁵² In February 2004, the Sacramento County Board of Supervisors adopted a draft *Airport Master Plan* that included lengthening the secondary runway.⁵³ It was hoped that environmental studies for the master plan would clarify noise issues,⁵⁴ but these studies were still incomplete in September 2006. Nearby Folsom threatened legal action if the county adopted the master plan without making provisions to limit landing of large aircraft between 10 p.m. and 7 a.m.^{55 56}

Alameda County

The case studies examined two airports in Alameda County: Oakland International Airport and Livermore Municipal Airport. Oakland International Airport, one of two secondary commercial service airports in the Bay Area, is located on the shore of the bay, with residential development to the east and west, under or close to the arrival and departure flight paths (see [Figure 2](#)). Livermore Municipal Airport is a busy general aviation airport located in a developing suburban area in the east of the county (see [Figure 3](#)).

Oakland International Airport is located on the shore of San Francisco Bay, as shown in [Figure 2](#). A single air-carrier runway is designated as the South Field, and three general aviation runways form the North Field. There is a large area of residential development on Bay Farm Island to the west of the airport under the primary departure flight paths from the North



Figure 2 Oakland International Airport

(looking east)

Source: Travis Church, "Aerial Photos," www.flickr.com/photos/travischurch/sets/46776 (accessed August 24, 2006).



Figure 3 Livermore Valley

(looking northwest, airport lies to the right of the retention ponds)

Source: Cecil E. Chapman, www.bayareapilot.com/RhvtMod.htm (accessed September 24, 2006).

Field runways and fairly close to the primary departure flight path from the South Field runway, with some residential areas to the east of the airport in San Leandro fairly close to the arrival flight paths for the two main North Field runways, as can be seen in [Figure 2](#).

The City of Oakland has planned TOD at the Coliseum BART station to the north of the airport. Although the planning has not involved the airport or its planners much, it seems to be compatible with both smart growth principles and its proximity to the airport. The airport is predominantly surrounded by industrial, commercial, and airport-serving land uses. Smart growth practices, such as high-density, mixed-use, and transit oriented development, are currently concentrated along the BART line, east of I-880 and the airport influence area for Oakland International Airport. Most of the area west of I-880 is within redevelopment areas, so there is potential for mixed-use infill development. This may include high-density, pedestrian-oriented residential projects in the future, but currently there is much effort to preserve industrial and commercial uses near the airport. In many ways, current development patterns near the airport follows John Kasarda's Aerotropolis concept.

Oakland International Airport is noteworthy for its community outreach activities. Many residences in Alameda and San Leandro are affected by aircraft noise. When the Port of Oakland initiated the Airport Development Program in 1992, there was vocal community concern and litigation was filed in 1998. A settlement was reached that called for, among other things, expansion of the airport's Noise Management Program. Aspects of the expanded program include increased noise monitoring and public outreach, and stakeholder groups that work together on both airport operations and nearby development issues. Several hundred homes and several schools in San Leandro and Alameda have been insulated through the airport's Sound Insulation Program, funded by federal Airport Improvement Program grants. Today, one of the Oakland airport's goals (defined in the Port of Oakland's *2003–2007 Strategic Plan*) is to develop sustainable community relations. Specific objectives include expanding the community involvement program and maintaining good relations through proactive communication during the airport construction process.

Livermore Municipal Airport lies in a developing suburban area in the Livermore Valley in the east of the county. Although it is owned and operated by the city of Livermore and lies within the city boundary, the cities of Dublin and Pleasanton lie immediately to the west of the airport. As a result, residential development has been steadily encroaching on the airport, as shown in [Figure 3](#).

Recent efforts to update the airport master plan for Livermore Municipal Airport have proved contentious with surrounding communities, which are concerned about the projected increase in business jet aircraft activity. More than five years in the making, work on the master plan update has delayed efforts to update the *Airport Land Use Compatibility Plan*. Competition between the neighboring jurisdictions of Livermore, Pleasanton, and Dublin, together with the need to provide more housing in a jobs-rich corridor and disagreements about how close to the airport this housing should be developed, has made it difficult to resolve this conflict. Although all three cities have respected an Airport Protection Area that prohibits new

residential development, Dublin has approved development of high-density housing within the outer part of the Airport Influence Area. On the other hand, Pleasanton has been quite proactive in examining issues related to development near the airport. In conjunction with plans for expanding residential development toward the airport, Pleasanton published an *Airport Noise Report* in May 2003 that examined noise impacts and made recommendations both for the airport and for development.

Both case studies illustrate how time consuming and difficult coordination of airport master plans and ALUCPs can be. Each of the master plan updates took far longer than anticipated—more than a decade for Oakland (a plan finally was approved in March 2006). In February 2005 the Livermore City Council voted to stop work on the update of the Livermore Municipal Airport master plan and develop a noise monitoring and mitigation program. The master plan update was still incomplete in August 2007, eight years after work began. In each case, citizen opposition and lawsuits (or the threat of lawsuits) coalesced well into the master plan process and resulted in major changes to the plan and major delays to the master planning process. Delays in master plan completion have, in turn, delayed the update of the Alameda County ALUCP, which as of 2007 had last been fully revised in 1986.

Many obstacles to airport-compatible land use planning that were identified in the literature apply to the Alameda County case studies: multiple jurisdictions, competing community needs, demands of airport neighbors, and lack of funding and technical support for land use compatibility planning. The problem of “misaligned incentives” identified by Leora Waldner,⁵⁷ whereby airports want to promote compatible land uses but have no authority over land use, and the local governments that have authority over land use have little incentive to promote compatible uses, is pertinent to the Livermore situation.

The main obstacle to airport land use compatibility in the Livermore Valley is the pressure to provide housing. Local jurisdictions are aware of airport land use compatibility issues, but the housing shortage is a bigger issue.

Contra Costa County

The case studies included the two airports in Contra Costa County: Buchanan Field in Concord and Byron Airport in the east of the county. Both airports are operated by the county and currently support only general aviation activity, although there has been some limited commercial air service at Buchanan Field in the past. The county also appoints the ALUC. The *Contra Costa County Airport Land Use Compatibility Plan* was adopted in December 2000, replacing separate compatibility plans for each of the two airports. Buchanan Field is surrounded by dense suburban development, with predominantly residential areas under the main arrival flight paths to the east of the airport, as shown in [Figure 4](#). Byron Airport is located in a relatively rural, but developing, area of eastern Contra Costa County ([Figure 5](#)).



Figure 4 Buchanan Field Airport
(looking southeast)

Source: Contra Costa County Airports, "Home," www.co.contra-costa.ca.us/depart/pw/airport
(accessed August 24, 2006).



Figure 5 Byron Airport
(looking south)

Source: Contra Costa County Airports, "Home," www.co.contra-costa.ca.us/depart/pw/airport
(accessed August 24, 2006).

When the legislature updated California real estate disclosure law (through Assembly Bill 2776) in 2002, the Concord City Council contended that the Airport Influence Area (AIA),

established 25 years earlier, was too wide for the real estate disclosure, and pushed for a much smaller disclosure zone. The ALUC originally created this area not for noise issues, but to limit the occupancy and height of buildings. Ultimately, a disclosure zone considerably smaller than the AIA was established, using a noise-based standard. The zone includes the area within the 50 dB Community Noise Equivalent Level (CNEL) contour as well as areas where there have been two or more noise complaints over a 15-month period. Several thousand homes are included, about half the number in the AIA.

From 2003 until late 2005, a controversial (and ultimately unrealistic) attempt to relocate Buchanan Field in favor of a large-scale smart growth “urban village” delayed the master plan process and added a great deal of uncertainty regarding the future of Buchanan. Notably, the process to solicit proposals for a replacement airport and the redevelopment of Buchanan Field was done independently of the ALUC and the county planning staff assigned to the ALUC. While the process might never have garnered sufficient support to come to fruition, an experienced development team examined the realities of replacing the airport in some detail, and found the difficulties ultimately insuperable.

The opening to urban development of an eight square mile portion of the former Concord Naval Weapons Station to the north of Buchanan Field rendered pressures to redevelop Buchanan Field largely moot. This area represents the largest infill development opportunity seen in decades. The area to be developed is nearly nine times larger than Buchanan Field airport and offers far more land for infill development in central Contra Costa County, without the need to replace and redevelop an airport. With the release of the Naval Weapons Station for development, smart growth and airport area planning are less of an either/or proposition. As the *Buchanan Field Airport Master Plan* update process continues, the emphasis now is on developing the airport in ways compatible with its close-in neighbors.

Byron Airport has been an example of good airport land use planning. The airport is located in a rural area in the east of the county, as shown in [Figure 5](#), and is well protected with agricultural land and other open space land use designations. Proposals to incorporate air freight uses are officially stalled because of lack of infrastructure; this, in turn, is because its surroundings are beyond the county’s urban limit line (an example of smart growth planning). The county’s consultants for the Byron master plan studied and dismissed prospects for significant air freight based on their appraisal of factors that air freight carriers use to locate their operations. Improving highway access to the airport would not solve the fundamental problem of market isolation, irrespective of the smart growth urban limit line.

San Mateo County

San Francisco International Airport (SFO) is the primary commercial service airport for the Bay Area, the second-largest airport in the state, and the largest employment center in San Mateo County. The City/County Association of Governments of San Mateo County (C/CAG) appoints and staffs the ALUC, which has the most experienced ALUC planner among the Bay Area counties. The C/CAG also staffs an Airport-Community Roundtable that provides a

forum in which community representatives and SFO staff can address aircraft noise and land use planning concerns. C/CAG staff have indicated an active interest in using specific plans to promote better airport land use planning and want to find ways to coordinate expenditure of ground transportation funds and airport development funds that benefit both the airport and the surrounding communities. In early 2007, C/GAC received an FAA grant under Section 160 of the Vision 100–Century of Aviation Reauthorization Act to fund an update of the ALUCP for San Francisco International Airport.⁵⁸

The airport is located on the shore of San Francisco Bay between the U.S. 101 freeway and the bay. The primary arrival flight paths lie over the bay, although the approaches pass fairly close to Foster City on the edge of the bay to the south of the airport. Most departures take place over the bay to the north of the airport, although heavy, long-haul flights typically need to use the longer runways to take off to the west. These flights climb out above residential communities to the west of the airport. [Figure 6](#) shows the western end of the two east-west runways and the communities beyond the U.S. 101 freeway.

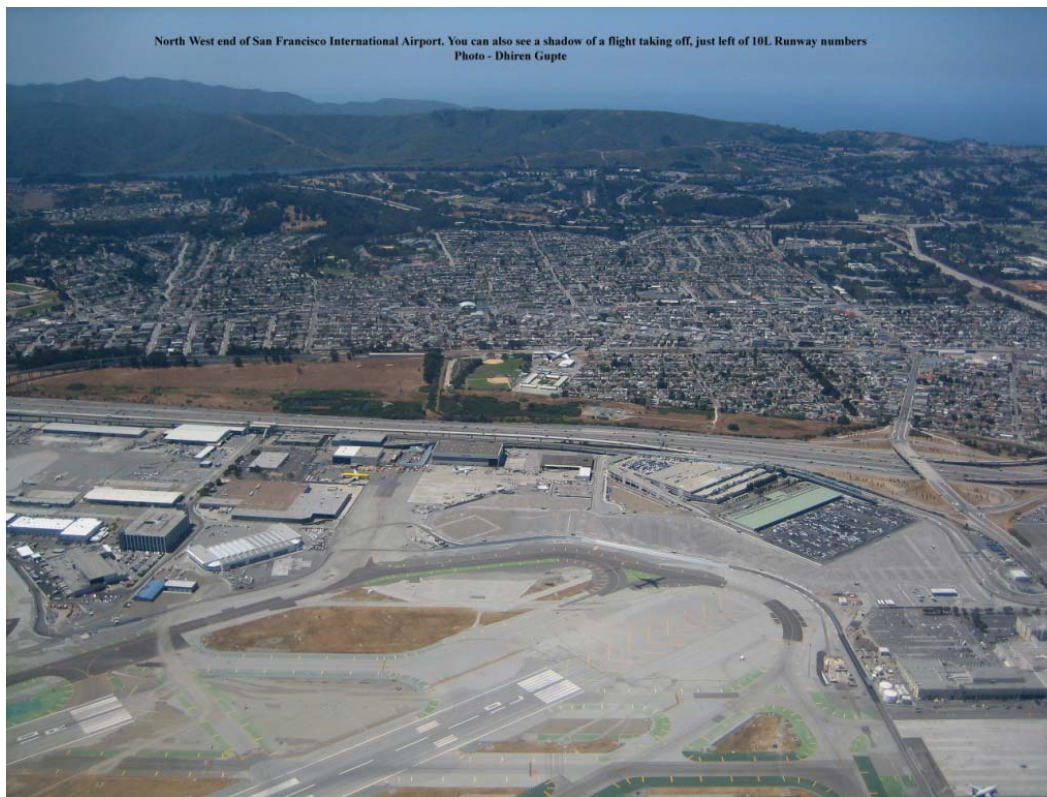


Figure 6 San Francisco International Airport Environs

(looking west from northwest corner of airfield)

Source: Gupte Kaka, August 2006, www.kedar.smugmug.com/photos/87289484-D.jpg

(accessed August 25, 2006).

SFO's two main runways are only 750 feet apart, and during periods of low cloud ceiling the airport can use only a single arrival runway, which can lead to significant delays. In 1998 the then San Francisco Mayor Willie Brown and development groups launched the Runway

Reconfiguration Project to reconfigure the runway layout to provide greater lateral separation by extending the airfield area into the San Francisco Bay. Environmental organizations expressed concern that the project could ruin key bay wildlife habitats and cause erosion, water stagnation, and other problems. The runway project was abandoned in 2003. In October 2004, a new procedure for simultaneous landings was approved based on the use of a Precision Runway Monitor radar system that allows two planes to make simultaneous approaches to SFO's closely spaced runways under conditions of lower ceiling than previously possible. Airport officials said the system would cut delays by 25 percent on overcast days.⁵⁹

The Airport/Community Roundtable has worked with SFO management and the FAA to identify ways to reduce aircraft noise. The Roundtable convinced the FAA to increase the altitude of some arriving flights, change certain arrival routes, and direct most arriving and departing flights over water. A program called "Fly Quiet," which grades each airline's compliance with noise reduction procedures, has also helped. Residents can log on to a first-of-its-kind web site made available in May 2001, and within 10 minutes of a noise event can identify the aircraft that generated the noise and determine its direction and altitude. A new, more accurate noise monitoring system, the Aircraft Noise and Operations Monitoring System Version 8 (ANOMS8), was unveiled in March 2006. The system enables airport officials to check complaints and track trends to help determine if flight operations should be changed.⁶⁰

In August 2002, SFO met state standards for noise abatement for the first time since the standards were set in the 1970s. Noise complaints decreased from an average of 3,600 a month in 2001 to 1,400 a month in 2002.⁶¹ Under SFO's home insulation program, which began in 1983, cities and San Mateo County managed their own programs with airport and FAA money. As of May 2006, the insulation program had paid to insulate over 15,000 homes against aircraft noise, and the airport was receiving an average of only 600 noise complaints a month.⁶² However, airport estimates show that the number of homes in the 65 dB CNEL contour will nearly double over the next 20 years.⁶³ Some of the affected neighborhoods are shown in [Figure 6](#).

SFO is now served by two rail systems, the Bay Area Rapid Transit (BART) system and Caltrain, a commuter rail service between Santa Clara County and San Francisco that also serves communities in San Mateo County. While these rail lines provide good public transit access to the airport, they also have stimulated mixed-use development in the corridor to the west of the airport. As mentioned above, several TOD projects have been planned and some built around rail stations near SFO, with mixed results from the perspective of airport land use planning. In November 2004, the California High-Speed Rail Authority released a tentative plan for a high-speed rail system from San Francisco to Los Angeles, with a stop at the Millbrae BART/Caltrain station that provides a connection to SFO. It remains to be seen whether state voters will approve the funds to develop such a system. A bond measure is scheduled for the November 2008 ballot. If the system is developed, the pressure for transit-oriented development near the airport could increase.

Santa Clara County

South County Airport in the unincorporated community of San Martin in the south of Santa Clara County is a small general aviation airport in a predominantly rural environment that has experienced some low-density development. It is a good example of issues typical of a traditionally rural area that is subject to land use development pressure on the one hand and an increase in general aviation activity on the other, because of both regional growth and spillover from airports elsewhere in the county. The changing volume and character of the aircraft activity at the airport has been of concern to local residents, and a recent proposal to expand the number of hangars at the airport generated some opposition, which intensified over subsequent efforts to update the airport master plan and amend the CLUP. This opposition seems likely to gather momentum once the EIR process for these plans begins.

In Santa Clara County, airport and airport land use compatibility planning are focused at the county level. General aviation airports are managed by the County Airports Administration, the Airport Land Use Commission is supported by county planning staff, and the county Board of Supervisors approves both airport comprehensive land use plans and airport master plans. South County Airport is also located within the county's land use planning jurisdiction, which lessens communication issues for this airport.

South County Airport lies beside the U.S. 101 freeway, surrounded mostly by compatible, agricultural land and scattered residential and commercial uses, as shown in [Figure 7](#). Airport compatibility has not been an issue in the past, so there is little attention to land use compatibility planning in the area. However, there is an emphasis by all jurisdictions in the south county on keeping the area rural in nature. Since the 1970s, growth in Santa Clara County has been directed toward the cities, and the desire to protect open space has led to strong urban growth boundaries and the use of smart growth policies and practices in the nearby south county cities of Gilroy and Morgan Hill.

It appears that sustainable development practices like smart growth and urban growth boundaries have largely protected South County Airport from encroachment up to this time. Conversely, Santa Clara County airports located within city boundaries have not fared so well. South County Airport is the only airport in Santa Clara County with room to expand. The July 2006 update of the *South County Airport Master Plan* recommends lengthening the runway from 3,100 to 5,000 feet. The plan also recommends purchasing an estimated 332 acres surrounding the 180-acre airport to protect the airport, and leasing it out to keep the area in agricultural use.

San Martin residents are attempting to incorporate as a town because they think they have little input into land use decisions such as the expansion of South County Airport. The San Martin Neighborhood Alliance filed a lawsuit against the county, challenging the approval of new hangars and the adequacy of the environmental study. A settlement allowed hanger construction to move forward, but the county agreed to a full environmental review of the



Figure 7 South County Airport

(looking north)

Source: Tom Bukowski, www.tombukowski.smugmug.com/keyword/south

(accessed August 24, 2006).

master plan update. San Martin is likely to regulate land uses around the airport and oppose airport expansion if they incorporate.

San Luis Obispo County

San Luis Obispo County Regional Airport provides an example of a small commercial airport where the ALUC found itself in conflict with a city's "smart growth" general plan, which placed housing too close to the airport from the ALUC perspective. The San Luis Obispo County Regional Airport lies in a valley to the south of the City of San Luis Obispo, to the east of the U.S. 101 freeway, and surrounded by mostly agricultural land with some scattered commercial uses, as shown in [Figure 8](#). However, residential and other development has been steadily encroaching from the north.

The *City of San Luis Obispo General Plan* and the *Margarita Area Specific Plan* covering new development immediately to the north of the airport were revised and a compromise reached. The county and the city have both adopted policies that respect the Airport Land Use Plan (ALUP). Both sides now proactively communicate on planning matters, and one positive result of the controversy is that the ALUC now meets more frequently, generally monthly. The specific plan process seems to be working for a number of major developments in the vicinity of the airport. Both the city and the airport management now believe that their needs are understood by the other party, and, for the most part, each side's needs are reflected in both the



Figure 8 San Luis Obispo County Regional Airport
(looking northwest)

Source: Dean Cully, San Luis Obispo Airport Northwest View, January 2004,
www.flickr.com/photos/vision_aerie/4590378 (accessed August 26, 2006).

ALUP and the city's general plan. As the following examples show, the resolution of airport-area planning has been largely successful. However, the affordable housing problem remains an issue for the city and the region.

Almost all the major projects within the ALUP planning area are under the jurisdiction of the city of San Luis Obispo. Although the intent is to implement smart growth, even the original proposal for the Margarita Area proposed only 1,200 dwellings on 412 acres—a gross density of less than three units per acre. The city agreed in 2002 to reduce the number of homes in response to ALUC concerns about the development's proximity to the San Luis Obispo County Regional Airport. The homes will now be built farther from aircraft flight tracks in order to provide more safety and limit noise impacts to residents.

For more than a decade, the San Luis Obispo Marketplace, a large mixed-use development proposed just south of San Luis Obispo, has been controversial. In 2002, a new plan for the development proposed a business park instead of senior housing because the county ALUC opposed homes in the area, which lies beneath a flight path of the airport. The new proposal failed to pass a citywide initiative, and the project was redesigned again. The new initiative, approved by voters in a countywide election in November 2006, proposed 530,000 square feet of retail, 60 residences, an organic farm and farmer's market, and other amenities.⁶⁴ Again, the ALUC successfully restricted the number and location of residences to reduce safety and noise concerns.⁶⁵

Recent commercial projects in the immediate airport environs are introducing elements of Kasarda's Aerotropolis. In 2002, despite economic doldrums in the region, the 10-acre Aerovista Business Park next to the airport was successfully signing new tenants. The airport is attracting substantial compatible commercial development—a win-win situation in that commercial uses are more compatible with airport operations, and they provide greater net revenue for the city compared to residential uses.

In the late 1990s, the airport formed a Noise Working Group, comprising pilots, airport management representatives, and residents from areas affected by aircraft noise. By 2001, the group had developed a brochure for pilots listing voluntary steps they can take to mitigate noise impacts on the community, including a voluntary curfew between 11 p.m. and 7 a.m. The perception of airport staff is that noise complaints have declined among long-term residents in the airport vicinity, which they attribute to the Noise Working Group's activities and the advent of regional jets, which are not only quieter, but also larger than the turboprop commuter aircraft they have been replacing, meaning fewer flights can carry an equivalent passenger load.⁶⁶

Los Angeles County

Long Beach Airport in Los Angeles County is one of the secondary commercial service airports in Southern California that also has a significant amount of general aviation activity. A noise ordinance includes a nighttime curfew and limits the number of flight departures at the airport to 41 commercial flights and 25 regional commuter flights each day. During the 1990s

the airport had few commercial flights, well below the limit. However, with the introduction of service by JetBlue Airways in 2001 and the competitive response by other airlines, commercial service has expanded and all the available operating slots for commercial flights have been taken by the airlines.

Long Beach Airport is surrounded by residential communities with a narrow buffer of commercial, industrial, and other uses, including a golf course and a park, between the airport and the residential areas, as shown in [Figure 9](#). The former McDonnell-Douglas Aircraft Company plant, now owned by Boeing, abuts the airport boundary on the northeast. While aircraft noise complaints have increased somewhat since the expansion of airline service in recent years, these typically result from late-night arrivals when commercial flights arrive after the curfew because of flight delays elsewhere in the system.



Figure 9 Long Beach Airport

(looking west with the Boeing plant in the lower right corner)
John Mast, Airports Photo Gallery, May 2005, www.pbase.com/johnmast/airports

(accessed August 26, 2006).

The Long Beach Airport terminal was built in 1941 and has not been substantially upgraded since that time. Although many services are now operated out of temporary facilities, airport expansion plans have been controversial. With the recent expansion of airline service, the airport began a process to update the airport master plan to provide expanded terminal facilities. A group of activists organized as LBHUSH2 (Long Beach Homes Under Stress and Hazards) successfully lobbied for additional environmental review during the master plan update process and placed candidates on the city council. As a result, the size of the preferred project studied for the EIR was reduced from the 130,000 square feet recommended by airport

staff to about 100,000 square feet. City and airport officials repeatedly assured residents that there is no intention to overturn the noise ordinance and the expansion is not designed to accommodate additional flights. However, the activists have continued to express concerns that the 100,000-square-foot project is still too large and will invite challenges to the ordinance. They fear that the Southern California Association of Governments and the FAA will eventually force Long Beach to handle more traffic, since other airports in the region have limited capacity to handle the expected increase in air traffic over the next 20 years. Along with the school district and others, they appealed the planning commission decision to approve the EIR. The city council approved the planning commission decision and the groups filed suit. The city council then put the implementation on hold and instructed city staff to meet with representatives of the groups and attempt to work out an acceptable solution. However, the city and the project opponents were unable to reach a mutually satisfactory solution and the school district decided to pursue its lawsuit. In April 2007, the city council voted to proceed with a slightly reduced project of about 90,000 square feet. As of August 2007, the lawsuit was not yet resolved and construction had not yet started.

The principal airport land use issue at the airport is the proposed development of the former McDonnell Douglas aircraft plant, now owned by Boeing, into a mixed-use community known as Douglas Park. The initial proposal was vigorously opposed by airport users, local communities, and the ALUC, both because of the scale of the proposed development and the height of some of the buildings. Although the planned uses have since been redesigned to comply with current CLUP restrictions, the county Planning Commission, which serves as the ALUC, continued to oppose the development because of its proximity to the primary runway and the flight path to and from a secondary runway. However, the City of Long Beach is anxious to have the proposed development, and the project is going ahead, although the developers have recently announced that they are abandoning plans to include single-family homes in the development and will replace them with more townhomes and condominiums.

Riverside County

Two small general aviation airports in Riverside County are included in the case studies: Jacqueline Cochran Regional Airport near Thermal in the Coachella Valley in the east of the county, and French Valley Airport in the south of the county. Jacqueline Cochran Regional Airport is located in a rural area between Coachella and the Salton Sea, as shown in [Figure 10](#). The airport is primarily used by private jets bringing people to vacation homes and golf resorts in the Desert Resorts area to the west. Development of homes and golf courses is starting to move east and south toward the airport.

Growth in the Coachella Valley is proceeding at an incredible pace. As of April 2006, 72,465 homes were approved for future construction.⁶⁷ In 2005 Indio, about 4 miles to the northwest of the airport, was the second-fastest growing city in Riverside County, Coachella was the third-fastest, and La Quinta, about three miles to the west, was the fourth. Indio's population grew by around 6,000 people between 2004 and 2005. All three cities had growth rates over



Figure 10 Jaqueline Cochran Regional Airport

(looking northeast toward Thermal, CA)

Source: County of Riverside, Jacqueline Cochran Regional Airport Master Plan, www.rivcoeda.org/Default.aspx?tabid=536 (accessed September 14, 2004).

nine percent per year. In Coachella, 1,000 start-up permits were expected to be issued in 2005,⁶⁸ but the city reported that more than 1,500 dwelling units were approved.⁶⁹ Development is also occurring in areas under county jurisdiction, with 1,500 homes and other uses planned for the Kohl Ranch just to the south of the airport.⁷⁰ The Kohl Ranch proposal has been designed to keep the residential components away from the airport, but the proposed residential areas shown in the specific plan approved by the county for the project appear inconsistent with the noise compatibility zones identified in the latest update of the *Airport Land Use Compatibility Plan* prepared by the county ALUC.

At the beginning of 2006, the Riverside County Local Agency Formation Commission (LAFCO) considered a proposal to expand the Sphere of Influence (SOI) boundaries for La Quinta to the east toward the airport, and Indio and Coachella to the south toward the airport. Developers appear keen to build in the area, and the expansion of La Quinta's SOI eastward toward the airport and Coachella's southward toward the airport that was approved by the LAFCO is likely to result in more people living closer to the airport in the future. The cities are required to return to LAFCO and show that annexation is financially feasible before the land can be annexed. Nevertheless, the pace of growth and its sprawling nature indicate that residential development could encroach on the airport very quickly.

Riverside County economic development officials and others hope that the large section of industrial land between the airport and Highway 86 to its east will soon attract new activity. In 2005, there was talk of a specific plan for the airport area. The airport already is the center of an Enterprise Zone, which reportedly saved businesses \$30 million in taxes in 2003.⁷¹

French Valley Airport is located in a formerly rural area that is experiencing rapid suburban development. The Riverside County ALUC has been reasonably successful in keeping residential development away from the ends of the runways and requiring aviation easements and notification of purchasers of homes near the airport. When residential development began to occur in the vicinity of the airport, the ALUC attempted to keep the development even farther from the airport, but the county supervisors voted to override the recommendations, even though the ALUC is a county body.

Both airports appear to be good examples of cases where the airport land use planning process is working fairly well within the constraints of existing land use criteria. Whether the existing restrictions will be adequate to prevent future conflict between the airport activities and the owners of the new homes that are beginning to surround them remains to be seen. However, to date most of the residential development in the surrounding areas is still some way from the airports, particularly in the case of Jacqueline Cochran Regional Airport, so there is significant opportunity to limit future encroachment.

San Diego County

The case studies examined two airports in San Diego County: San Diego International Airport (SDIA) and McClellan-Palomar Airport in the city of Carlsbad in the north of the county. SDIA, formerly known as Lindbergh Field, is the primary commercial service airport for the county and is located close to downtown San Diego on the shore of San Diego Bay, which forms the southern boundary of the airport. There are extensive residential areas to the west and north, with high-rise commercial and residential development in the downtown area immediately to the east. McClellan-Palomar is primarily a general aviation airport with a small amount of regional airline service. It is located to the east of the Interstate 5 corridor and surrounded by a buffer of commercial and industrial land uses, with residential areas further to the north and south and predominantly open space to the east. The Legoland theme park is located immediately to the west, with mixed commercial and residential uses further to the west between the freeway and the coast. The San Diego County Regional Airport Authority (RAA), formed in 2003, operates SDIA and several general aviation airports (but not McClellan-Palomar, which is operated by San Diego County) and since its formation has served as the county ALUC.

McClellan-Palomar Airport is a good example of the importance of careful land use planning around smaller commercial airports. Carlsbad has been proactive in zoning the area around the airport for industrial and commercial uses, which has largely prevented residential development from encroaching on the airport. However, the development of housing quite close to the primary arrival flight path to the airport in a planned community called Bressi Ranch illustrates both the inadequacy of current noise criteria for airport land use planning at smaller commercial airports, where the CNEL contour may not extend very far from the airport, and the danger of allowing political pressure to distort the boundary of the Airport Impact Area (AIA) to favor particular parcels for development.

Despite the efforts of the airport to implement noise management measures, the surrounding residential communities continue to generate a significant number of noise complaints. Almost all of these originate from areas outside the 60 dB CNEL contour, providing further evidence of the inadequacy of current noise criteria to reflect the community response to aircraft noise. This suggests the need for a different approach to dealing with noise compatibility planning for residential areas that are well outside the 60 dB CNEL contours but still experience relatively high single-event levels of noise from aircraft overflights. Development occurring to the east of the airport in the cities of Vista and San Marcos and the unincorporated community of Lake San Marcos illustrate the importance of the AIA extending well beyond the 60 dB CNEL noise contour, so that land use planning for communities under the approach and departure flight paths that are some distance from the airport but still subject to significant levels of aircraft noise can be coordinated with the Airport Land Use Compatibility Plan.

The development of industrial and commercial land uses around McClellan-Palomar Airport as a buffer to prevent residential development from encroaching on the airport presents an interesting challenge from the perspective of smart growth planning. The cost of housing in Carlsbad is such that most of those working in these facilities cannot afford to live in the surrounding residential areas, and those who can afford to live in the city are likely to work elsewhere in the county. Thus efforts to develop commercial and industrial land uses adjacent to an airport need to be coupled with an aggressive program to ensure that there is sufficient affordable housing in the surrounding communities, without placing that housing in locations where it is exposed to significant levels of aircraft noise.

The San Diego region has been aggressively pursuing smart growth development policies. The San Diego Association of Governments recently initiated a Smart Growth Incentive Program. The Centre City Development Corporation has promoted residential development in the downtown area, and the San Diego Redevelopment Agency has undertaken a major redevelopment of the former Naval Training Center site immediately to the west of SDIA to create a new urban village. Unfortunately, many of these development projects in the vicinity of the airport lie under or close to the arrival and departure flight paths and are exposed to significant levels of aircraft noise, and possibly height conflicts. [Figure 11](#) shows the location of the Naval Training Center site immediately across the channel from the primary departure end of the runway.



Figure 11 Aerial View of Airport and Naval Training Center Site
(looking south)

Source: Liberty Station, 2004, www.libertystation.com/maps (accessed March 8, 2005).

Although the housing on the site is outside the 65 dB CNEL contour, it is still quite close to the departure flight path, and the area within the contour includes an educational district that as of late 2005 contained eight new schools. Since these are all private or charter schools, they are not subject to the state law that requires Caltrans to review proposed sites for public schools or community colleges within two miles of an airport runway.

The new RAA, acting as the ALUC, attempted to limit the ability to add new residential units within the noise impact area of SDIA through amendments to the CLUP. These were adopted in October 2004 after agreement was reached with the City of San Diego to defer the more controversial restrictions to a comprehensive update of the County's ALUCPs, which began in late 2004. Despite the usual outreach meetings and comment periods arranged during preparation of the plans, local agencies and the general public urged the ALUC to work more closely with stakeholders. The ALUCP Technical Advisory Group (ATAG) was formed in January 2006, including representatives of some 50 cities, local agencies, associations, community planning groups, and other stakeholders. Over the following six months, the group developed recommendations for density and land use intensity standards, a layered approach to defining criteria for land use compatibility zones, and policies on in-fill. The ATAG appears to have provided a process that engaged a large number of diverse stakeholders in the county and resulted in a set of consensus policy recommendations on a number of controversial issues. However, this has required an enormous commitment of time from the RAA staff and ATAG members.

Airport land use planning for SDIA has been further complicated by an Airport Site Selection Study that was in progress for several years and was exploring potential sites for a replacement

airport for SDIA, while in parallel an airport master plan update was in progress to define near-term development needs. As a result, there was considerable uncertainty over the future expansion needs of SDIA and the resulting noise impacts and need for land use controls in the surrounding communities. In November 2006 the airport replacement strategy recommended by the Airport Site Selection Study, to pursue joint use of the Miramar Marine Corps Air Station, was placed on the county ballot and overwhelmingly rejected by the voters, leaving further development of SDIA as the only course of action for the foreseeable future.

Whether the established airport land use compatibility planning process has been effective in San Diego depends greatly on what are considered appropriate land use compatibility criteria for the urban environment that surrounds SDIA. The RAA has expressed concern about continued residential development within the 65 dB CNEL contour and increasing density under the arrival and departure paths. On the other hand, the City of San Diego argues that the market has shown that people are willing to tolerate higher levels of ambient noise in order to live close to the downtown, and that it makes little sense to limit density of new development when the surrounding parcels are already built to a much higher density. This debate has thrown into sharp relief the limitations of the scientific basis for most of airport land use compatibility criteria. The data on the relationship between noise levels and community annoyance presented in the *California Airport Land Use Planning Handbook*, and most other guidance documents, do not distinguish between different levels of urban density or the prevailing type of residential construction.

CONCLUSIONS AND RECOMMENDATIONS

The case studies have provided a fairly comprehensive overview of the current state of airport land use compatibility planning in California and have identified several critical issues that will shape the future effectiveness of this process in the years ahead. This study appears to be the first formal attempt to examine how well this process has been working to date by studying the experience at specific airports. Although the scope has been limited to a sample of airports, these are sufficiently diverse to draw useful conclusions and formulate recommendations on how to strengthen the process. During the course of this study, the California Research Bureau undertook a broad-ranging survey of ALUCs that examined their characteristics, planning activities, and approaches to compatibility planning. Together, these two studies provide a detailed look at the role and effectiveness of the ALUCs and the airport land use planning process in achieving land use compatibility around airports in the state.⁷²

OVERALL STUDY FINDINGS

The current process for airport land use planning in California has steadily evolved over almost 40 years, and a well-defined set of policies, procedures, and institutional relationships have developed at the county level that are focused on the role of the ALUCs and other agencies performing the same function. Although there is a growing body of guidance material on airport land use compatibility planning at the federal level, and other states have recently been moving in similar directions, it is fair to say that in this area, as in many others, California has been well ahead of the state of practice at the federal level and in most other states. Even so, this has not been a panacea, and continuing land use compatibility conflicts hamper the development of the California airport system and subject many of its residents to what they perceive as unacceptable levels of aircraft noise. Although this process appears to have worked well in many cases, in others it has failed to prevent incompatible development, often through no fault of the parties involved. It is time to reassess the ability of the current process, policies, and regulations to meet the challenges that will arise in meeting the future development needs of both the California airport system and the surrounding communities.

The evolution of the paradigm that has come to be termed “smart growth” is more recent, although it has become widely accepted and its principles and strategies are a key component of urban planning throughout the state. Thus far, little consideration has been given to how smart growth principles and strategies should be addressed in airport land use planning, and vice versa, but there is an urgent need to rectify this situation. Although the literature on smart growth and airport land use planning is only beginning to intersect, useful lessons can be drawn from the material that exists:

1. Smart growth and airport land use planning (ALUP) have evolved separately. This study appears to be the first to consider their relationship and potential confluence.
2. Smart growth has three potential relationships with ALUP:
 - a. Conflicting—for example, a prototypical smart growth project (higher-density, mixed-use) is proposed near an airport without adequate consideration of safety and noise issues.
 - b. Complementary—for example, smart growth projects draw residential and residential-supportive uses away from airports, reducing pressure to develop incompatible uses near airports.
 - c. Transforming—the smart growth concept of transit oriented development (TOD) is extrapolated and expanded into a concept of airport-oriented development.
3. Under the third of these relationships, smart growth concepts would actively help realize ALUP goals by establishing comprehensive planning around airports. The goal of such planning would be to assure that land near the airport is reserved and actively planned for uses that benefit from (and are not threatened by) being close to the airport. The literature review revealed two efforts in this direction:
 - a. The Aerotropolis concept developed by Dr. John Kasarda at the University of North Carolina
 - b. The American Planning Association’s “Airports in the Region” initiative.
4. The specific plan represents a useful tool for California planning agencies to undertake a comprehensive, proactive, positive ALUP.
5. ALUC staffs are overtasked, isolated, and undertrained. Most ALUCs do not have even one full-time planner or equivalent level of staffing; most report that they had to learn their jobs “on the fly” and want more forums for education and exchange with other ALUC planners.
6. We actively sought but were unable to find any ALUC (or other agency) that maintains records of changes in actual land use over time, either electronic or hard copy. Maps showing how the land use in the vicinity of an airport today compares with some years ago would be useful to assess the effectiveness of ALUP procedures. In the major metropolitan regions of the state, the data and appropriate GIS tools exist to track airport area land use over time, but no one is doing this at present.
7. Certain trends—quieter commercial jets, technological improvements enhancing both air navigation and aircraft noise monitoring and management, increasing noise complaints related to overflights rather than take-offs and landings—suggest that the basic framework for addressing aircraft noise in California since the 1960s (exemplified by basing land use noise compatibility on a specific CNEL contour) needs rethinking.
8. The term “smart growth” is entering the lexicon of airport executives and planners. In a presentation to the Greater Concord Chamber of Commerce and the Contra Costa Council (April 13, 2005) John L. Martin, director of the San Francisco International Airport (SFO)

discussed the importance of regional cooperation and the need to make efficient use of limited resources to meet the needs of air travel. In his presentation, he outlined a concept that he termed “smart growth” in relation to airport operations.

One aspect of smart air traffic growth is using technology to make maximum use of existing airports, saving on the need for costly and contentious airport expansion, which, even if approved by all the concerned agencies, may prove uneconomic. (By Martin’s reckoning, the landing fees needed to pay for SFO’s \$1 billion-plus proposal for runway expansion that had been pursued a few years before would likely cause a reduction in traffic at the airport in the current economic climate, thereby eliminating the need for the expansion project). On the other hand, improved air traffic control systems enabled a 43 percent increase in effective runway capacity some under adverse weather conditions, without the need for physical expansion. Another aspect of smart air traffic growth identified by Martin is offloading general aviation and shorter commercial flights to smaller airports in the region.

9. One clear opportunity for joint smart growth and airport planning is in planning for major transit links to serve large airports. Ground access travel at large airports, by both air passengers and airport employees, may justify the provision of improved transit services for a number of reasons: reducing vehicle traffic volumes generated by the airport, often through a congested corridor, and providing an alternative to the cost involved in parking a private car at the airport, especially for longer duration trips. Even so, the transit ridership generated by the airport is likely to be relatively low, and smart growth planning can ensure that other stations on the airport line produce ridership to make the line more cost-effective.

Effectiveness of Current Airport Land Use Planning Process in California

The various conflicts that were identified in the case studies provide one perspective on the effectiveness of the current airport land use planning process in California and its ability to prevent incompatible development from limiting the ability of the airport system to meet future demands for air transportation. A second perspective can be obtained from the analysis of land use changes in the vicinity of those airports where suitable data is available.

The *California Airport Land Use Planning Handbook* provides detailed guidance to ALUCs in the preparation of the ALUCPs. However, the extent to which the ALUCs have been able to translate this guidance into effective land use plans varies widely. In particular, many ALUCPs are significantly out of date and have not been updated since the *Handbook* was last revised, limiting their value in shaping local general plans and associated zoning and other regulations. In spite of this, safety issues involving building heights and development density are generally well-handled, in part because the relevant federal standards for airport protection have not changed in some time. However, aircraft noise issues are often a continuing source of controversy. The noise contours that form the basis of many of the older ALUCPs have not

been updated since the phase-out of the Stage 2 jet aircraft in 2000, and thus may not reflect current conditions.

It is clear from many of the case studies that there are two very different situations. The first is where community expansion or other development forces result in new development being proposed in the immediate vicinity of airports that will result in residential and other noise-sensitive uses (such as schools and churches) occurring in areas that do not already have these uses or that significantly increase the amount of these uses. The other situation is where changes in airport activity, such as the construction of new runways, reuse of former military bases, or changes in the traffic level or composition of the aircraft fleet using the airport, result in changes to the noise levels experienced by existing land uses near the airport. The distinction between these two situations is important, both because the options available to address the resulting or potential problems are different in the two cases and because there are issues of social justice in the latter case that do not arise in the former. However, the differences between these two situations are not well addressed in the current guidelines.

The other important observation from the case studies is that most airport land use compatibility problems, primarily involving issues of aircraft noise, arise in areas that are not subject to existing development restrictions. Even if the ALUC is deeply concerned about the potential future problems that are likely to arise from a proposed development, it is often powerless to prevent the development from being approved. Aircraft noise impacts outside the 65 dB CNEL contour are often a major concern with nearby communities, particularly with general aviation airports, where the noise contour rarely extends very far from the airport property. The *Airport Land Use Planning Handbook* allows adjustments to the noise levels used in setting development restrictions, termed normalization, to tailor the restrictions to better reflect local conditions. However, ALUCPs typically do not take advantage of these opportunities.

Improving the Airport Land Use Planning Process

There appear to be significant opportunities to improve the airport land use planning process. Perhaps the most important is to strengthen the ALUCs themselves. Most ALUCs have very limited staff support. In many cases, the ALUC is assigned one person who has to include ALUC duties along with other responsibilities. These planners have limited opportunities to interact with staff at other ALUCs and typically are expected to learn their skills on the job. Similarly, ALUC commissioners often have no formal training in airport land use planning practice and limited opportunities to exchange ideas with other ALUCs.

As a consequence, the ALUCs typically become focused on preparation of the ALUCP and reviewing specific development proposals, rather than developing a broader strategy. The ALUCs generally do not have the staff resources or perceive the need to monitor land use changes around the airports in their jurisdiction and work proactively with the relevant local planning agencies to define a common vision of future land use patterns around the airport that meet both airport and local needs. The case studies found no ALUCs that routinely track

land use changes around the airports in their jurisdiction apart from the quarterly reports that are generated by those noise-problem airports that are required to obtain a variance from the California Department of Transportation under state law. These reports typically track changes in households and population within the 65 dB CNEL contour that have not received noise attenuation measures, but do not consider other changes or even present this information in a way that can be used to assess the effectiveness of land use planning measures. For example, there is no distinction between new residential uses, existing residences that are still within the contour but made compatible through sound attenuation, and changes in the noise contour.

The other aspect of ALUC activities that presents opportunities for improving the visibility of the airport land use planning process is the extent to which information about airport land use planning issues and ALUC actions is readily available to interested stakeholders. The ALUC web sites vary widely in quality and content. Several do not even have the latest version of the ALUCP available on the web site. While many post the agenda and minutes of ALUC meetings, the minutes often lack sufficient detail for a reader to understand the basis for decisions or perform retrospective analysis of the overall effectiveness of the airport land use planning process. In some cases, the minutes report discussion of staff reports that are not included with the minutes, making much of the reported discussion incomprehensible. None of the ALUCs studied in the research produced an annual report that summarized land use decisions by the ALUC or relevant local agencies affecting development in the Airport Influence Area.

Beyond ways to increase the effectiveness of the ALUCs, there is a need to rethink the basic approach to airport land use planning that has evolved over more than 30 years. Many of the principles are still valid, but some of the underlying assumptions have been overtaken by events or can be seen to be of questionable validity in the current (and likely future) environment. Trends in aircraft technology have changed the issues that need to be addressed. Quieter aircraft engines and the introduction of regional jets have changed the nature of the noise impact for many communities. At the same time, increased use of business jet aircraft has resulted in a significant increase in jet aircraft activity at some general aviation airports. Noise complaint data and information from aircraft flight tracking systems show that CNEL is a poor predictor of community annoyance and that 65 dB CNEL in particular is an unacceptable criterion of compatibility for many communities. Finally, the current approach ignores the development pressures that many local jurisdictions are trying to resolve, particularly the need for tax base and affordable housing. Effective airport land use planning needs to grapple with these issues and have the tools to do so, and not be constrained to applying simplistic criteria without regard to local circumstances. Perhaps the most obvious limitation of the existing process is that ALUCs are restricted to addressing only changes in land use, and are not able to address compatibility with existing land uses. As development continues around the state's airports, the opportunities to achieve land use compatibility through restrictions on new uses will steadily diminish and community concerns will increasingly result from existing land uses.

Incorporating Smart Growth Considerations

Many steps can be taken to begin to incorporate smart growth considerations in airport land use planning in a more integrated way. Perhaps the most significant is to develop explicit guidelines on how to address smart growth planning in the vicinity of airports. These guidelines should be developed in coordination with state and interested local agencies involved in land use planning as well as other relevant Caltrans divisions and district offices.

A second useful step would be to incorporate economic planning considerations into airport land use planning guidance. This would begin to move the focus of the airport land use planning process beyond simply preventing incompatible development near airports to actively promoting *compatible* development and to viewing the airport as a community asset that needs to be protected and taken advantage of, rather than a locally unwanted land use that has to be protected from encroachment.

As part of this approach, there needs to be a proactive, coordinated effort to addressing regional housing needs. ALUCs need to work with local jurisdictions to develop joint strategies to meet their housing needs in a way that is compatible with airport activities before projects are proposed to locate new housing close to airports. In many communities, the pressure to develop new housing is sufficiently intense that once plans are proposed to locate major new housing developments in the vicinity of an airport, the ALUC will be fighting an uphill battle to stop or scale back the project.

Future Research Needs

Although the current research project has developed a significant amount of information about the current state of airport land use planning in California, there is much more that could be done. Further research would be desirable to expand the information on airport land use planning in other counties or at other airports. This research could include surveys of ALUC staff to develop a quantitative profile of ALUC activities. In addition, the outcome of several of the airport land use planning issues identified in the case studies are subject to continuing activity by the ALUCs and airport sponsors, so it would be useful to update the case study information from time to time to ensure that the research findings do not become obsolete. Beyond this type of follow-on activity, several research activities could generate specific information to enhance the airport land use planning process.

The first of these activities is to obtain a better understanding of how community attitudes to aircraft noise vary with local conditions. The normalization adjustments permitted by current guidelines would more defensible (and more likely to be used) if there were a well-developed body of evidence that shows how the type of surrounding communities (urban, suburban, or rural) and the type and frequency of aircraft operations influence community attitudes and response. This research could also address the distinction between changes in the community and changes in airport activity, by examining differences between the attitudes of established residents and those of newcomers to the area.

A second useful research activity would be to work with ALUC staff to identify and document “best practices” in airport land use planning. These could address such aspects as coordination with local planning jurisdictions, development of airport area specific plans, monitoring land use changes and community attitudes, and successful efforts at community outreach and information dissemination.

A third research topic would be to identify professional development needs for ALUC staff and commissioners, identify existing opportunities, and develop a program plan and curricula for new courses, workshops, or symposia.

RECOMMENDATIONS

Based on the research findings, particularly the case studies, the following recommendations are made to facilitate and strengthen the airport land use planning process in California. Each recommendation is followed by a brief summary of the underlying rationale.

1. *The California Department of Transportation should work with the Federal Aviation Administration and the California legislature to develop an adequate source of funding to support appropriate levels of ALUC staff and activities.*

In order to expand the resources available to support effective airport land use planning in the state, Caltrans should work with the California legislature to introduce legislation to require each county to establish a dedicated funding source for airport land use planning activities. The level of funding should be sufficient to ensure that each ALUC has an appropriate number of full-time staff positions or equivalent levels of staffing for the number and type of airports that it is responsible for and to provide adequate resources to ensure that all county ALUCPs are updated (or, at minimum, comprehensively reviewed and recertified) at least every five years. Potential revenue sources that could be considered include fees on applications for development permits within an Airport Influence Area and set asides from taxes generated by aviation activity (such as sales tax on aircraft fuel and possessory interest tax on aircraft) that currently flow into state or county general funds. The success of the California airport land use planning process depends on the effective functioning of the ALUCs, which in turn requires adequate staff support and funds to perform studies and undertake periodic revisions to their Airport Land Use Compatibility Plans (ALUCPs). This is true whether success is measured as conformance with the legislated airport land use planning process or as development and implementation of an airport area land use plan. In some cases, ALUCs are adequately funded by their sponsoring agency. However, it is more common for ALUCs to have only one staff member assigned to support them. This staff member typically has additional duties and little or no funding for contract assistance. The FAA has recently begun to make planning grant funds available to support airport land use planning around selected airports. Caltrans should encourage all eligible ALUCs to apply for these funds and work with the appropriate staff

at the FAA Regional Office to facilitate this process and encourage its expansion to other airports.

2. *Caltrans Division of Aeronautics should work with ALUC staff to develop recommended standards of practice regarding how ALUCs document their land use decisions and what information they post on their web sites.*

The level and detail of documentation of ALUC decisions and web site content varies widely across ALUCs. While many ALUCs post minutes of their meetings, the background information on specific decisions and the rationale for those decisions is often limited or unclear, making it difficult to achieve a consistent approach and for local communities and developers to understand the strategy being pursued by the ALUC to achieve land use compatibility.

Web sites provide an effective way for ALUCs to communicate with local communities, project proponents, and interested members of the public. However, ALUC web sites are often difficult to locate and are frequently missing important or relevant information. Guidelines for websites location, content, and format would greatly increase their value as a communication tool and contribute to ALUC visibility and effectiveness.

3. *The Caltrans Division of Aeronautics website should provide a single point of access to information on all ALUCs in the state.*

One simple but effective measure to increase the accessibility of ALUC websites that can be implemented immediately is for the Land Use Compatibility section of the Caltrans Division of Aeronautics web site to include links to every existing ALUC web site. Currently a list of ALUC contacts is posted on the Airport Land Use Compatibility Planning Guidelines web page, together with a discussion of the role of the ALUCs in airport land use planning, but neither the web page nor the contact list provide link to ALUC web sites.

4. *Caltrans Division of Aeronautics should work with ALUC staff to track and report changes in land use within Airport Influence Areas on an annual basis.*

The purpose of the California airport land use planning process is to achieve compatible land use around airports. However, there is no formal process to assess the effectiveness of the current procedures or monitor trends on a local or statewide basis. ALUCs should be encouraged to prepare an annual report that summarizes the project development recommendations they have made over the year and changes in both planned and actual land use within the Airport Influence Areas of the airports in their jurisdictions. For airports with little development activity, this could be a brief report. The increasing use of geographical information systems by city and county planning agencies will simplify and facilitate this process. These reports should be publicly available on the ALUC web sites.

The defined “noise problem” airports in California currently submit quarterly reports to Caltrans Division of Aeronautics that include some information on land use changes within the 65 dB CNEL contour as a condition of receiving an operating variance. However, the value of this information is limited by the restricted definition of

“incompatible” use within the current regulations. Although these reports document progress in eliminating narrowly defined incompatible uses, they provide almost no information on the real extent of the noise problem around those airports or of emerging issues of concern. Thus, a large residential development just outside the 65 dB CNEL contour currently would not be included in the reported statistics. Expanding the reporting requirements to include trends in actual land use and residential density within the Airport Influence Area at different levels of aircraft noise exposure, and distinguishing between property that has been classified as compatible because of sound attenuation measures, property for which the airport has obtained avigation easements, and property for which neither action has been taken, would greatly increase the value of these reports in measuring progress at achieving land-use compatibility around those airports.

5. *Caltrans Division of Aeronautics should take the lead in improving the specialist training and professional interaction of ALUC commissioners and staff.*

Many ALUC staff planners now have no formal training in airport land use planning, must combine their support for the ALUC with other duties, and have little formal interaction with the staff of other ALUCs. Caltrans Division of Aeronautics should develop a standard training curriculum for new ALUC staff and hold short training and refresher courses on a periodic basis, at least annually. The division should also sponsor periodic meetings where ALUC staff planners can exchange ideas, questions, and experience, and can be informed about recent changes in airport land use planning regulations or procedures.

Many ALUC commissioners also have limited professional experience in land use planning and no formal training in airport land use planning. The Division of Aeronautics should develop a curriculum for an introductory seminar for new ALUC commissioners that would be held on a periodic basis, no less than annually. Planning directors and senior land use planners from local jurisdictions within Airport Influence Areas could also be invited to attend the seminars, both to educate them on the specialist aspects of airport land use planning and to facilitate interaction with ALUC commissioners.

The Division of Aeronautics should also consider developing a periodic newsletter aimed at ALUC commissioners and staff planners, as well as land use and transportation planners in jurisdictions with or near airports. This newsletter, ideally web-based, would provide information on recent developments in airport land use planning in the state, discuss the status of ALUCP updates, provide a forum to share experiences among ALUCs, and distribute information about professional development opportunities for ALUC commissioners and staff.

6. *The California Department of Transportation should work with the state legislature to ensure appropriate levels of representation of both local communities and aviation interests on all ALUCs.*

At present, there are two different basic formats for ALUCs within California: separate single-purpose entities and designated existing bodies. There are also several special cases and exceptions that apply to specific counties. State law specifies the composition of the single-purpose entities and requires representation of local communities, aviation interests,

and the general public, as well as the process for selecting those representatives. However, the requirements for designated bodies are less comprehensive and only specify that the body must have at least two members with aviation expertise, or be augmented by two such members when acting as the ALUC. Section 21670(e) of the *Public Utilities Code* includes in the definition of a person with aviation expertise an elected official of a local agency that owns or operates an airport. There is no requirement for explicit representation of local jurisdictions (although the designated body may be a local jurisdiction, such as a county board of supervisors) or the general public, and an elected official of a local agency that owns or operates an airport may or may not have any particular knowledge of aviation. In order that the decisions of ALUCs be seen as both informed and impartial, it is important that their composition reflect the interests of the different stakeholders in the land use planning process. Caltrans should consider working with the state legislature to ensure that the composition of designated bodies when acting as ALUCs, and the regulations governing designated special cases, are broadly consistent with the intent of the requirements for single-purpose entities. One approach would be to require that when a designated body or other entity is serving as an ALUC, it should have at least two members that represent cities within its jurisdiction (designated by a committee of mayors as specified for single-purpose entities), at least two members that represent the county or counties within the jurisdiction (designated by the relevant board(s) of supervisors), at least two members with aviation expertise (designated by a committee of the managers of public airports within its jurisdiction), and one general public representative selected by the designated commissioners, or be augmented as necessary by additional members to meet these requirements. This would not preclude the existing members of the designated body being designated by the other parties to meet these requirements, but it would at least require some consultation and effort to satisfy the intent represented by the required composition of a single-purpose entity. It could certainly lead to a larger ALUC in the case of a designated body (which already may be much larger than a single-purpose entity ALUC), but that may be no bad thing to ensure that ALUC decisions take into account a broad set of interests.

7. *Caltrans Division of Aeronautics should review the guidelines contained in the California Airport Land Use Planning Handbook to ensure that they adequately reflect the changing context of airport land use planning and are based on sound technical analysis of community response to aircraft noise and the safety risks posed to both aircraft and those on the ground by land uses and development adjacent to airports.*

It is increasingly recognized that most airport compatibility problems are arising in areas not subject to development restrictions in existing ALUCPs. At the same time, the focus in current state law on preventing new incompatible development ignores the much larger problem at many airports in California of existing land uses in the vicinity of airports. The existing guidelines do not distinguish between changes in the pattern of development around airports and changes in aircraft activity. Many airports have recently experienced a reduction in aircraft noise impact contours due to the fortunate confluence of two factors: a

drop in traffic levels after 2001 and the required phase-out or retrofit of large Stage 2 aircraft by 2000. However, the prospects of further reduction in the extent of the noise contours are limited and as air traffic growth resumes, they are likely to once again increase in area. More important, there is ample evidence that the CNEL metric is a poor predictor of community attitudes in the current environment and that noise impacts outside the 65 dB CNEL contour are a major concern to many communities.

ALUCPs typically do not take advantage of the adjustments on aircraft noise compatibility that are allowed by the guidelines in the *California Airport Land Use Planning Handbook*, in part because of the lack of detailed guidance in the *Handbook* on how these adjustments should be applied or the technical basis on which to do so. At the same time, it makes little sense to apply the same criteria to infill development in a dense urban environment as to new development in a suburban setting. Yet the guidelines in the *Handbook* fail to recognize these important differences in context and discuss community attitudes to aircraft noise as if all communities are identical. Just as situations commonly exist where communities outside the 65 dB CNEL noise impact contour find the level of aircraft noise aggravating, it is also likely that in a dense urban environment, aircraft noise levels above 65 dB CNEL may be quite acceptable for some types of residential use.

There also is a need to review the existing guidelines on development density near airports and better tailor them to different contexts. While it makes good sense to attempt to maintain open areas under aircraft flight paths near airports where development has not yet occurred, it is completely unrealistic to try to apply the same criteria to existing built-up areas. If the safety compatibility zones defined in the *California Airport Land Use Handbook* are based on an analysis of the risk posed by an aircraft accident, then it is obvious that this risk must depend on the number and type of aircraft operations using the airport. Yet the examples given in the *Handbook* for the dimensions of the zones depend only on the length of the runway (in the case of general-aviation airports) or the type of aircraft activity (large air carriers or military use), and not on the actual probability of an accident occurring, much less the consequence of an accident should it occur (noting that risk is the product of probability and consequence). While the *Handbook* is clear that the dimensions shown are only examples and not standards or policy, it provides no guidance on how to select different dimensions if those shown are not used. This makes the guidance offered by the *Handbook* virtually useless.

Furthermore, the accident data on which the guidelines are based are open to two significant objections. The first is that the accident rates are based on historical data, in some cases well over 10 years old. There has been a significant reduction in aircraft accident rates over the past decade, so the implied probability of an accident must also have reduced, affecting the risk calculation. The second is that the analysis of accident locations does not distinguish between cases in which the pilot could have avoided an object on the ground, had there been one, and those where the pilot had no control over the location of the impact. Even if there is no difference between the distributions of the

accident locations in the two cases (an issue that is not addressed in the *Handbook*), at the very least it reduces the expected consequences of an accident and hence reduces the risk.

While it is clearly much simpler to apply a single set of dimensional criteria, this approach carries heavy costs for the communities involved in terms of foregone development opportunities in cases where the zones are too conservative, and may even lead to situations where communities are unnecessarily exposed to *higher* risk in cases where a proper risk analysis would conclude that the zones should be larger.

This has a significant impact on smart growth planning, since it may well restrict the type of development that can occur in areas under the departure and arrival flight paths near airports. If local communities are to be expected to restrict not just residential development, but other types of development as well (the compatibility criteria apply to the intensity of nonresidential as well as residential uses), then it is important to be able to demonstrate that the restrictions in the ALUCPs are based on a technically sound analysis of real risks involved. Since this is a highly specialized area, ALUCs will undoubtedly require additional guidance to that currently in the *Handbook* in order to properly assess the level of risk and define appropriate zones. This guidance will be needed in part to avoid a “lowest common-denominator effect,” in which opponents of airport activity might seek to impose the most restrictive standards for the community, even if inappropriate.

8. *Caltrans Division of Aeronautics should coordinate with other relevant state agencies, particularly the Department of Housing and Community Development and the Governor’s Office of Planning Research (OPR), to develop explicit guidelines that address smart growth planning in the vicinity of airports.*

These guidelines should address economic planning considerations and be incorporated in the *California Airport Land Use Planning Handbook* as well as referenced in any other state guidelines on smart growth planning or related issues. There is a clear need to move beyond a simple focus on preventing incompatible development around airports to one that actively promotes compatible development. Types of land use that benefit from close proximity to airports, and methods of encouraging such uses around airports, should be delineated in the guidelines. The guidelines should address the need to develop a proactive coordinated approach to meeting regional housing needs that recognizes the importance of constraints on locating housing in the vicinity of airports. The guidelines should encourage ALUCs to work with local jurisdictions to define broad land use development strategies before projects are proposed to locate housing close to airports.

9. *To ensure that the California Department of Transportation and the ALUCs within the state are basing their regulations, guidelines, and decisions on the best available information, Caltrans Division of Aeronautics should undertake an ongoing research program to better understand the issues that will need to be addressed to achieve effective airport land use planning in the state.*

The context of airport land use compatibility planning is changing. Trends in aircraft technology, including quieter engines, the increased use of regional jets for service to smaller communities, and the increased use of business jets, are changing the issues that

have to be addressed. The existing focus on land use within the 65 dB CNEL contour dates from a time when this was clearly the most serious issue to be faced. However, as noise impact contours have reduced and aircraft noise management and mitigation measures, including residential and school sound insulation programs, have reduced the exposure of existing uses to high interior levels of aircraft noise, the focus of community concerns has shifted. There is an urgent need for a better understanding of how community attitudes to aircraft noise vary with local conditions, including the type of development (urban, suburban, or rural), the type and frequency of aircraft operations, and the difference between the impacts created by growth of communities near airports and changes in the level or nature of airport activity.

Research is also needed to address aspects of the airport land use planning process, including efforts to identify and document “best practices” that can help ALUCs address such issues as effective coordination with local planning jurisdictions, the potential role and development of airport area specific plans, the monitoring of land use changes and community attitudes, and techniques for community outreach and information dissemination. Further research is required to identify professional development needs for ALUC staff and commissioners, and to help Caltrans better understand, monitor, and document the effectiveness of the existing airport land use planning process and the challenges and opportunities presented by the increased focus on smart growth in land use planning in California.

FINAL THOUGHTS

Effective airport land use planning will be an essential component of the future development of the California aviation system. Allowing incompatible land uses to develop around airports creates conflicts between the airports and the surrounding communities, constraining the ability of the airport system to meet future aviation needs and discouraging other communities from allowing airport development in their vicinity. As with the motivation to develop smart growth policies in general, there is an increasing recognition that land around airports is a limited resource and that continuing existing patterns of development is not sustainable in the long term. New solutions are needed to balance the interests of all involved.

New research aimed at redefining and refining airport-compatible land uses and the processes that lead to such land uses is needed. An equally important and even more urgent need is for improved channels of communication between airport and land use planners and managers. Open channels of communications “through the fence” will not only help address immediate issues; it will also ensure that future research findings will be disseminated and discussed, and ultimately implemented and improved in practice. The existing airport land use compatibility planning process in California provides a solid institutional foundation from which to address these issues, but the effectiveness of this process at influencing land use development around individual airports has varied widely. There is a need to strengthen the process and to determine how it can be made more effective. This will require an ongoing effort to study its

effectiveness and to better understand the circumstances in which it has worked well and those in which it has not.

APPENDIX A

CASE STUDY—SACRAMENTO INTERNATIONAL AIRPORT

Sacramento International Airport (SMF), Sacramento County	
Airport location	Sacramento County
Airport size	5,500 acres
Type of facility	Regularly scheduled passenger flights and general aviation
Level of airport activity	10.2 million passengers, 70,000 metric tons of cargo, 168,000 aircraft operations in 2005
Curfew	None, 24-hour operation
Most recent ALUCP	1994
Most recent <i>Airport Master Plan</i>	2007
Nearby cities (population 1/1/06)	Sacramento: 457,800
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Agriculture with encroaching residential development in northwest Sacramento • Conflicts with wildlife • A few minor noise conflicts have occurred
Major issues	Extensive residential development (as near as two miles from the airport) has increased the number of residents exposed to noise
Approaches to solving airport/community conflicts	<ul style="list-style-type: none"> • Land use planning based on “theoretic capacity” of airports • “No new residential” policy within 60 dB CNEL noise contours
Stakeholder groups	None
Integration with smart growth policies	<i>Natomas Joint Vision</i> and related general plan amendments appear to be aimed at producing smart growth that safeguards airport operations
ALUC agency	Sacramento Council of Governments (SACOG), MPO
ALUC staff contact name	Greg Chew
ALUC staff contact phone	(916) 340-6227
ALUC staff contact e-mail	gchew@sacog.org

INTRODUCTION

Sacramento International Airport is owned by Sacramento County and operated by a county department known as the Sacramento County Airport System (SCAS), which operates four other county airports as well. The SCAS is responsible for developing 20-year Airport Master Plans for the airports it controls.

Sacramento International Airport is fortunately located with respect to other land uses. It is only 12 miles from downtown Sacramento, yet from its opening in October 1967 until quite recently, the 5,500-acre airport has been surrounded by farmland. About half of the airport property is leased to farmers as a buffer between the airport and residential uses.⁷³

The airport was the first new major commercial airport west of the Mississippi built on a greenfield site since the opening of Kansas City Mid-Continent International Airport in 1956.

In its first year, a single terminal served five airlines and fewer than 1 million passengers, mostly to and from other California destinations. By 1990, 3.6 million passengers used the airport. In 1991, Southwest Airlines began service, and helped drive airport growth above anticipated levels. The 1990s were generally an era of fast growth for the entire region.⁷⁴

Sacramento International is one of the few airports where passenger numbers rebounded quickly after the September 2001 terror attacks. Together, Terminals A and B are designed to adequately serve 7.2 million passengers a year. In 2002 passenger totals hit 8.5 million, rising to 9.5 million in 2004 and 10.3 million in June 2006.

In June 2003, construction started on Sacramento International Airport's first parking garage. At one point following the 2001 terrorist attacks, the project was on hold with worries that it would have to be modified to meet increased airport security requirements against a violent attack.⁷⁵ Instead, the garage was expanded from five to six levels and opened in September 2004.

The economic impact of the airport has grown over time as well. A county study released in 2004 concluded that Sacramento International, together with two other airports operated by SCAS—Mather and Sacramento Executive—provided a \$2.4 billion annual economic infusion to the local economy, more than twice as much as in 1989. The three airports were credited with creating 18,600 airport-related jobs, an increase from 10,000 in 1989.⁷⁶

Figure 12 shows the Sacramento International Airport vicinity.

AIRPORT LAND USE PLANNING

Airport Master Plan

The last *Airport Master Plan*, for what was then known as Sacramento Metropolitan Airport, was adopted in 1976. A master plan update has been under way since the year 2000. According to the SCAS web site, the master plan process was interrupted by uncertainties about air traffic and security planning needs after the terrorist attacks of September 2001. A draft was completed and approved by the County Board of Supervisors in February 2004. The plan contains airfield, passenger terminal, landside, and access and circulation components to accommodate anticipated growth to 2020. Based on the forecast, demand is expected to grow to more than 16 million annual passengers by that year.

One of the most prominent elements of the *Sacramento International Airport Master Plan* is the addition of a third runway. Several alternatives were considered; the preferred alternative (Alternative 2, the Outboard West Runway) was selected based on environmental impacts, additional capacity for aircraft operations, and general cost effectiveness. The new runway, with a preliminary estimated cost of \$94 million, would be 1,200 feet from the airport's existing west runway and would give the airport enough capacity for the expected near-doubling in passenger traffic by 2020. The Sacramento Board of Supervisors had earlier

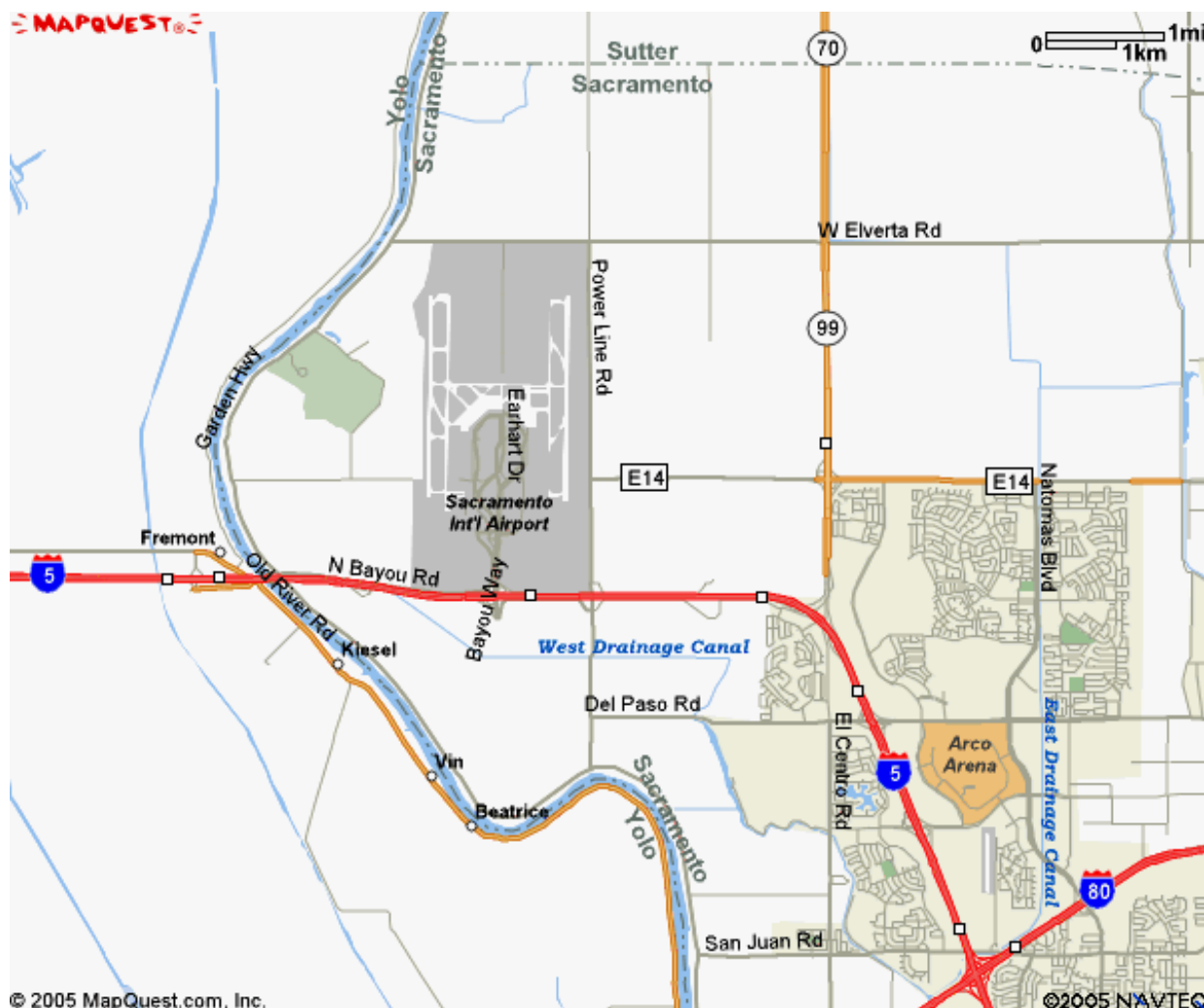


Figure 12 Sacramento International Airport Vicinity

Source: MapQuest.com, Inc., www.mapquest.com (November 2005).

eliminated an eastside runway from consideration; although it could have allowed a longer runway with more independence from existing runways, the county would have to pay substantially more for the land, which is part of a planned industrial office park, Metro Air Park (discussed beginning on [page 105](#)).⁷⁷

Other major improvements called for in the *Draft Master Plan* include:⁷⁸

- expansion of the east runway to 11,000 feet to handle larger planes and flights to Europe;
- adding a second parking garage and a larger hotel;
- extending Elkhorn Boulevard as a secondary vehicular access into the airport;
- building a light rail station at the airport as part of an extension of the regional light rail system to the airport.

Chapter 6 of the *Draft Master Plan* presents the terminal facilities requirements (terminal building, aircraft parking, terminal roadways, vehicle parking) and summarizes the evaluation of alternatives and selection of the preferred terminal concept.

To accommodate the forecast activity, current Transportation Security Administration (TSA) screening requirements, and level of customer service standards, the plan states:

1. The terminal building area will need to more than double in size from 620,000 square feet to 1,450,000 square feet.
2. The needed number of gates for commercial aircraft will nearly double, from 26 to 47–50 gates.

More than 30 terminal concept alternatives were evaluated, with detailed refinement and analysis of six alternatives. After evaluating the master plan, Alternative E2 (a centralized terminal concept, flanked by parking garages, with a people mover to facilitate access to passenger gates at the periphery) was selected as the preferred concept. Alternative E2 was chosen because it would provide the shortest average walking distance (ticketing counter to gates), ease in way-finding, and desirable roadway and curbside redundancy.

The master plan update process was completed in August 2007 with the approval of the *Final Master Plan* by the County Board of Supervisors, together with the certification of the Final Environmental Impact Report and adoption of the mitigation and monitoring program.

History of Land Use Issues in the Airport Vicinity

Noise

As noted in the introduction to this case study, Sacramento International Airport has been relatively isolated from residential and other urban development. However, in the early 1990s, three homeowners sued the county as owner of the airport, claiming increased flight activity had lowered the property values of their Garden Highway homes a few miles south of the airport. The county ended up buying the houses, reportedly for almost \$2 million, then demolishing them. Airport officials say they learned an important legal fact: even though the airport was there first, the airport can be sued if it expands or modifies its operations.⁷⁹

In summer 2001, residents in the new Sundance Lake subdivision in North Natomas were filing complaints about jet noise, even though its proximity to Sacramento International Airport and overflight of planes was clearly disclosed when they bought the houses. The complaints indicated the potential conflict as the airport and Natomas Basin continue to grow. Even though aircraft noise is within legally permissible limits, it generates complaints from some new residents.

The *California Airport Land Use Planning Handbook* recommends against residential land use in areas where aircraft noise levels exceed 65 dB CNEL.⁸⁰ Sacramento County has a more stringent standard around Sacramento International Airport, 60 dB CNEL.⁸¹ The Sundance Lake subdivision is somewhere in the 55–60 dB CNEL range.

In 2002, Sacramento City Planning Director Gary Stonehouse stated that housing developments under construction around El Centro and Del Paso Roads, about two miles east-southeast of Sacramento International's eastern runway, are about as close to the airport as the city wants houses to get. He stated that the city is committed to protecting the airport and its surrounding open space. Another new residential development near the airport is The Shores, a "village" in Sacramento City situated northwest of Del Paso and El Centro roads (west of Interstate 5 near Arco Arena), 5 miles from Sacramento International Airport. Approximately 6,000 homes and apartments were approved in 1998. Most are now built and occupied.⁸²

Despite concerns on the part of SCAS staff, Sacramento was moving forward in early 2006 with plans to develop high-density residential uses (the Greenbriar project) around a proposed light-rail station site just east of Metro Air Park, within the Airport Influence Area. The city indicated its intent to seek an override to the existing Comprehensive Land Use Plan (CLUP) to allow the development. While the project is outside the 60 dB CNEL, it is subject to military training overflights with single-event noise measurements in excess of 100 dB SEL.⁸³

Airport Comprehensive Land Use Plan

The Sacramento Area Council of Governments (SACOG) is the ALUC for all Sacramento County Airports: International, four general-aviation airports (Sacramento Executive, Rio Linda, Sunset Sky ranch, and Elk Grove), and two converted Air Force bases (McClellan Airport and Mather Airport). SACOG has also been designated the ALUC in the other member counties of Sutter, Yolo, and Yuba.

The Sacramento International Airport Comprehensive Land Use Plan—the legal keystone to implementing state and ALUC policies—has not been updated since 1994 and thus is outdated in many respects: it contains traffic forecasts only to the year 2000; that forecast was for 3.5 million passengers,⁸⁴ well under half of current traffic levels. A new Airport Land Use Compatibility Plan will be developed upon completion of the Airport Master Plan environmental review.⁸⁵

Through the master plan process, the SCAS is developing an intriguing and innovative approach to airport land use planning. Rather than using the standard 20-year forecast of growth, noise contours will be drawn based on what SCAS terms "theoretic capacity" of the airports that serve large jets. This capacity number—less than the FAA-defined Annual Service Volume, but more than the 20-year forecast—is intended to represent the maximum foreseeable traffic level at each airport, based on the relevant master plans. The "no new residential" policy within the 60 dB CNEL noise contours will be extended to all airports serving commercial passenger and cargo jets (International, Mather, and McClellan Airports).

Even more innovative is SCAS's plan to define Airport Planning Policy Areas (APPAs), which will apply to areas where aircraft weighing more than 75,000 pounds regularly operate less than 3,000 feet above ground level. Draft maps of these APPAs were distributed in 2005. The APPAs for Sacramento International, Mather, and McClellan Airports extend well beyond the

60 dB CNEL contour, averaging about 25 miles by 10 miles at their longest and widest points. The intent is to require disclosure and an aviation easement for any new residential development within the APPA. The APPAs must be adopted by SACOG before becoming ALUC policy.⁸⁶ However, the Sacramento County Board of Supervisors adopted the APPAs in April 2006, as they apply to land under the county jurisdiction.⁸⁷ Figure 13 shows the draft proposed APPA for Sacramento International Airport. While most of the APPA is open space at present, the APPA boundary includes much of the Natomas Joint Vision urban growth area (discussed below). Figure 14 shows the considerable area covered by the proposed APPA boundaries for the three airports.

Role of Surrounding Jurisdictions

Three jurisdictions are responsible for land use planning and permitting near Sacramento International Airport. As noted earlier, Sacramento County owns the airport and has jurisdiction over lands in the immediate vicinity of the airport. The City of Sacramento and Sutter County are the two other jurisdictions with close proximity to Sacramento International Airport. The Sacramento City boundary is approximately two miles east of the airport and the southern boundary of Sutter County is less than two miles from the northern end of the runways.

Sacramento City–County Joint Planning for the Natomas Basin

Sacramento International Airport is located in a currently rural area known as the Natomas Basin. Industrial development is being planned by Sacramento County east of the airport as a driver for economic development (see the Metro Air Park discussion on [page 105](#)). Planned residential development is encroaching into the area to the east of the airport from Sacramento to the south and from Sutter County to the north as well. The area north of the city limits is currently designated for agricultural uses in both the County and City General Plans ([Figure 15](#)).

After years of arguments over which jurisdiction would be better suited to plan and develop the Natomas Basin, city and county staff announced a proposal in summer 2002 that called for opening about 10,000 acres of Natomas farmland for development while preserving another 10,000 acres as permanent buffer along the Sacramento River and around Sacramento International Airport.

The plan called for the city to annex territory north of its current Elkhorn Road boundary for development of homes and businesses, while sharing tax revenues with the county. In turn, the county would buy land for a permanent greenbelt along the Sacramento River and the Sutter County line as a shield from urban encroachment. The county would use development fees to buy up parcels to hold as open space in perpetuity. The agreement called for one acre of open space to be set aside for every acre developed in that corner of the county.⁸⁸

In December 2002, Sacramento County supervisors approved the conceptual agreement with the city of Sacramento, but discarded a controversial map that designated specific parcels as

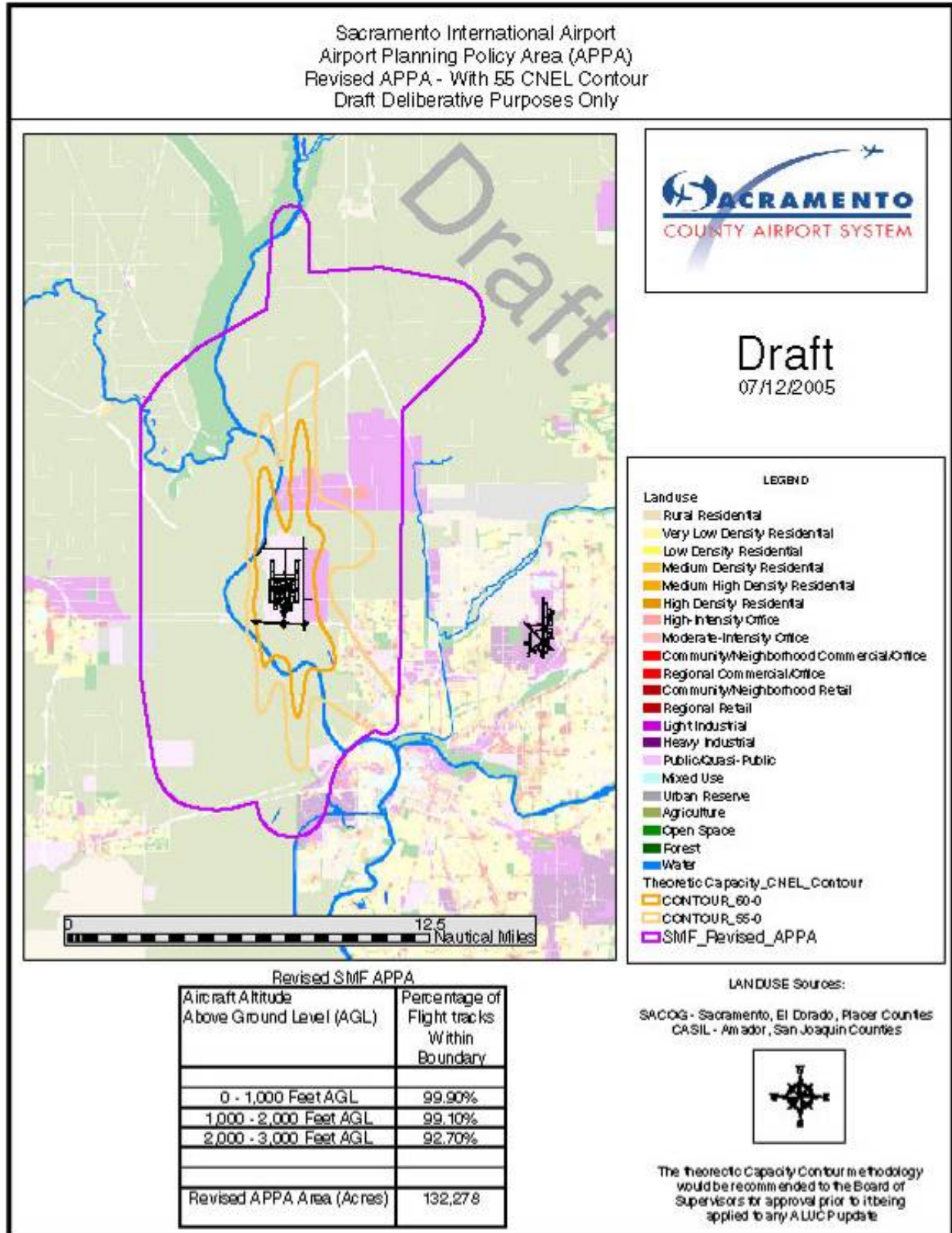


Figure 13 Draft Sacramento International Airport Planning Policy Area Map

Source: Sacramento Area Council of Governments, July 2005.

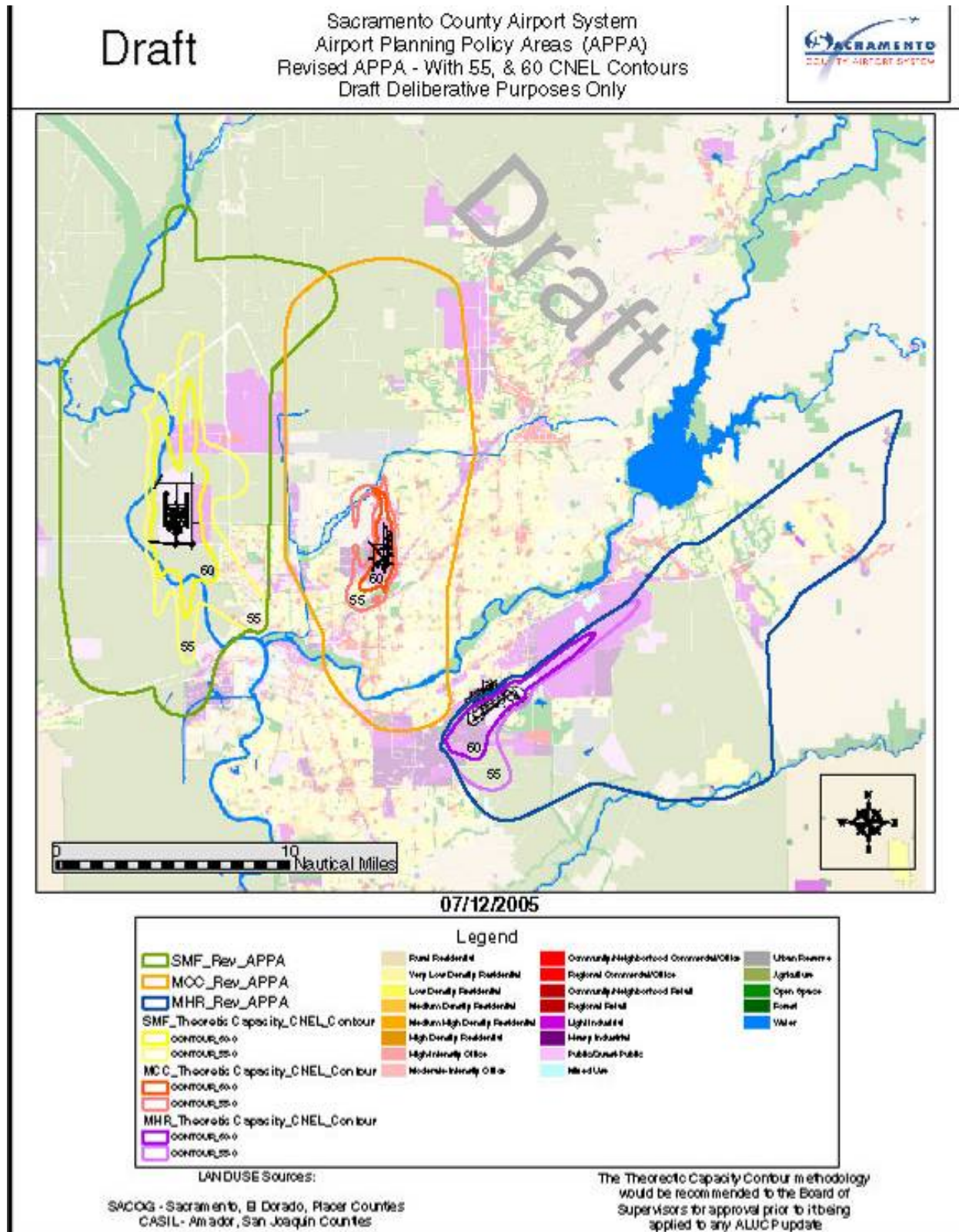
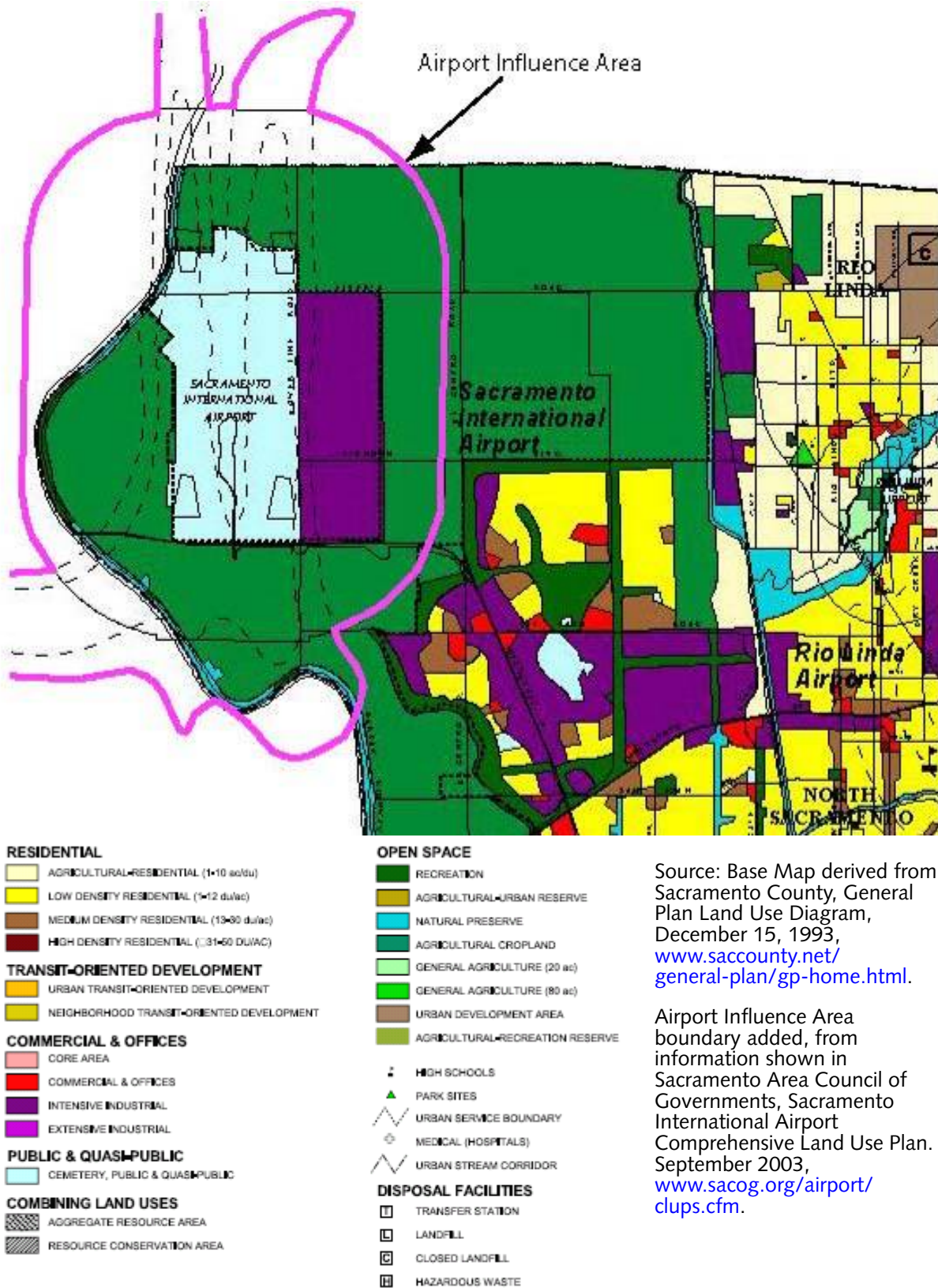


Figure 14 Draft Composite Regional Airport Planning Policy Area Map
 Source: Sacramento County Airport System, September, 2005



Source: Base Map derived from Sacramento County, General Plan Land Use Diagram, December 15, 1993, www.sacounty.net/general-plan/gp-home.html.

Airport Influence Area boundary added, from information shown in Sacramento Area Council of Governments, Sacramento International Airport Comprehensive Land Use Plan. September 2003, www.sacog.org/airport/clups.cfm.

Figure 15 1993 City General Plan and Airport Influence Area

open space. Besides discarding the map, the board eliminated a mile-wide no-development buffer zone paralleling the Sacramento River, generally along Lone Tree and El Centro roads.⁸⁹ In other words, the specific location of open space parcels will be determined as the plan is refined.

County Supervisor Roger Dickinson stated that the agreement accomplished the county's goal of protecting the airport from houses built in its flight path.⁹⁰ It also provides a buffer of open land between Sacramento County and a planned industrial park in southern Sutter County.

Sacramento City Manager Bob Thomas said the city-county agreement offers a well-defined plan for controlled development. Such a plan should help planners and policymakers resist the constant pressure for piecemeal project approvals from developers. However, most environmental groups oppose any development north of the current city limits, which was a no-growth district in the county's 1993 general plan.⁹¹

The Joint Vision planning area comprises approximately 25,000 acres located in unincorporated Natomas, as shown in [Figure 16](#). In September 2004, City Council consideration of certification of the Joint Vision FEIR and approval of the proposed amendments was anticipated to occur in the near future.⁹² However, the Joint Vision planning process was still underway in 2007.

The Notice of Preparation (NOP) for the Natomas Joint Vision EIR states the following:

The Sacramento City Council and the Sacramento County Board of Supervisors adopted principles regarding land use and revenue sharing asserted in the Memorandum of Understanding and Joint City and County Natomas Vision in December 2002. The County and the City have mutual policy and economic interests in accommodating limited long-term development while securing permanent preservation of open space within that area of the County known as Natomas. The area is currently designated Agriculture/Open Space in the Sacramento County General Plan and no new land uses are proposed at this time. The proposed policies are intended to promote agriculture viability, permanent open space and habitat conservation, Sacramento International Airport protection, and long-term development consistent with the city's Smart Growth principles.⁹³

City of Sacramento General Plan Amendment for the Natomas Joint Vision

The North Natomas area is planned to house 60,000 people, with build-out originally expected around 2030. However, by early 2006, thousands of homes had already been constructed along with a growing number of office developments.⁹⁴ The pending *City General Plan Amendment* for the Natomas Joint Vision project includes the following Guiding Policies.⁹⁵ These planning policies are established for the planning areas depicted on the proposed General Plan Amendment Map ([Figure 16](#)).

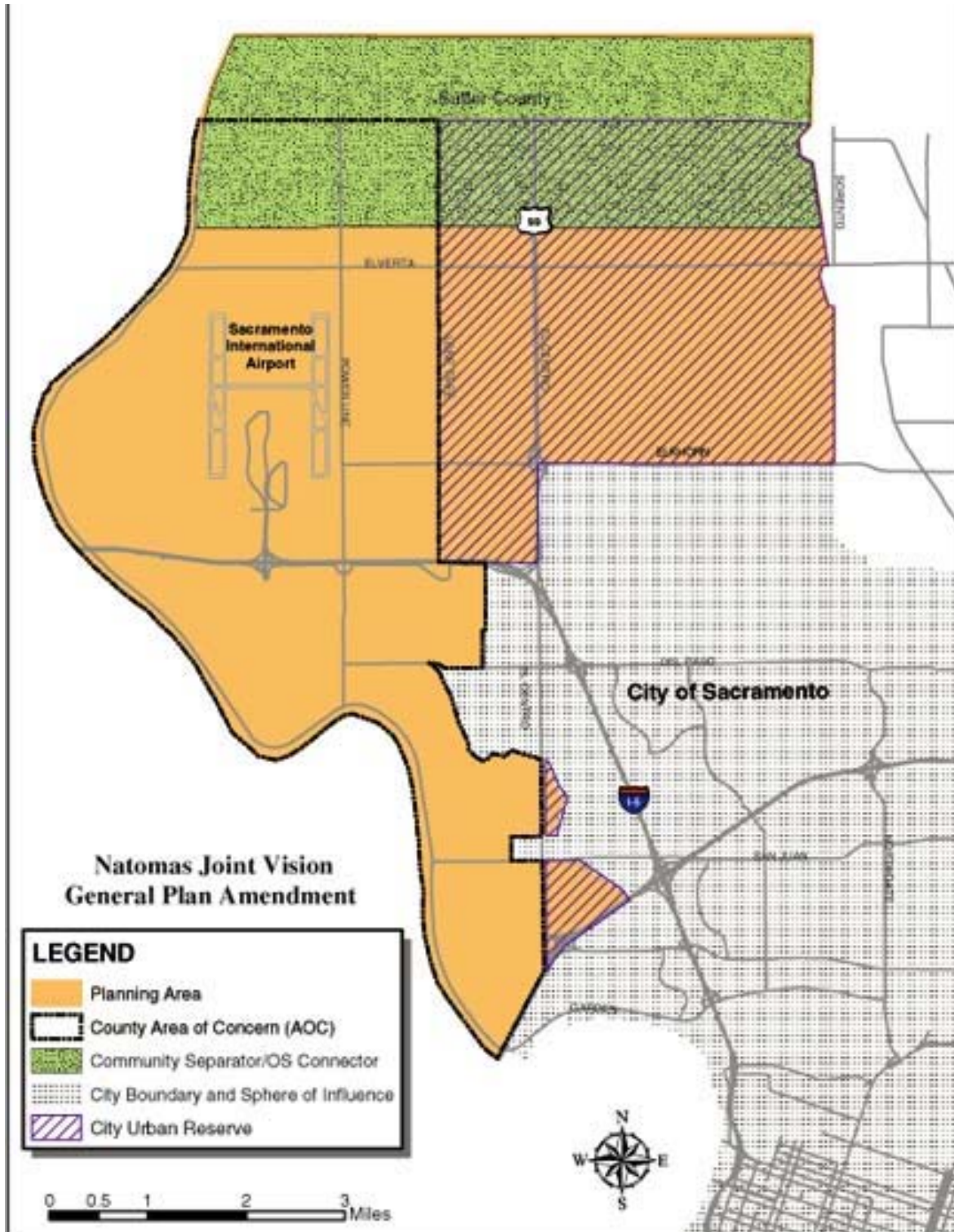


Figure 16 City of Sacramento Natomas Joint Vision

Source: City of Sacramento Planning Division, Natomas Joint Vision, "Exhibit A (Notice of Preparation of Environmental Document)," October 7, 2003, www.cityofsacramento.org/planning/longrange/natomas_vision/#maps (accessed March 28, 2005).

- a. The Planning Area includes land outside the city's boundary that bears relation to the city's planning activities and where interagency cooperation can resolve planning conflicts. The planning area covers the portion of the Natomas Basin in Sutter County adjacent to the county line and the unincorporated Natomas area of Sacramento County where the city has an interest in joint planning programs to address habitat conservation and open-space objectives.
- b. The Area of Concern is the area that requires active cooperation and coordination among the city, county, and other jurisdictions in those unincorporated areas that bear a direct relationship to the city's long-range planning efforts. The Area of Concern includes the open space/agricultural mitigation area for the Natomas Joint Vision.
- c. The Urban Reserve is the area outside of the city's Sphere of Influence in which future development and extension of municipal services are contemplated but not imminent.
- d. The Community Separator is the open space area used for creating community form and image, a sense of place, which provides clear separation between communities, defines the transition between urban and rural uses, and provides gateways that define entrances to the city. A Greenbelt is proposed north of Elverta Road separating Sutter County and the city's Urban Reserve area.

The NOP for the Natomas Joint Vision General Plan Amendment also calls for the city to work with the Local Agency Formation Commission (LAFCO) and Sacramento County, in phases, to revise the Sphere of Influence (SOI) to include the Urban Reserve to the east of Sacramento International Airport. The NOP Guiding Policies explicitly call for development to be consistent with smart growth principles. In particular, it states that permanent open space buffers will be used to delimit urban development and preserve sensitive habitat. Regarding urban form, the NOP calls for an integrated mix of land uses and includes compact development served by a balanced transportation system. Development is to be preceded by a comprehensive land use plan for the affected area. This comprehensive planning process is defined to include rezoning, infrastructure finance, adequate open space, and habitat preservation. These plan elements are typically covered by in a Specific Plan. The overall goal for the areas to be annexed is creation of a "whole and complete, mixed-use community."⁹⁶

Airport Protection Provisions

The NOP for the Natomas Joint Vision General Plan Amendment also contains four goals with supporting actions related to the protection of Sacramento International Airport:⁹⁷

- a. *Protect Future Airport Operations.* Plan land uses in Natomas in a manner that will protect Sacramento International Airport from complaints originating from encroaching uses that might eventually limit its operation or future expansion.
- b. *Coordinate Long-Range Land Use Planning.* The various affected jurisdictions will coordinate planning efforts to ensure the continued viable operations and expansion of Sacramento International Airport.

- c. *Maintain Airport Safety Related to Habitat.* Avoid compromising airplane safety when establishing open space by keeping waterfowl habitat at safe distances from the airport.
- d. *Implementation.* A multijurisdictional Airport Master Plan will protect the airport by preserving open space around it and keeping noise-sensitive development and waterfowl attractors in relatively distant areas. An emphasis on open space will also lend permanence to any buffers that are established.

Based on the NOP, the Natomas Joint Vision appears to be aimed at producing smart growth that safeguards airport operations. More detailed planning for the area has continued into 2007. In late 2005, Sacramento City Principal Planner Steve Peterson stated that the plan was taking longer than originally anticipated, and new workshops to further plan the city's Urban Reserve Area were scheduled for March 2006; however, these did not occur until April 2007.⁹⁸

Metro Air Park (Sacramento County)

In 2004, after years of planning, the 1,900-acre Metro Air Park just east of the airport appeared ready to go into development, with business facilities designed to provide jobs for approximately 38,000 people. Gerry N. Kamilos, project manager for the air park, told the *Sacramento Business Times* that the 20 million square feet of space will include 11 million square feet of light manufacturing space, five million square feet of office space, and four million square feet of research and development facilities. The park will be north of Elkhorn Road between Lone Tree Road on the east and Power Line Road on the west. Restaurants and approximately 955 hotel rooms are planned for development someday near Interstate 5, just south of Sacramento International Airport. A freeway interchange also is planned.⁹⁹ The land has been designated for industrial use since 1968. Planning for Metro Air Park as a mixed-use business park began in the 1980s.¹⁰⁰

County officials are interested in the fiscal windfall such a level of development would result in, since the county has seen its tax revenue drop sharply as previously unincorporated areas such as Elk Grove and Rancho Cordova have incorporated as cities. Metro Air Park and the redevelopment of the former McClellan Air Force Base into the McClellan Park business park will be important sources of revenue to support future government operations.¹⁰¹

In February 2004, the planned mixed-use business park cleared a major legal hurdle when U.S. District Judge David F. Levi tossed out an environmental challenge, ruling that the Habitat Conservation Plan adequately protects two threatened species, the giant garter snake and the Swainson's hawk.¹⁰²

In September 2005, a tentative deal was reportedly in the works in which Chinese buyers would purchase the still unbuilt Metro Air Park in North Natomas for more than \$900 million.¹⁰³ A trade center showcasing Chinese goods would anchor the air park, and airport access to both International and McClellan Airports was reportedly a primary attraction.¹⁰⁴ In July 2006, it was reported that the deal was officially dead.¹⁰⁵

Sutter County Development Plans

For more than a decade, development proposals have been made on large parcels of land in Sutter County that are within a few miles of Sacramento International Airport. Environmental concerns have stopped previous plans in the area. Voters turned down a Sutter Bay “new town” proposal in the early 1990s.¹⁰⁶

In May 2003, the city of Sacramento and Sutter County completed a Habitat Conservation Plan to protect the Natomas basin’s endangered species.¹⁰⁷ This plan enabled developers in south Sutter County to proceed with some ambitious plans. According to Bob Shattuck, a spokesman for Lennar Communities, the south Sutter land holdings of his firm and two other developers combined, could hold the following:¹⁰⁸

- 17,500 homes on 2,900 acres. By comparison, the city of Sacramento’s 9,038-acre North Natomas community plan (discussed above) allows approximately 33,000 homes on 3,160 acres.
- Approximately 70 million square feet of warehousing, high-tech space, along with a small amount of office space on 3,600 acres. By comparison, North Natomas is designated for 17 million square feet of office and high-tech space, and Metro Air Park, just east of the airport, is zoned for 20 million square feet of industrial and office space.
- Support services such as stores, schools, libraries, conference facilities, roads, and parks, on 1,000 acres.
- Potentially 70,000 jobs in the commercial space.

In response to requests from developers, the Sutter County Board of Supervisors placed an advisory measure on the November 2004 ballot. The ballot language asked whether voters would approve planning for development if the area included at least 3,600 acres of industrial and business parks; at least 1,000 acres for schools, parks, “retail areas and other community facilities”; and no more than 2,900 acres for housing, for an estimated population of 39,000 people.¹⁰⁹

Despite opposition and lawsuit threats from the Sierra Club’s Motherlode Chapter, the Environmental Council of Sacramento, and Friends of the Swainson’s Hawk,¹¹⁰ on November 2, 2004, Measure M was approved with 59 percent of the voters voting for the measure. On August 30, 2005, the Board of Supervisors held a study session with the Measure M developer group, at which plans for development of the Measure M area consistent with the list of land uses described above were presented. Generally, the Sutter development plans would place industrial development in the areas closest to the airport.¹¹¹

According to Sutter County Senior Planner Doug Libby, until a site plan was presented with a General Plan Amendment application, it would be premature to enter discussions with SACOG in its capacity as the ALUC. Such discussions were expected to occur in the subsequent months, as specific development plans were presented, reviewed, and refined.¹¹³ The Measure M Group submitted a General Plan Amendment application in January 2006 that was accepted by the County Board of Supervisors later than month and a Spcific Plan

application for a development called *Sutter Pointe* in July 2006. County staff reviewed the proposed *Sutter Pointe Specific Plan* and issued a Notice of Preparation for a Draft Environmental Impact Report in March 2007.¹¹³

POTENTIAL ROLE AND IMPACT OF SMART GROWTH

Smart growth practices such as high-density, mixed-use, and transit-oriented development is integral to the large-scale planning in both Sacramento city and county that will govern the development approaching Sacramento International from the south and east. These plans include provisions to protect Sacramento International.

Questions remain: Will the densities and balanced land use mixture of these long-range (and not fully articulated) plans be maintained? Will the Airport Influence Area remain uncompromised? Many smart growth advocates would argue that a high-capacity rail (or other high-capacity transit) line could provide a focal point and incentive for smart growth implementation. A strong regional plan can also enhance the realization of smart growth planning. In both regards, the prospects for smart growth around Sacramento International Airport appear promising.

Even so, there may be conflicts, as was noted in the “Noise” section on [page 96](#) regarding the Greenbriar development just east of Metro Air Park. Here the city plans to encourage the development of high-density residential uses around a proposed rail station that is within the Airport Influence Area. The city was planning to seek to override the existing CLUP to allow the development, despite the objections of SCAS staff.

Airport Transportation Projects: Potential Catalysts for Smart Growth

In July 1997, YoloBus #42—the first public bus line linking Sacramento International Airport to both downtown Sacramento and Davis—began as a two-year experiment. Civic leaders and transit officials hailed the long-awaited launch after more than two decades of studies and debate. For planners, the two-county, four-city service is proof that critical issues such as traffic and air quality can be successfully addressed with a regional approach. Until Route 42’s debut, Sacramento International Airport was the last major airport in the state without a public transit link. Two buses leave the airport every hour. One makes a 13-stop loop through downtown Sacramento, West Sacramento, Davis, and Woodland, and then returns to the airport; the other goes in the opposite direction. Service is offered from about 5 a.m. to 10 p.m.¹¹⁴

After just six months of service, ridership of the YoloBus to Sacramento International Airport had grown beyond what even the most optimistic supporters predicted. In August, the route’s first full month of service, 2,781 people rode it just to the airport; transportation planners had not expected 2,700 riders until at least the new service’s seventh month of operation.¹¹⁵

In July 2000, SACOG board members approved a plan that would bring light-rail service to Sacramento International Airport. The plan calls for expanding the Sacramento Regional

Transit District (RT) light-rail line 11.7 miles from downtown Sacramento, through the rapidly growing Natomas area that is already within Sacramento's city limits, and finally to the airport. Preliminary plans called for 12 stops at a total cost of \$430 million. Before the line is built, however, RT must secure funding, select a precise route, and purchase the right-of-way between downtown and the airport. The growth north of Sacramento and increased bus ridership to the airport pushed the route to the top of SACOG's list of potential projects. Yolobus transported 47,179 riders in May 2000, a 30 percent increase from May 1998.¹¹⁶

In December 2003, the Sacramento Regional Transit District Board of Directors selected a locally preferred alternative (LPA) for the Downtown-Natomas-Airport (DNA) Corridor that uses Truxel Road as the preferred alignment and light-rail transit (LRT) as the preferred technology. The selection of the LPA was followed by the preparation and public circulation of a *Draft Environmental Impact Statement and Report* (EIS/R), leading to the next phases of the federal funding process: preliminary engineering and final design. Environmental studies were expected to take two years, and construction was expected to take another three years. In early 2004, RT officials hoped trains would start running on the DNA line by 2012.¹¹⁷ The Draft EIS/R was submitted to the Federal Transit Administration in September 2006 with the expectation that it would be released for public review and comment in June 2007. However, as of September 2007, this had not occurred.

Mike Wiley, assistant general manager for transit systems development at Sacramento Regional Transit, has noted that the light-rail line to Sacramento International Airport would include service to the fast-growing Natomas area, and that developers are setting aside money to help pay for stations integral to the subdivision's design. The 12-mile airport line would start at the downtown transportation center and include crossings over the American River, Interstate 80, and Highway 99.¹¹⁸

As stated on the DNA project web site,¹¹⁹ the *Downtown/Natomas/Airport Alternative Analysis* and *Draft Environmental Impact Report and Study* are based on goals and objectives that will

- improve corridor mobility
- promote patterns of smart growth
- find cost-effective solutions for transportation problems in the corridor
- minimize community and environmental impacts
- provide solutions that are consistent with other planning efforts
- have strong community support

Community support is generally considered strong: voters passed a bond issue in November 2004 that funds a preliminary spending plan that includes money to help build the first phase of a light-rail line from downtown to Sacramento International Airport. (Sacramento Regional Transit General Manager Beverly Scott has expressed concerns that it does not provide RT with money to run the new line).¹²⁰ Figure 17 shows the locally preferred proposed alternative for the DNA line.

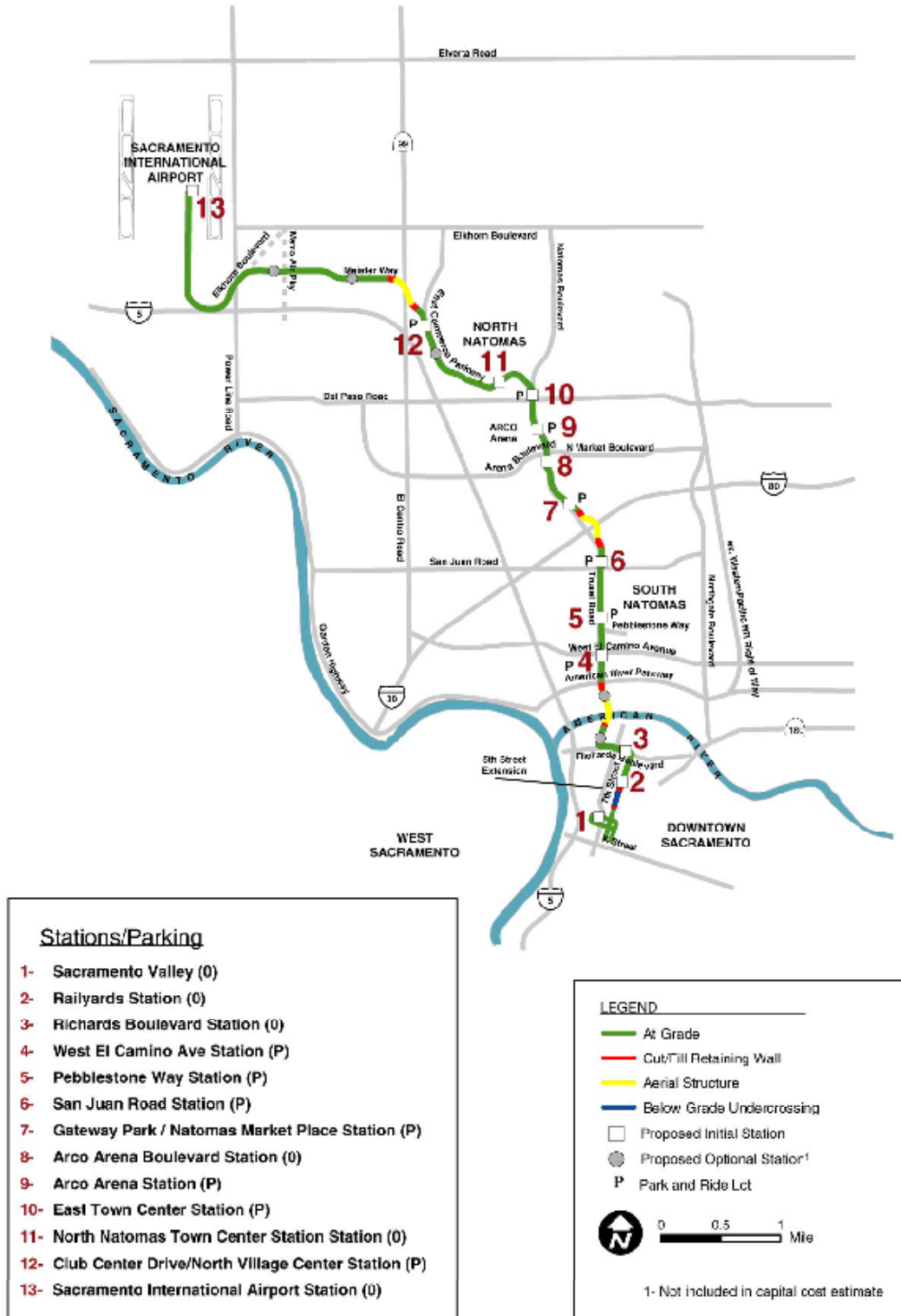


Figure 17 Locally Preferred Alternative for the Downtown Natomas Airport Line

Source: Sacramento Regional Transit Expansion Projects, www.dnart.org/lpa (accessed September 24, 2005).

The extension of the light-rail line to the airport will provide focal points that the city intends to develop as nodes of higher density, mixed use—that is, smart growth. The expansion of high-quality, high-capacity transit in the corridor improves the prospects for smart growth projects that are complementary to Sacramento International Airport in that they will focus higher-density development away from the immediate airport environs. Experience to date (and the SCAS's APPA boundaries) suggest that there may still be noise complaints from some of the tens of thousands of residents of the Natomas Basin. In this case, smart growth may still provide a benefit; it is possible that residents of higher-density and mixed-use projects may be less disturbed by aircraft noise compared to residents of lower-density residential-only subdivisions.

Sacramento Blueprint Project

The *Sacramento Region Blueprint* is a three-year growth-visioning study designed to illustrate the effects of land use decisions on the region's transportation and air-quality problems. Failure to meet federal air quality standards could mean losing federal transportation funding. SACOG and its civic partner, Valley Vision, jointly led the *Blueprint* study. The study was built upon a set of seven smart growth principles:

1. Housing choice and diversity
2. Use of existing assets (reinvestment in existing buildings and infrastructure)
3. Compact development
4. Natural resources conservation
5. Design for quality (design factors influencing the attractiveness of living in a compact development and facilitating bicycle or pedestrian access to neighborhood services)
6. Mixed-use developments
7. Providing transportation choices

The *Blueprint* process included dozens of community meetings held in all parts of the region, plus two regionwide forums that brought together residents, community and business leaders, elected officials, environmental groups, and developers. Interactive computer models used at the meetings showed participants what the region might look like in 2050 under four different growth scenarios.

The SACOG Board of Directors adopted a Preferred Blueprint Scenario in December 2004. The Preferred Scenario promotes compact, mixed-use development and more transit choices as an alternative to a Base Case Scenario, which models a continuation of current low-density growth patterns. A series of maps and models illustrate how the preferred scenario achieves better performance than the base case, using criteria based on smart-growth principles.

The Preferred Blueprint Scenario is the basis of SACOG's *2006 Metropolitan Transportation Plan*, the long-range transportation plan for the six-county region that channels federal and state transportation spending. SACOG is also developing a *Blueprint*-based land use map in collaboration with local jurisdictions for use in developing the draft metropolitan

transportation plan for 2035 that was scheduled to be released in late 2007. The *Blueprint* is intended to serve as a framework to guide local government land use and transportation planning through 2050. However, the *Blueprint* does not take freight transportation into account.¹²¹

To implement the *Blueprint* framework, SACOG plans to do the following:

- provide incentives for capital and planning projects consistent with the *Blueprint*
- provide technical assistance to local communities and developers
- develop model codes, street design guidelines, tutorials for using the modeling software developed as part of the study, and other best planning and development practices
- develop a benchmarking system for tracking the region's growth pattern

As shown in Table 3, the *Blueprint's* preferred alternative for the Airport-Airpark and North Natomas planning areas indicates a substantial reduction in housing for the former area (closer to the airport), and a substantial increase in housing in the latter (further from the airport) compared to the Base Case Scenario.

Table 3 Comparison of Base Case vs. Blueprint Preferred Scenario

	Base Case	Draft Preferred Blueprint Scenario
Airport-Airpark		
Growth in Jobs: 2000-2050	22,582	18,345
Growth in Housing Units: 2000-2050	5,087	14
North Natomas		
Growth in Jobs: 2000-2050	10,846	8,868
Growth in Housing Units: 2000-2050	25,858	41,437

Source: www.sacregionblueprint.org/sacregionblueprint/the_project/discussion_draft_preferred_scenario.cfm.

EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS

The Sacramento region represents an ideal institutional arrangement from the perspective of airport land use planning, with a single agency (the county) owning and managing the major airports in the region as a system, and the ALUC duties handled by the regional planning agency, the Sacramento Area Council of Governments, which has responsibilities for both comprehensive transportation planning and comprehensive land use planning coordination. As of 2007, the ALUC is in the process of revising the CLUP, which will go beyond the minimum requirements in that it will consider airport activity levels at build-out of each airport and examine impacts beyond the 65 dB CNEL contour.

According to the ALUC planner, SACOG's *Blueprint* process offers a tool to better model trade-offs between smart growth goals and airport protection. The SCAS policy of planning for theoretic capacity, the maximum foreseeable traffic level at each airport based on the relevant

Master Plans, is worthy of emulation, as is their designation of Airport Planning Policy Areas (APPA), defined by locations where aircraft regularly operate under 3,000 feet above ground level, although this amounts to a large proportion of the region. Real estate disclosure requirements and requiring aviation agreements for residential development over such a large area might dilute potential negative associations with such disclosures and agreements.

According to the *City and County Natomas Joint Vision Plan*, virtually all new homes will be outside the 60 dB CNEL contour, but based on prior experience some will be close enough to be affected by, and to result in complaints about, airport noise.

The extension of Sacramento's light rail system to Sacramento International Airport within a decade will create nodes for transit oriented development, focal points that are intended to help ensure the realization of smart-growth policies in the North Natomas area. Although the planned light-rail line will mainly serve areas within the city of Sacramento now, it will create a transit spine that can be extended to elsewhere in the Natomas Basin. Potential transit nodes will likely be zoned for higher density and mixed use. Such nodes will accommodate more development per acre, which may help relieve development pressure on parcels closer to the airport. On the other hand, it may just allow more development overall.

SUMMARY

Since its founding in 1967, Sacramento International Airport has been well protected by its 5,500 acres and agricultural buffers. It now faces unprecedented new challenges as tens of thousands of homes and jobs begin to develop in the surrounding area in a few years time.

Both Sacramento city and county have adopted smart-growth policies that respect the CLUP. Planned development around Sacramento International Airport appears fundamentally sound, featuring airport-related employment nearby, with housing at a suitable distance. It should be noted that as of 2007 the nature of the major employment center, Metro Air Park to the east of the airport, was still somewhat fluid, and is likely to remain so until some major tenants are signed.

The *Sacramento Blueprint Project*—which explicitly aims to do regional smart-growth planning—represents a potentially promising approach for trading off impacts of overflight (and the positive and negative externalities of airports in general) with other community, economic, and environmental factors and values. The *Blueprint* process has included dozens of community meetings in all parts of the region, plus two regionwide forums that brought together residents, community and business leaders, elected officials, environmental groups, and developers. Interactive computer models are used at the meetings to show participants in real time the impacts of different growth scenarios.

The *Blueprint* planning process may be useful in resolving issues as the city of Sacramento, Sacramento County, and Sutter County implement their large-scale plans. Unbuilt areas, planned for urbanization, still surround Sacramento International Airport. Although the

county's plans for an airport-oriented business center at Metro Air Park and the city and county's Natomas Joint Vision plans are promising, they are still evolving. As of mid-2007, the former is still without major tenants, and detailed planning for the latter will not occur until the General Plan Amendment is completed, which was still some time off. Smart-growth planning that acknowledges the importance of the airport appears, on paper, to accommodate substantial growth while keeping residential development beyond the 60 dB CNEL contour. Strong regional planning initiatives, exemplified by the *Blueprint* process, and near-term plans to extend the regional light rail system to the airport, increase the prospects for smart growth plans to be realized. The airport vicinity is entering a period of significant growth from three neighboring jurisdictions. The efficacy and robustness of the planning for Sacramento International Airport's surroundings will soon be tested.

APPENDIX B

CASE STUDY—MATHER AIRPORT

Mather Airport (MHR), Sacramento County

Airport location	Sacramento County
Airport size	2,875 acres
Type of facility	Cargo and general aviation, no scheduled passenger flights
Level of airport activity	59,000 metric tons of cargo, 86,000 aircraft operations (16,000 by cargo aircraft) in 2005
Curfew	None, 24-hour operation
Most recent ALUCP	1997
Most recent <i>Airport Master Plan</i>	<ul style="list-style-type: none"> • Draft completed February 2004, work on the environmental review resumed in June 2007 • Will be first <i>Master Plan</i> since military base conversion
Nearby cities (population 1/1/06)	Rancho Cordova: 56,400; Folsom: 69,500; El Dorado Hills (unincorporated): 35,300
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Residential, office, and industrial uses in Rancho Cordova have not caused much conflict • Residents in nearby Folsom and El Dorado Hills (at a higher elevation) are most affected by noise and make many complaints
Major issues	<ul style="list-style-type: none"> • Extensive residential development has increased the number of residents exposed to noise since 1995 • City of Folsom is threatening legal action if nighttime flights are not limited • Areas near the airport are developing quickly with a variety of uses
Approaches to solving airport/community conflicts	<ul style="list-style-type: none"> • Land use planning based on “theoretic capacity” of airports • “No new residential” policy within 60 dB CNEL noise contours • Encouragement of use of instrument approach for night operations to reduce noise impacts
Stakeholder groups	Mather Airport Aircraft Overflight Noise Group
Integration with smart growth policies	<ul style="list-style-type: none"> • Rancho Cordova is attempting to implement smart growth policies to curb further sprawl and create a walking, biking, and transit-friendly environment • In particular, connecting residential to commercial uses and to the airport, and connecting to transit are seen as big challenges
ALUC agency	Sacramento Council of Governments (SACOG), MPO
ALUC staff contact name	Greg Chew
ALUC staff contact phone	(916) 340-6227
ALUC staff contact e-mail	gchew@sacog.org

INTRODUCTION

Mather Airport is located approximately 12 miles east of downtown Sacramento in unincorporated Sacramento County, as shown on [Figure 18](#). Mather Air Force Base closed in the fall of 1993. On March 28, 1995, the Air Force and Sacramento County signed a lease agreement, enabling commercial development of the 2,875-acre airport under county

auspices. Mather Airport was reopened in May 1995 as a civilian airport. Since then, air cargo operations have grown steadily. The airport generated \$143 million in business sales in 1999, and 1,300 jobs were created in its first five years.¹²²

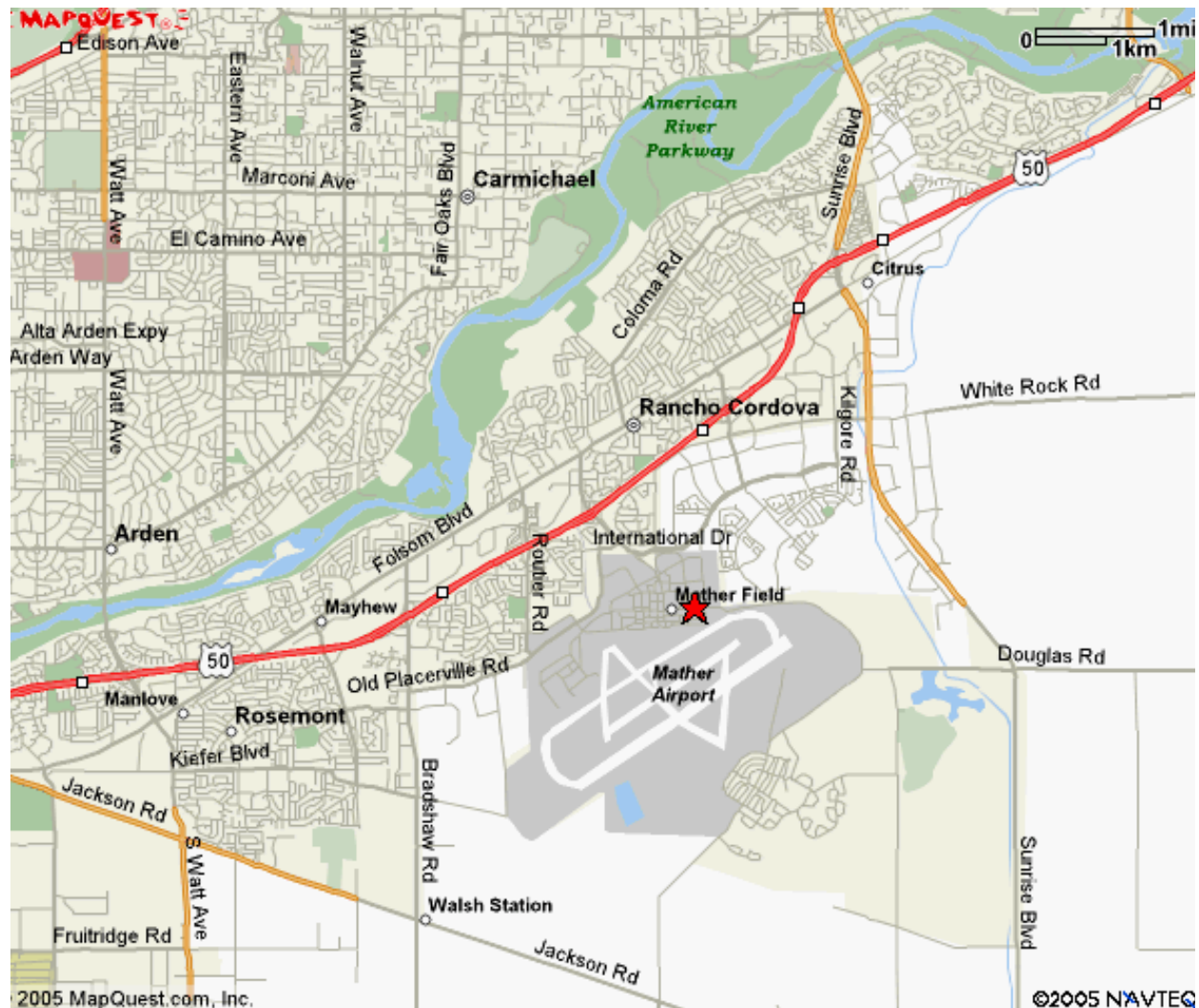


Figure 18 Mather Airport Vicinity

Source: MapQuest.com, Inc., www.mapquest.com (November 12, 2005).

Thus, Mather is an important economic asset for Sacramento County, which operates the facility. Mather is attractive to air cargo carriers because it offers plentiful space for the construction of new facilities. The airport also offers a full-service fixed-base operator (FBO), 24-hour air traffic control, and one of the longest runways in California: 11,300 feet long and capable of handling fully loaded wide-body aircraft.

A 24-hour-a-day control tower began operating at Mather Airport in July 2000. (The Air Force control tower at Mather Airport was retired with the base.) At the time, there were about 50,000 operations a year at Mather. The control tower and subsequent air traffic control improvements allow for procedures and regulations to better deal with flight levels, approaches, and departures of concern to residents in the area.¹²³

Sacramento County's website in September 2005 reported that various buildings at Mather Airport were available for lease, including 31,217 square feet of office space; 26,600 square feet of hangar/shop/office space; 81,000 square feet of warehouse space; and a 17,600-square-foot rampside air cargo sort facility. The website also reported that more than 200 acres of land were available for new construction at the airport. The county was actively seeking new carriers and landside businesses for Mather.¹²⁴

The Sacramento Area Council of Governments (SACOG) has been designated the ALUC for Mather as well as other Sacramento County Airports, which include Sacramento International, Sacramento Executive, Rio Linda, Sunset Skyranch, and Elk Grove Airports, and another converted Air Force base, McClellan Airport. SACOG has also been designated the ALUC in other member counties of Sutter, Yolo, and Yuba.

AIRPORT LAND USE PLANNING

Mather Air Force Base had a 60,000-acre buffer zone between the airfield and residential development; the county has reduced the buffer zone to 12,000 acres.¹²⁵ The vast acreage of the former base serves many purposes, and its users have different perspectives on and visions for its future. From an environmental standpoint, the former base contains numerous vernal pools vital to the life cycle of many plants and animals. Potential residents of the new subdivisions on and near the former base value the area's relatively affordable housing and its proximity to booming job centers along the Highway 50 corridor. However, land use conflicts are developing as Mather and its environs grow.¹²⁶

Environmentalists criticize the county for considering development—including a new runway—that could harm the vernal pools. The Caltrans Division of Aeronautics opposed several school sites inside Zinfandel Village, a new subdivision next to Mather; however, the school district ultimately was granted a site. Caltrans also has warned that any expansion at the airport could jeopardize the safety of the Sacramento City Unified School District's new Rosemont High School, which opened in September 2004. Finally and most notably, the conversion and expansion of the airport has created controversy over noise.

Residents to the east have complained frequently and vigorously about noise from aircraft.¹²⁷ Most complaints have come from those on the approach path for cargo jets landing at night. Many complaints originate in El Dorado Hills and Folsom, more than 5 miles away; many residents moved into their homes during the years Mather sat relatively idle. In an ironic contrast, residents of subdivisions directly adjacent to the airport (for example, Independence at Mather and Zinfandel Village) seem to accept the planes.¹²⁸

Airport Master Plan

In February 2004, the Sacramento County Board of Supervisors adopted a draft Airport Master Plan that included lengthening the secondary runway, currently useful only to general aviation, from 6,040 feet to no more than 7,200 feet. County airport officials wanted an option

to extend the runway to 8,500-feet in the future. The expansion of the secondary runway would be used as backup for cargo planes if the main landing strip were unavailable because of an emergency or repairs.

According to Rob Leonard, assistant director of the Sacramento County Airport System, the backup runway is not required to serve expected demand, nor is it intended to increase capacity. The Master Plan forecasts that air cargo flights will increase from the estimated 2003 level of 4,158 to 10,600 (base forecast) to possibly 15,300 (high forecast) per year.¹²⁹ The environmental review on the plan was still incomplete in late 2005, in part because of a threatened lawsuit by nearby Folsom over noise issues.¹³⁰

Folsom's mayor and other critics of the runway expansion believed that it would create more cargo capacity at the airport that would likely be filled. At the public hearings on the Master Plan, more than 20 individuals argued that noise from large cargo planes should be reduced before the second runway is expanded. Noise is being addressed in the environmental analysis.¹³¹ Work on the environmental review resumed in June 2007.

History of Land Use Issues Around Mather Airport

Mather Airport's redevelopment has been led by the county of Sacramento, which retains jurisdiction over the airport grounds. It is also adjacent to the city of Rancho Cordova, incorporated in June 2003, and rapidly growing. The general plans of these two jurisdictions are discussed beginning on [page 126](#). This section discusses individual projects, specific plans, and area plans, all of which began under county auspices, although many may ultimately be developed under the jurisdiction of Rancho Cordova.

Even before its incorporation, Rancho Cordova was one of three major employment centers in the region (Downtown Sacramento and Roseville are the others). In the 1950s, Mather Air Force Base and the nearby rocket engine testing and manufacturing facility of the Aerojet Company changed Rancho Cordova from a farming community to an industrial suburb. About 65,000 people work in Rancho Cordova, giving it about 10,000 more jobs than residents.¹³²

Employment Projects Near Mather

In late 1999, Sacramento County used \$8 million in federal grant money to transform the part of the base that has been renamed the Mather Commerce Center from a military base appearance to that of a traditional business park. More than 20 buildings were razed to accommodate the change.¹³³

In August 2002, Sutter Health announced plans to employ about 450 employees at a new complex at Mather Airport. Sutter signed a 10-year lease for a 95,597-square-foot building developed by Jackson Properties, Inc., on Schriever Avenue at the old Air Force base. Sutter already had 600 employees, in about 86,000 square feet next door in the renovated base commissary. The developer who worked with Sutter planned to develop another 240,000 square feet of office space for other tenants across the street.¹³⁴

In late 2003, work began on a new 95,000-square-foot office complex near the entrance of the former Air Force base. Preliminary work was under way for a retail complex to house several small restaurants in the same area. Mather, which already had about 500,000 square feet of government and private sector tenants, was adding 74,000 square feet in August 2003 when the Sacramento County Office of Education occupied its new high-tech building there. In addition, three local developers were in escrow to buy several large parcels at the park for future office projects.¹³⁵

In June 2003, the Sacramento Veterans Administration Medical Center at Mather Field opened a 133,000-square-foot building. The U.S. Department of Veterans Affairs had already taken ownership of Mather Community Hospital in July 1998 and opened the first in-patient tower in February 1999. The new tower's 16,000 square feet of research laboratories are jointly operated with the University of California, Davis.¹³⁶

Residential Development Near Mather

After taking over the base in 1995, Sacramento County pursued residential development plans for parts of the base. Independence at Mather is a major public-private project in which 1,271 military housing units were demolished, to be replaced with a similar number of new homes by the end of 2005. Seven years were required for the federal government, Sacramento County, and the Sacramento Housing and Redevelopment Agency (SHRA) to develop the project. Officials initially planned to refurbish the cluster of frame homes, but it became apparent the houses could not be saved. SHRA negotiated a commitment from the housing developer Kaufman & Broad that 33 percent (383) of Mather's new homes would be sold to low- and moderate-income families and individuals.¹³⁷ Two schools that operated on the site, Mather Heights Elementary and Kitty Hawk, were subsequently closed.¹³⁸

Sacramento County Supervisors gave preliminary approval in April 2000 to the Villages at Zinfandel, a subdivision just outside the base's borders. At that time, County Supervisor Illa Collin said the need for a second runway or a longer runway was not raised during the original discussions about whether Mather should be used as a cargo airport. "We promised all the people around Mather that we would operate a constrained airport," Collin said. "They bought into the idea of keeping Mather as an airport based on the promises of the Board that we would support upscale housing and new schools."¹³⁹ The Zinfandel project, being built by Elliott Homes, Inc., is seen as an important addition to Rancho Cordova's housing market, particularly for move-up buyers, looking to move to larger homes near their jobs along the U.S. 50 corridor.¹⁴⁰

The supervisors' 4–1 vote in favor of the Zinfandel project came after Elliott Homes agreed not to build in the southern part of the mixed-use (housing, office, and retail) development near Mather for 18 months while the county considered expanding the general-aviation runway as a backup to the main runway, which is used by cargo planes. The board's action allowed Elliott to begin building 587 single-family homes in three "villages" in the 823-acre

community, which was planned to include a mix of residential, office, retail, and recreation spaces.

Elliott agreed to delay development of 92 acres, including 192 single-family homes, 153 apartments and almost 500,000 square feet of retail and office space. The idle area would lie within the approach and departure zone of Mather's general aviation runway if the 6,040-foot airstrip were upgraded to accommodate heavy cargo jets, as envisaged in the Aripport Master Plan.¹⁴¹

Villages at Zinfandel School Site

In January 2003, Sacramento County supervisors approved key traffic changes for the general aviation runway at Mather Airport to help clear the way for a proposed elementary school in the Villages of Zinfandel. The changes shifted small aircraft that land on the runway about 3,000 feet east, over a light industrial area along Sunrise Boulevard. The “non-standard approach pattern,” which was approved by the FAA, increased the former 1,100-foot traffic altitude to 1,300 feet for light general aviation planes and 1,800 feet for larger corporate planes.¹⁴² This boosted plans by the Folsom Cordova Unified School District to open an elementary school for the Villages of Zinfandel. Citing noise and safety concerns, the state Department of Transportation had objected to several campus sites proposed from 2000 to 2003 in the new Rancho Cordova subdivision.¹⁴³ The Folsom Cordova school district and developer ultimately prevailed. The school was under construction in the summer of 2005, with a planned opening date of August 2006, and named Navigator Elementary in honor of the navigation training mission of Mather Air Force Base, whose air traffic control tower is visible from the school site.¹⁴⁴

Mather Specific Plan

In 1995, the Board of Supervisors initiated a specific plan for what was then termed Mather Field. The *Mather Specific Plan* was initiated to provide guidance in the evolution of Mather Field from military to civilian uses. The purpose of the specific plan was to implement previous planning efforts by identifying a clear land use framework with associated clear and specific requirements for private and public development within Mather Field.

The *Mather Specific Plan* establishes the location, intensity, and character of land uses; the circulation pattern and necessary infrastructure improvements to support development; the location and general configuration of parks, open space, and community facilities necessary to support new development and contribute to the quality and livability of the region as a whole; and the implementing actions required to realize the plan's objectives. On May 7, 1997, the board adopted a “Community Plan Amendment” for Mather Field and a *Specific Plan*, including text, policies, permitted uses, development standards, and design guidelines.

Soon after it was adopted, county officials realized a planned regional park impinged on prime vernal pool territory that environmentalists wanted preserved. Consequently, in 2004 Sacramento County planners were in the process of drawing up a new blueprint for much of

the former Mather Air Force Base that included a 1,053-acre vernal pool reserve. As envisioned by county planners, the plan also would allow some development on a portion of Mather designated for a regional park. In return, developers would be required to pay for planned park and sports facilities. The northern portion of Mather contains the airport and the Mather Commerce Center business park, but the southern part remains largely open.¹⁴⁵

Also in 2004, Sacramento County Economic Development Director Paul Hahn announced new provisional plans for the 4,000 acres of Mather Field south of Mather Airport, an area significantly larger than Sacramento's central business district. The draft plan entailed 525 acres for park facilities and another 485 acres east of Eagles Nest Road for a combination of parks and development. By allowing some development on the 485-acre parks property, Hahn said, the county could generate fees to fund an "Olympic village" training facility with a pool, running track, and tennis courts. These would serve the new neighborhoods developing around Mather.

Hahn stated that the development needed to be something other than single-family homes, "something special and unique, maybe some kind of townhouses or a university village." Such a development could serve students and staff at a private university campus being planned to the immediate southeast of Mather Field.¹⁴⁶

Sunrise Douglas Community Plan

In May 1999, the Sacramento County's Cosumnes Community Planning Advisory Council recommended approval of the 6,042-acre *Sunrise Douglas Community Plan*—which had been under discussion since 1987—and the *Sun Ridge Specific Plan*. The proposals could include 22,503 homes in the project area bounded by Grant Line and Jackson Roads, Sunrise and Kiefer Boulevards, near the Aerojet facility, Mather Airport, the Sacramento County landfill, and the Sacramento Rendering Plant. Sacramento County Supervisors have long contemplated home construction in the Sunrise Douglas Community Plan area, east of Sunrise Boulevard. In 1993, the supervisors initiated the *Sunrise Douglas Community Plan*. Sun Ridge is a 2,632-acre specific plan area within the *Sunrise Douglas Community Plan*. Buildout is expected to take 50 years.¹⁴⁷

The council suggested that property owners inside the Sunrise Douglas Community Plan area should grant the county an easement in the form of an acknowledgment that they are near a runway. In addition, those selling homes in the Community Plan area would have to inform buyers of the noise potential, although the project is several miles southeast of Mather Field.¹⁴⁸

The Rio Del Oro planned development lies within the Sunrise Douglas Community Plan area, at the southwest corner of the Aerojet property near Sunrise Boulevard and White Rock Road. Aerojet's real estate director Terry Griffin said that the company initially filed an application with Sacramento County to develop about 3,700 acres. An update to the application in late 2001 predicted that about 11,300 homes would be built on the full 3,700-acre site. Elliott Homes, Inc., purchased 1,100 acres for a residential project. The remaining 2,600 acres is

directly to the east of the Elliott site, but vernal pools and wetlands will limit development; these must be preserved. The larger acreage cannot be developed until Elliott completes its project on the 1,100 acres. Residential units will not be allowed under Mather Airport's flight path.¹⁴⁹

Planning for the Sunrise Douglas Community area will go forward under the auspices of Rancho Cordova.

Airport Comprehensive Land Use Plan

The *Mather Airport Comprehensive Land Use Plan* (CLUP) was adopted in 1997. A new *Airport Land Use Compatibility Plan* (ALUCP) will be developed upon completion of the Airport Master Plan environmental review. The 1997 CLUP prohibits residential development within the 65 dB CNEL contour. The updated Mather ALUCP will have a more stringent standard, 60 dB CNEL.¹⁵⁰

Through the Master Plan update process, the Sacramento County Airport System (SCAS) is developing an intriguing and innovative approach to airport land use planning. Rather than using the standard 20-year forecast of growth, noise contours will be drawn based on what SCAS terms “theoretic capacity” of the airports that serve large jets. This capacity number—less than the FAA-defined Annual Service Volume, but more than the 20-year forecast—is intended to represent the maximum foreseeable traffic level at each airport, based on the relevant master plans. The “no new residential” policy within the 60 dB CNEL noise contours will be extended to all airports serving commercial passenger and cargo jets (International, Mather, and McClellan—another, more recently converted Air Force Base).

Even more innovative is SCAS's plan to define “Airport Planning Policy Areas” (APPAs), which will be defined by locations where aircraft regularly operate less than 3,000 feet above ground level. Draft maps of these APPA areas were distributed in March 2005. The APPAs for the three airports extend well beyond the 60 dB CNEL contour, averaging about 25 miles by 10 miles at their longest and widest points. The intent is to require disclosure and an aviation agreement for residential development. The APPAs must be adopted by SACOG before becoming ALUC policy,¹⁵¹ but they were adopted by the Sacramento County Board of Supervisors in April 2006 as they apply to land under the county jurisdiction.

[Figure 19](#) shows the draft proposed APPA for Mather Airport (MHR). [Figure 20](#) shows the Mather APPA together with those for Sacramento International Airport (SMF) and McClellan Airport (MCC).

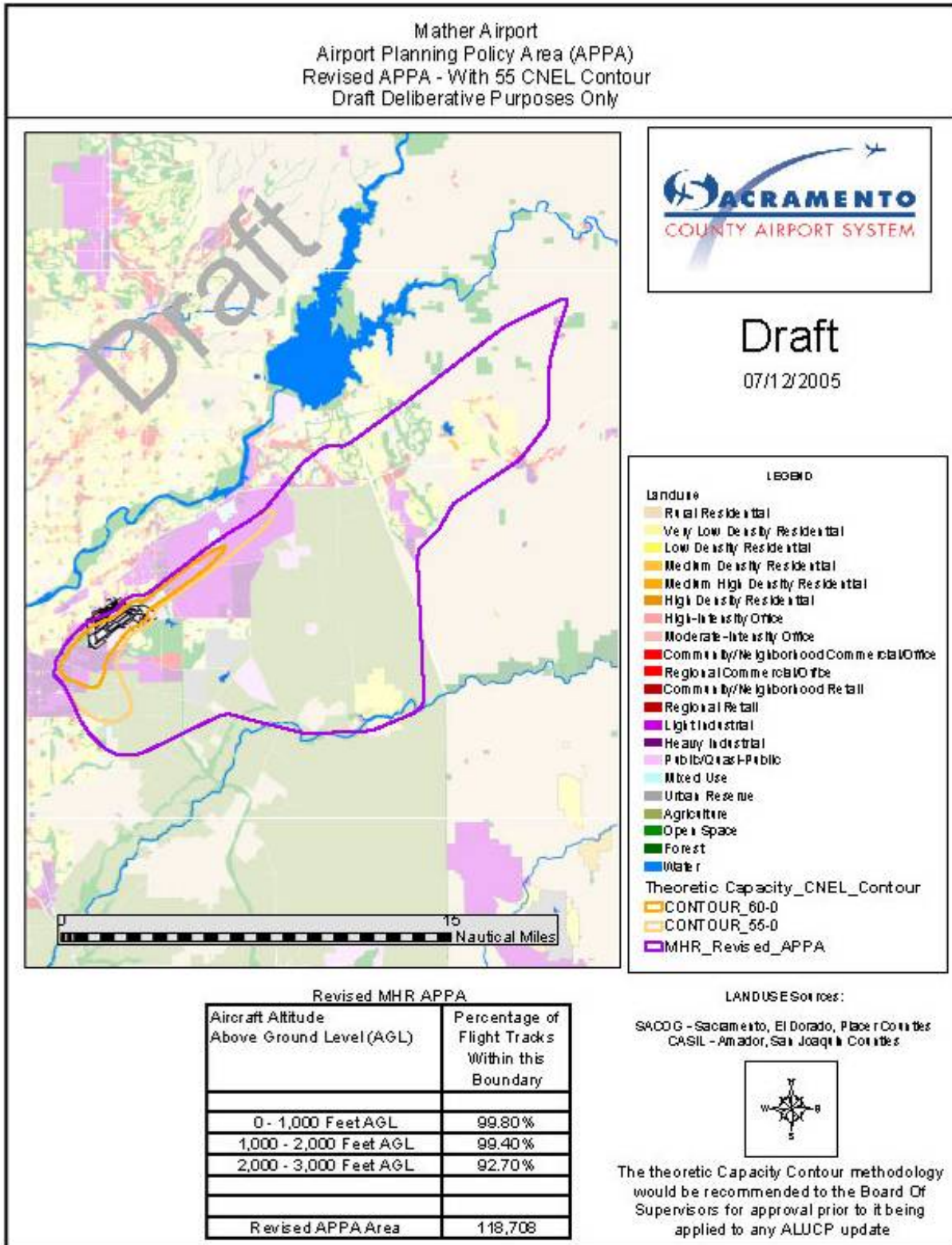
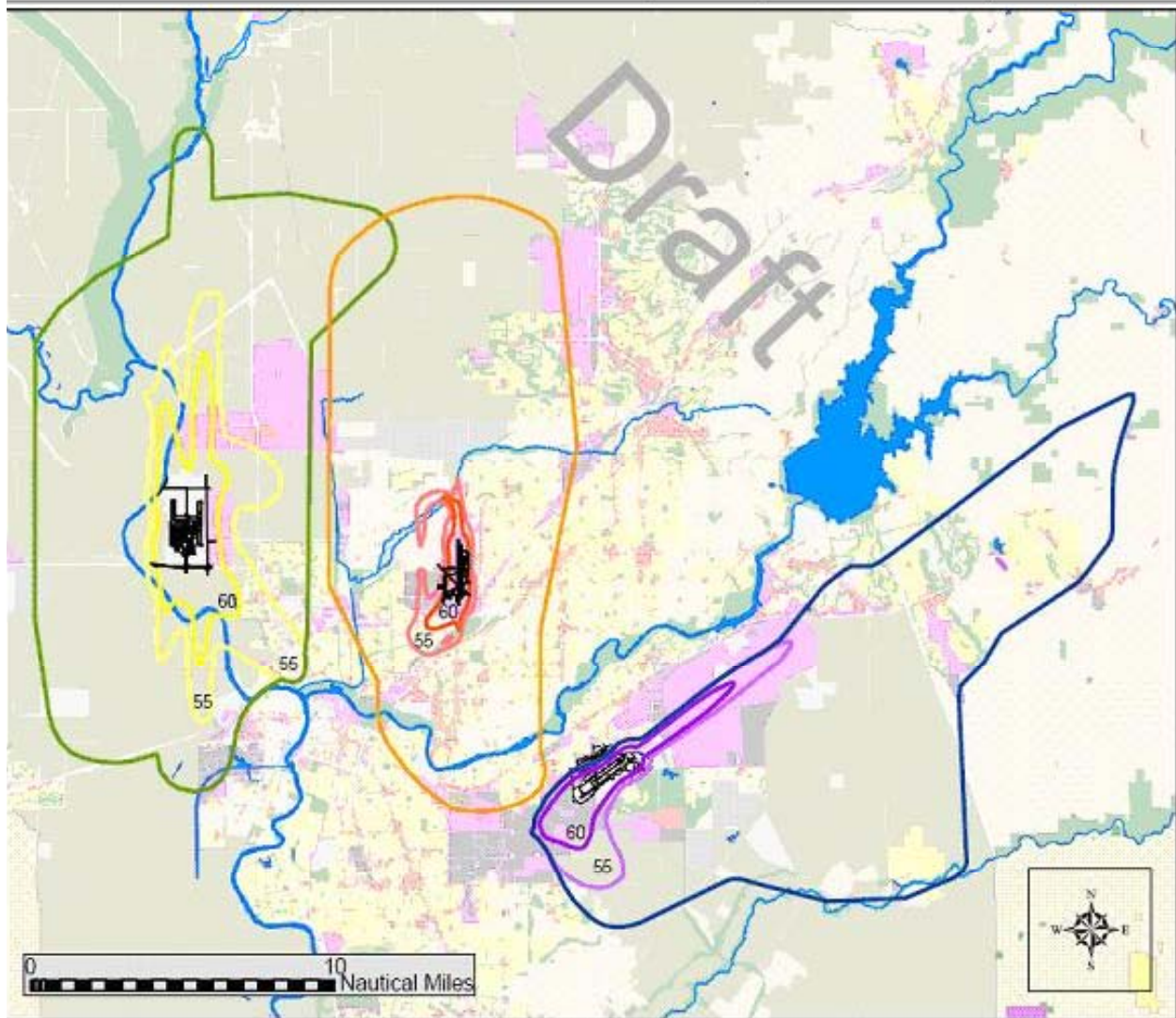


Figure 19 Mather Airport Planning Policy Area
Source: Sacramento Area Council of Governments, July 2005.

Draft

Airport Planning Policy Areas (APPA)
 Revised APPA - With 55, & 60 CNEL Contours
 Draft Deliberative Purposes Only



07/12/2005



LANDUSE Sources:

SACOG - Sacramento, El Dorado, Placer Counties
 CASIL - Amador, San Joaquin Counties

The Theoretic Capacity Contour methodology would be recommended to the Board of Supervisors for approval prior to it being applied to any ALUCP update

Figure 20 Sacramento County Airport System Airport Planning Policy Areas

Source: Sacramento Area Council of Governments, July 2005.

Approaches to Noise Issues

Residents have complained about aircraft noise from Mather Airport since it became a civilian operation in 1995. The noise still exists and residents still complain, but there is a working group that addresses the problem. The Mather Airport Aircraft Overflight Noise Group, created in August 2002 by the Board of Supervisors, is charged with finding ways to lessen the noise impacts to the areas underneath the flight paths. Its first recommendations, delivered in January 2003, contained nine measures, including informing pilots of the county's noise-abatement procedures, making flight deck data more accessible to the public through the Internet, and encouraging all aircraft to fly at a higher approach into the airport. The committee consists of area residents and representatives from the FAA, UPS, and the Sacramento County Airport System.¹⁵²

Officials from the Sacramento County Airport System, which oversees Mather Airport, said the agency does not track the number of residences underneath the flight path. Residents near the flight path called in more than 500 airplane noise complaints in February 2003.¹⁵³ According to SCAS staff, there have only been about 50 individual complainers since 1997 with perhaps a dozen “regular” callers.¹⁵⁴

Night operations and thousands of new residents are two key reasons why airplane noise is a bigger irritant now than when Mather was a military base, along with the fact that air freight is not deemed by many to be as important as military flights. When the military began scaling back operations at Mather in the early 1990s, there were 29,600 people in Folsom and 10,568 living in El Dorado Hills, according to U.S. census figures. In the decade that followed, those two areas have seen two of the biggest population booms in the Sacramento region. By 2001, Folsom had 52,700 residents and El Dorado Hills has 19,400—78 percent and 84 percent increases, respectively.¹⁵⁵

In May 2004, the FAA decided not to resume a flight test for night landings at Mather Airport, saying the alternative path did not reduce noise for nearby communities. The SCAS conducted the experiment from July to November 2003 in response to Folsom residents' complaints about noise. The procedure shifted air traffic away from the city, sending flights to the south over Cameron Park, Shingle Springs, and parts of El Dorado Hills. After analyzing data from the SCAS, the FAA determined in May 2004 that the alternative flight path did not reduce noise but simply moved it from one community to another.¹⁵⁶

After the test was completed, the FAA recommended that pilots fly an instrument approach, which allows for the use of highly precise landing procedures. The alternative path provides some guidance to pilots but is less precise. As a long-term strategy to reduce noise, officials say that Mather Airport may be the first in the country to fully implement a “continuous descent approach” strategy that dictates how pilots operate the aircraft.¹⁵⁷ The procedure reduces noise on the ground by managing throttle settings, flaps, and landing gear deployment. Meanwhile, it was hoped that environmental studies for the Mather Airport master plan, begun in late 2004, would clarify noise issues.¹⁵⁸ In September 2006, these studies were still incomplete,¹⁵⁹ and the City of Folsom had threatened legal action¹⁶⁰ if the county adopted the master plan

without first making provisions to limit landing of large aircraft between 10 p.m. and 7 a.m.¹⁶¹

Interviews with ALUC (SACOG) and SCAS staff and Folsom city staff revealed that negotiations were at an impasse in the fall of 2005.¹⁶² The city of Folsom had rejected a proposed airport roundtable to discuss future noise abatement plans, saying they needed action, not more discussion.¹⁶³ In December 2005, Folsom also sent a complaint opposing the declaration of Sacramento as a customs port of entry because of concerns about increased noise and overflights.¹⁶⁴

Role of Surrounding Jurisdictions

Sacramento County

Mather Airport lies within the jurisdiction of Sacramento County, as were all surrounding lands for several miles until the incorporation of the city of Rancho Cordova in 1993. Sacramento County is unusual for a California county in that it has large urban communities within its jurisdiction. The *County of Sacramento General Plan* was last updated in 1993. Much of the focus of the general plan was on new growth areas. From 1997–2003, three urban areas incorporated: Citrus Heights in 1997, Elk Grove in 2000, and Rancho Cordova in 2003. Consequently, since 1993, Sacramento County has adopted general plan policies aimed at keeping both existing and new growth areas as viable places to live and work in, and to provide tax revenue to the county.

Policies relevant to Mather Airport in the Circulation Element of the County General Plan include the following:

CI-30. Policy: Sacramento County will encourage approach and departure flight patterns that do not cross over the urban areas.

CI-31. Policy: Sacramento County shall plan for airport expansion and the protection of airports from the encroachment of incompatible uses through land use and transportation planning.

CI-32. Policy: Sacramento County shall comply with the intent of the recommendations in the Comprehensive Land Use Plans (CLUPs) for airport environs by restricting in the vicinity of airfields those land uses which are inherently incompatible with airfield operations, based upon the following performance standards...¹⁶⁵

The text makes clear that inherently incompatible uses addressed by this policy are limited to those that release into the air any substance that would impair visibility, produce light or electronic emissions, attract birds, or physically impinge upon approach-departure or transitional surfaces.

CI-33. Policy: Sacramento County will support the expansion of transit service to and within commercial airports.

In addition, the Noise Element of the County General Plan establishes criteria for airport land use compatibility for noise and discusses coordination between the General Plan and the CLUPs for airports in the county.¹⁶⁶

Among the county agencies that have been involved in the redevelopment of Mather are the Planning and Community Development Department, the Economic Development Department, and the Sacramento Housing and Redevelopment Agency (SHRA). The 1993 general plan identifies both Mather Air Force Base and McClellan Air Force Base as redevelopment areas.

Although the county has been the primary agency responsible for the initial conversion of the base and associated land uses, and will continue to operate the airport, planning beyond the airport fence will be led by the newly incorporated city of Rancho Cordova, whose sphere of influence surrounds Mather Airport.

City of Rancho Cordova

In June 2003, Rancho Cordova was officially incorporated as Sacramento County's newest city. The city has inherited the controversy over Mather Airport flights. Recognizing that these challenges don't stop at the city limits, Rancho Cordova's leaders see the new city partnering with Sacramento County and setting up cooperative agreements with the neighboring cities of Folsom and Citrus Heights. The city council has publicly supported the county's efforts to create a major air cargo facility at Mather Airport. Folsom will work with Rancho Cordova to tackle Mather Airport, said Folsom City Councilman Andy Morin. "It's one major issue that will confront both of us," he said. "As Folsom citizens, we're concerned about overflight, and Rancho Cordova will be concerned about economics." Despite the difference, Morin stated in June 2003 his belief that the two cities could find a solution.¹⁶⁷

Before the idea of incorporation could be brought to the voters, incorporation proponents had to agree to a revenue neutrality payment—the amount a new city must pay the county to offset the revenues lost because of incorporation. According to the terms negotiated, Rancho Cordova is required to pay the county \$6.3 million annually for 31 years. The 33-square-mile suburb of 55,000 residents is just east of the center of the county.¹⁶⁸ Rancho Cordova city boundaries include the Mather Commerce Center, a 300-acre business park that is a cornerstone of the community's ties with the former Mather Air Force Base, and 2,700 acres of Aerojet land set for long-term development in the Rio Del Oro community. The Sunrise Boulevard corridor is in the city's sphere of influence for future annexation.¹⁶⁹ Two large development projects under consideration in 2004—Sunrise Douglas and Rio Del Oro—propose to build 40,000 homes south of Highway 50, promising to more than double the city's population. The new residents will be separated from existing neighborhoods by a freeway and a large swath of employment uses.¹⁷⁰

In 2004, Rancho Cordova conducted workshops regarding the city's first general plan. A recurring theme in the workshops was the need to give the city a core, to create a cultural center that distinguishes it from the suburban expanse. In seeking to create a downtown,

Rancho Cordova is following smart growth trends toward building more urban, mixed-use development. The city has an advantage in pursuing denser, mixed-use development because it is served by light rail. The regional light-rail system, which just reaches Rancho Cordova's western edge, was extended to downtown Folsom along Folsom Boulevard by late 2005. Ted Gaebler, Rancho Cordova city manager, was quoted as saying that the city had an opportunity to learn from the mistakes of older downtowns and craft something sustainable.¹⁷¹

Figure 21 shows the General Plan area for the City of Rancho Cordova.

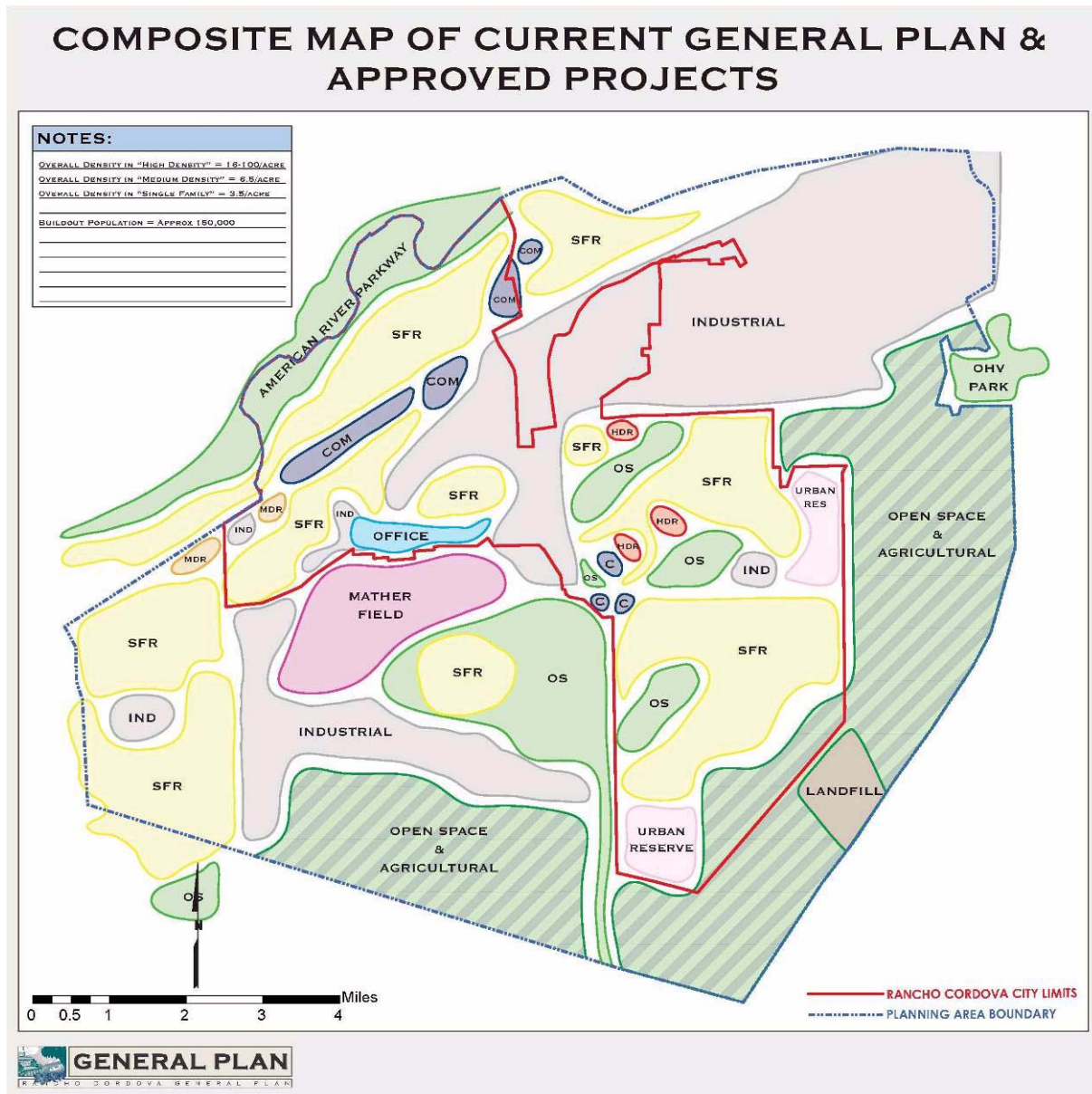


Figure 21 Rancho Cordova General Plan Area

Source: City of Rancho Cordova. *Rancho Cordova General Plan*.
<http://gp.cityofranhocordova.org/documents/visioning/index.html>

Discussions with Rancho Cordova planning staff (who are contract employees, like many other city staff) were conducted in August and September 2005.¹⁷² City staff report they are closely

involved in the ongoing Mather Airport Master Plan and ALUCP update. Dave Sander, council member, and Curt Haven, economic development director, represent Rancho Cordova on the Mather Master Plan Working Group. Senior Planner Bill Campbell represents the city on the SCAS noise committee.

Staff believe that the new *Airport Master Plan* and ALUP will impinge less on the city than the old plans. Proposed revisions to the noise contours reduce the area of impact, therefore reducing the impacts to land use planning within these noise contours. The current Master Plan and ALUP directly affect large portions of the city in the Rio Del Oro area (north of Douglas Boulevard and east of Sunrise Boulevard) as well as along Sunrise Boulevard. With the reduced noise contours, these impacts will be lessened and, in some cases, eliminated entirely.

Height restrictions and land use density requirements may stay the same, as overflights of approaching and departing aircraft will be essentially unchanged. Currently, density and height of land uses are limited by the city (and previously by Sacramento County) along Sunrise Boulevard. The city also has restricted residential land uses in these areas.

The land use element acknowledges the authority of both the CLUP and the city-adopted Mather Airport Planning Area (MAPA) policies. The MAPA, originally developed by Sacramento County, places additional development conditions or conditions on new residential uses within the geographic boundaries of the MAPA. The MAPA policies are more stringent than the CLUP policies in that 60 dB CNEL, rather than 65 dB CNEL, is the limit for new residential uses. As noted above, the revised CLUP will likely use this 60 dB CNEL standard. The land use element has a positive rather than restrictive action item regarding Mather (Action LU.1.2.2): “Establish a comprehensive plan for an economically viable mix of land uses in and around Mather Airport.”¹⁷³

The land immediately adjacent to the airport does not lie within the city limits of Rancho Cordova, and seems likely to remain unincorporated county territory. In fact, all land encompassed in the current Mather Airport Comprehensive Land Use Plan (CLUP) lies outside city boundaries. However, land adjacent to the CLUP boundary that is within city limits is zoned for compatible uses. Staff note that the setbacks, densities, and types of land uses allowed by the Mather Airport ALUP result in a buffer zone of low-intensity land uses, which restricts smart growth land use patterns. The city’s general plan, approved in June 2006, includes policies related to Mather Airport and incompatible uses, as well as safety and noise issues associated with the airport. The Land Use, Noise, and Safety Elements contain policies related to Mather Airport.

Staff noted that ALUC policies have influenced the types of uses that the city may ultimately like to see along and near Sunrise Boulevard. These policies affect the land use designations, zoning designations, density, and height of uses for the affected parts of the city. They also affect the location and density of residential projects in relation to Mather Airport. For example, the Rio Del Oro project is being planned and designed with the noise contours of

Mather Airport in mind in respect to housing design, density, and location. Commercial uses have been proposed for Rio Del Oro in areas within the Mather Airport 60 db noise contours.

Potential Role and Impact of Smart Growth

City of Rancho Cordova

With respect to smart growth projects near Mather, Rancho Cordova staff interviewed noted that in 2006 the council approved the Capital Village project, which lies approximately 2.5 miles northeast of Mather Airport. The project incorporated smart growth concepts in its design, including a balance of residential, commercial, and parks uses with higher-density residential uses and a walkable design that ties into the pedestrian and bicycle routes in the city. The city is also working with project applicants of the Rio Del Oro, Suncreek, and Preserve at Sunridge projects to include smart growth principles into the project designs, including mixed-use land uses, walkability, and so on. The Land Use element of the city's *Interim General Plan* includes policies directly related to smart growth.

Staff note that there are inherent challenges when encouraging high-density, smart growth projects in close proximity to the Airport Influence Area. They stated that the best method for reducing conflict and achieving effective implementation of both the city's General Plan and the Airport Master Plan is open communication. This communication and coordination between agencies needs to be initiated early in the planning process. The city has tasked Dave Sander, Curt Haven, and Bill Campbell with representing the city in the Mather Airport planning process. Other relationships are being built between ALUC planning staff and city planning staff. The ALUC planning staff is included in the city's distribution list for both planning processes and environmental review processes. The ALUC staff is asked to comment on upcoming projects both through the regular planning process and the CEQA environmental review process.

The most challenging issue for staff—how to connect existing residential areas, smart growth/mixed-use projects, and transit centers to airports and employment centers around airports—looms as a particular challenge.

Sacramento Blueprint Project

The *Sacramento Region Blueprint* is a three-year growth-visioning study designed to illustrate the effects of land use decisions on the region's transportation and air-quality problems. Failure to meet federal air quality standards could mean losing federal transportation funding. The Sacramento Area Council of Governments and its nonprofit civic partner, Valley Vision, jointly led the *Blueprint* study. The study was built upon a set of seven smart growth principles:

1. Housing choice and diversity
2. Use of existing assets (reinvestment in existing buildings and infrastructure)
3. Compact development

4. Natural resources conservation
5. Design for quality (design factors influencing the attractiveness of living in a compact development and facilitating bicycle or pedestrian access to neighborhood services)
6. Mixed-use developments
7. Provide transportation choices

The *Blueprint* process included dozens of community meetings held in all parts of the region, plus two regionwide forums that brought together residents, community and business leaders, elected officials, environmental groups, and developers. Interactive computer models used at the meetings showed participants what the region might look like in 2050 under four different growth scenarios.

A Preferred Blueprint Scenario was adopted by the SACOG Board of Directors in December 2004. This scenario promotes compact, mixed-use development and more transit choices as an alternative to a Base Case Scenario, which models a continuation of current low-density growth patterns. Maps and models illustrate how the Preferred Blueprint Scenario achieves better performance than the Base Case using criteria based on the smart growth principles.

The Preferred Blueprint Scenario is the basis of SACOG's 2006 *Metropolitan Transportation Plan*, the long-range transportation plan for the six-county region that channels federal and state transportation spending. SACOG is also developing a *Blueprint*-based land use map in collaboration with local jurisdictions for use in the 2007 transportation plan. The *Blueprint* is intended to serve as a framework and guide local government land use and transportation planning through 2050.

To this end, SACOG plans to

- provide incentives for capital and planning projects consistent with the *Blueprint*
- provide technical assistance to local communities and developers
- develop model codes, street design guidelines, tutorials for using the modeling software, and other Best Planning and Development Practices
- develop a benchmarking system for tracking the region's growth pattern

Scenario Summary for Rancho Cordova

Under the Preferred Scenario, Rancho Cordova, including lands within its planning area, grows to become a major city of over 332,000 people by 2050. The Preferred Scenario respects the ALUP policies, but roughly doubles the number of households and jobs in the area surrounding Mather (See [Table 4](#)).

Table 4 Rancho Cordova Community Blueprint Scenario Comparison

SCENARIO	Base Case	Draft Preferred Blueprint Scenario
Growth in Jobs: 2000-2050	64,669	144,406
Growth in Housing Units: 2000-2050	68,108	112,290

Table 4 Rancho Cordova Community Blueprint Scenario Comparison (Continued)

SCENARIO	Base Case	Draft Preferred Blueprint Scenario
Balance of Jobs/Housing in 2000:	2.9	3.0
Balance of Jobs/Housing Growth (2000-2050)	0.9	1.3
Balance of Jobs/Housing in 2050:	1.6	1.7

Source: www.sacregionblueprint.org/sacregionblueprint/the_project/discussion_draft_preferred_scenario.cfm

The *Blueprint* website describes the 2050 preferred scenario for the Rancho Cordova area as follows:

- The area encompasses the full range of development conditions in the Sacramento region, from reinvestment opportunities on underutilized land along and near Folsom Boulevard to acres of greenfield lands inside the current Urban Services Boundary.
- Growth is a fairly even mixture of jobs and housing. This area continues to be one of the primary jobs centers of the region.
- Growth in housing is primarily single-family detached products; however, many of these are small-lot single-family. This product, plus the attached rowhouses, townhomes, condominiums, and apartments, will help to ensure housing for the growing work force, seniors, the young, and small households.

The higher-density housing types mean that the residential footprint is little changed (based on a visual comparison of the Base Case to the Draft Preferred Scenario maps).¹⁷⁴

Surface Transportation Projects Related to the Airport

In June 2001, a new bus route was introduced to connect many of the Mather Field facilities with the Mather Field-Mills light-rail station. The bus offers hourly service from 7 a.m. to 11 p.m. Monday through Friday; 8 a.m. to 8 p.m. Saturday; and 8 a.m. to 6 p.m. Sunday. Passengers pay the normal transit fare with free transfers to and from light-rail and other Regional Transit (RT) buses.¹⁷⁵

As noted above, Rancho Cordova officials hoped to one day transform the neighborhoods around many RT stations into pedestrian villages with offices, shops, and housing. The new *Rancho Cordova General Plan*, under review by the county in early 2003, would encourage creative projects near light rail by loosening the zoning along Folsom Boulevard.¹⁷⁶

Light Rail Extension to the City of Folsom

In October 2005, the RT light-rail system was extended from Sunrise Boulevard to Folsom's historic downtown. A 2.8-mile double-tracking for RT's existing line from the Mather Field/Mills Station to Sunrise Boulevard included the following renovated stations:

- Zinfandel Drive

-
- Cordova Town Center
 - Sunrise Boulevard (includes a 487-space park-and-ride lot)

The single-track 7.4-mile extension to Historic Folsom includes the following new stations:

- Hazel Avenue (432-space park-and-ride lot)
- Iron Point Road (216-space park-and-ride lot)
- Glenn (165-space park-and-ride lot)
- Historic Folsom (102-space park-and-ride lot)

The extension of the light-rail line will provide many potential focal points for smart growth in the U.S. 50 corridor. Further extensions into eastern Folsom and El Dorado County are under consideration.¹⁷⁷ The expansion of high-quality and high-capacity transit in the corridor improves the prospects for smart growth projects that are complementary to Mather Airport, in that they will focus higher-density development away from the immediate airport environs. [Figure 22](#) shows the existing and planned LRT system in relation to other current and planned major transit routes.

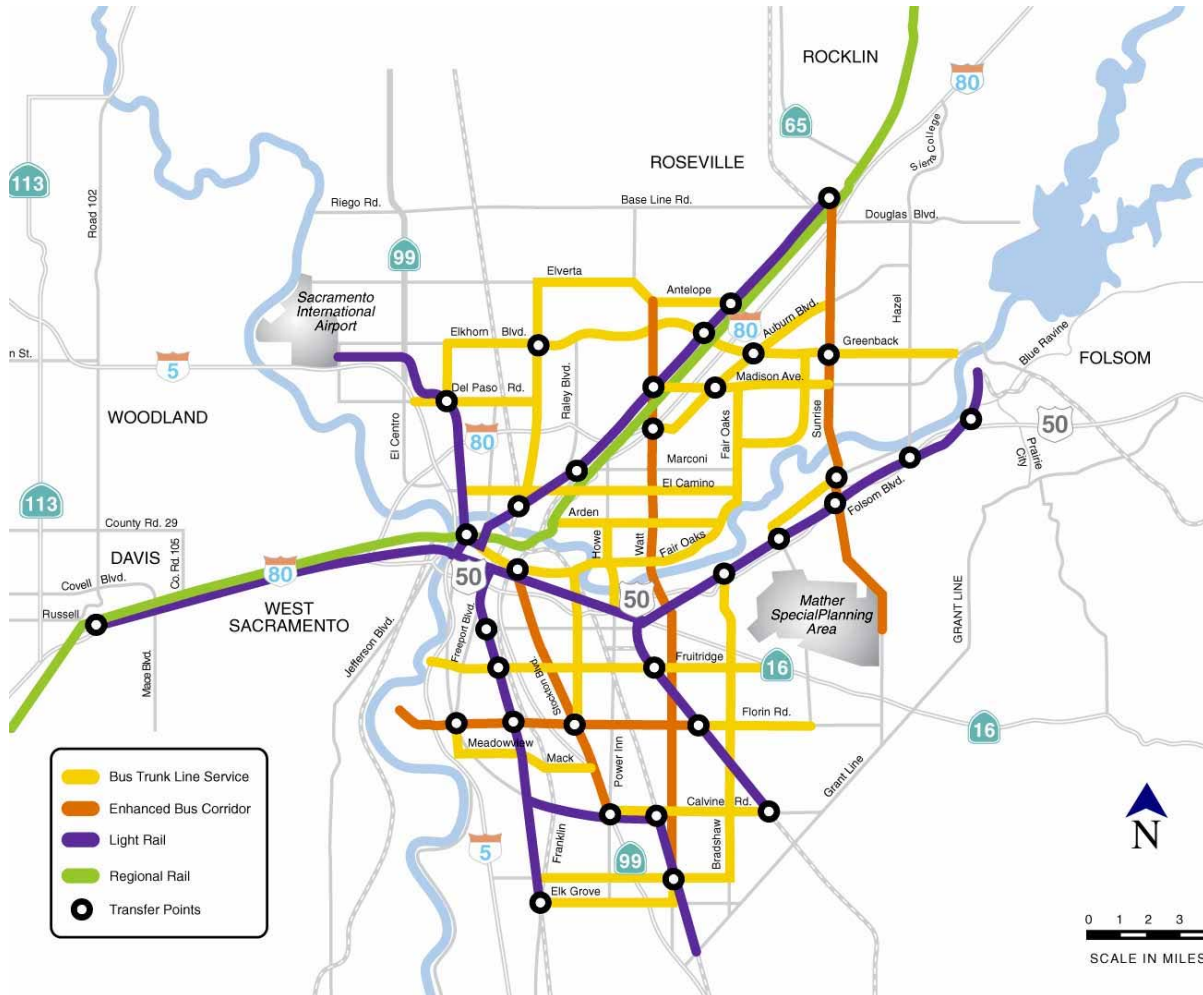


Figure 22 Sacramento Light Rail System 20-Year Plan

Source: Sacramento Regional Transit District, [/www.sacrt.com/documents/lrv.pdf](http://www.sacrt.com/documents/lrv.pdf).

SUMMARY: EFFECTIVENESS OF THE AIRPORT PLANNING PROCESS

The Sacramento region is an ideal institutional arrangement from the perspective of airport land use planning, with a single agency (County of Sacramento) owning and managing the major airports in the region as a system, and the ALUC duties being handled by the regional planning agency, the SACOG, which has responsibilities for both comprehensive transportation planning and comprehensive land use planning coordination. The ALUC is revising the CLUP, which will go beyond the minimum requirements in that it will consider airport activity levels at build-out of each airport and examine impacts beyond the 65 dB CNEL contour.

The Sacramento *Blueprint* project is a promising approach to trading off impacts of overflight (and the positive and negative externalities of airports in general) with other community, economic, and environmental factors and values. It may be useful in resolving overflight issues in Folsom and El Dorado. The *Blueprint* process included dozens of community meetings held in all parts of the region, plus two regionwide forums that brought together residents,

community and business leaders, elected officials, environmental groups, and developers. Interactive computer models are used at the meetings to show participants in real time the impacts of different growth scenarios. A statewide program was launched in 2006 to make *Blueprint*-style analysis of growth impacts available to all regions of the state.

Although an enormous amount of growth is still to come in the decades ahead, to date the airport planning process around Mather as conducted by Sacramento County, and more recently the new city of Rancho Cordova, has been largely successful in creating airport area land uses that respect the airport environment. Both Sacramento County and Rancho Cordova have adopted smart growth policies that respect the CLUP. While even residential development on its immediate periphery seems accepting of Mather Airport, the airport continues to draw complaints from well beyond its 55 dB CNEL contour because of an unfortunate intersection of nighttime freight operations with topography and high-income demographics in the city of Folsom and western El Dorado County. Clearly, current ALUC practice offers no remedies for such overflight issues, since they are beyond current criteria used to define airport impacts.

APPENDIX C

CASE STUDY—CONTRA COSTA AIRPORTS (BUCHANAN FIELD AND BYRON)

Buchanan Field (CCR), Contra Costa County

Airport location	Contra Costa County
Airport size	500 acres
Type of facility	General aviation (some commercial flights in past)
Level of airport activity	126,000 aircraft operations in 2005
Curfew	1987 ordinance prohibiting flight training from 10 PM to 7 AM
Most recent ALUCP (both Buchanan Field and Byron Airport)	2000
Most recent <i>Airport Master Plan</i>	1990 (update commenced in 2004)
Nearby cities	Concord: 123,400; Pleasant Hill: 33,100; Martinez: 36,200
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Surrounded by built-up cities (residential and office uses) • Much conflict over airport noise related to residential uses
Major issues	<ul style="list-style-type: none"> • Attempt to close airport based on conflicts and land value • Conflicts over AB 2776 real estate disclosure zone • Neighbors continue to advocate for noise abatement measures
Approaches to solving airport/community conflicts	<ul style="list-style-type: none"> • Brochure: “How Complaints Regarding Aircraft Operations are Handled” for residents; Noise Management Program Guide for pilots; many other noise abatement measures • Part 150 noise study is being conducted as part of the master plan update
Stakeholder groups	<ul style="list-style-type: none"> • Aviation Advisory Committee (largely pro-aviation) • People Over Planes (resident advocacy group)
Integration with smart growth policies	Attempt to replace airport with smart growth development failed
ALUC agency	Contra Costa County
ALUC staff contact name	Lashun Cross
ALUC staff contact phone	(925) 335-1229
ALUC staff contact e-mail	lcross@cd.cccounty.us

Byron Airport (C83), Contra Costa County

Airport location	Contra Costa County
Airport size	1,307 acres (807 acres are biologically sensitive habitat)
Type of facility	General aviation
Level of airport activity	60,000 aircraft operations in 2005
Curfew	None, 24-hour operation
Most recent ALUP	2000
Most recent <i>Airport Master Plan</i>	2005
Nearby cities (population)	Byron (unincorporated): 916 (2000 census)
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Agriculture and some office and low-density residential uses • Conflicts with wildlife

Byron Airport (C83), Contra Costa County

Major issues	Limited development potential due to wildlife refuges, location outside of the urban limit line, and low accessibility
Approaches to solving airport/community conflicts	Advocating industrial zoning to plan for future growth
Stakeholder groups	<ul style="list-style-type: none"> • Aviation Advisory Committee (largely pro-aviation) • Master Plan Project Steering Committee
Integration with smart growth policies	Urban limit line and open space conservation is limiting growth near the airport
ALUC agency	Contra Costa County
ALUC staff contact name	Lashun Cross
ALUC staff contact phone	(925) 335-1229
ALUC staff contact e-mail	lcross@cd.cccounty.us

INTRODUCTION

Contra Costa County owns two airports: Buchanan Field and Byron Airport. Both are covered by the same Airport Land Use Commission (ALUC). The *Airport Land Use Compatibility Plan*, which was adopted in 2000, has both general policies and policies specific to each airport. The emphasis in this case study is on Buchanan Field (Figure 23 and Figure 24), since the possible replacement of this older and busier airport with a smart growth development and the removal of aviation activities elsewhere was the subject of intense public debate and detailed study from 2003 until late 2005. This case study summarizes what may be construed as a head-on collision between airport protection and smart growth planning. The planning for the replacement of Buchanan—a project well outside the usual planning purview of an ALUC, and which did not directly involve the ALUC—offers insights into the complex issues and resulting difficulty of replacing an airport in a built-up area.

Buchanan Field Overview

Buchanan Field is located in Central Contra Costa County immediately west of the city of Concord, north of Pleasant Hill, and south of Martinez, the county seat (see Figure 23). Concord is the county's most populous city, with 130,600 residents in 2005,¹⁷⁸ and a significant employment center in the Interstate 680 corridor. The land for the airfield was acquired by the county in 1942 and was developed and used by the Army Air Corps during World War II. The improved airport was deeded to the county after the war, with the provision that Buchanan Field would be used only for public airport purposes. It has operated as both a commercial and as a general aviation airport ever since.

Over the decades, suburban development has surrounded Buchanan Field on three sides. Commercial air service, mainly to and from Southern California, was established in the 1970s and continued intermittently until 1992. Since that time there have been several unsuccessful initiatives to resume commercial flights. Air traffic has declined since the late 1970s. Annual airport activity in 2005 consisted of 126,243 operations, compared to 232,939 operations in

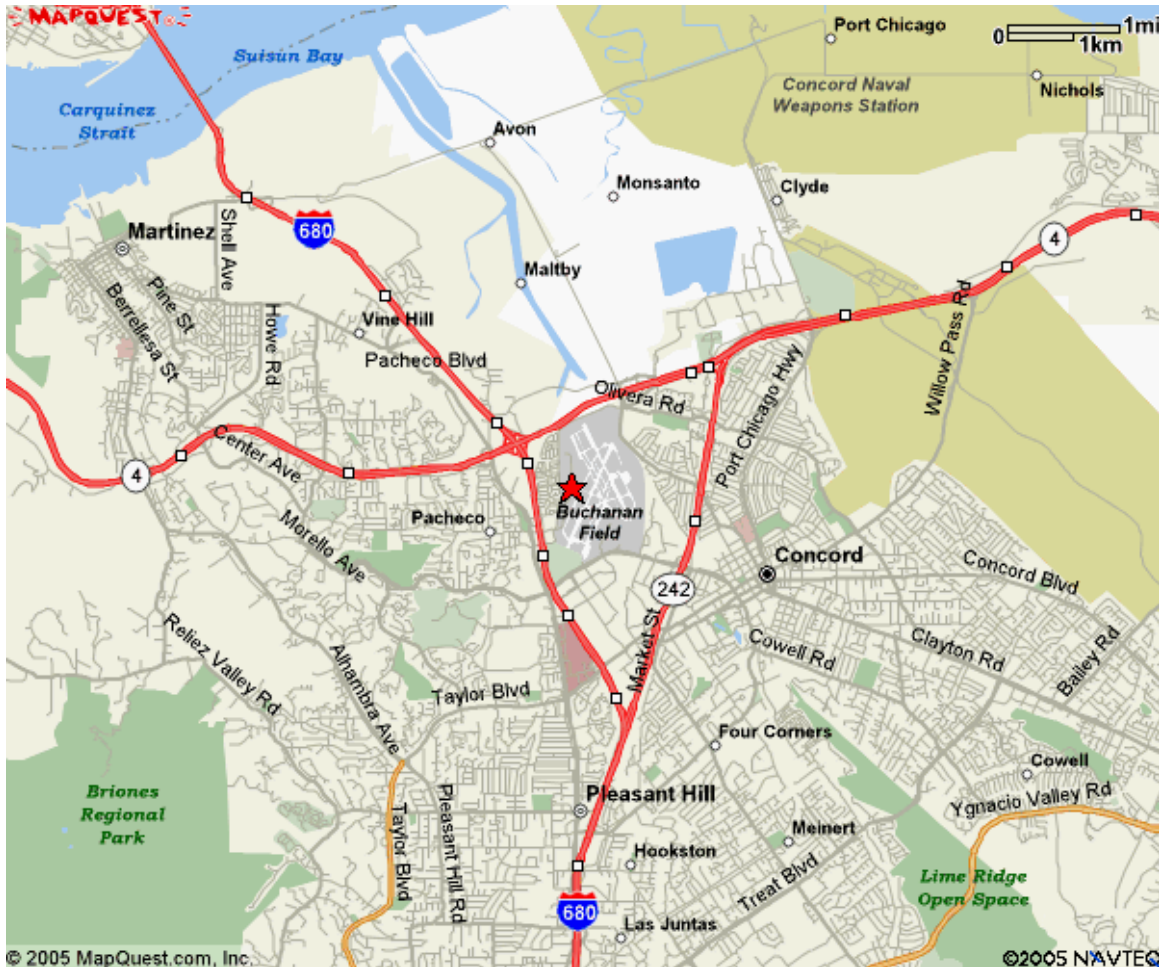


Figure 23 Buchanan Field Vicinity

Source: MapQuest.com, Inc., www.mapquest.com (accessed November 2005).

1999 and a peak of 353,926 operations in 1978. The 591 aircraft based at Buchanan Field in October 2000 included 11 jets, 11 helicopters, 74 multiengine, and 495 single-engine planes.¹⁷⁹ The current *Airport Master Plan* was adopted in 1990; an update began in 2004, with completion expected in late 2007.¹⁸⁰ As of spring 2006, the recommended plan did not include lengthening or reconfiguring the runways.¹⁸¹

Byron Airport Overview

In 1994 Byron Airport was opened, an expansion of a private airfield called Byron Airpark. The new airport was the result of 20 years of planning and \$21.5 million in federal and local funds. It was intended mainly to handle the overflow from Buchanan Field (although as noted, traffic at Buchanan is substantially lower than when planning began in the 1970s) as well as general aviation activities from airports at Oakland, Livermore, and Hayward.

The *Contra Costa County General Plan* states that the county's original intent in establishing a second county airport was to have an airport free from urban encroachment, including related



Figure 24 Buchanan Field Airport Influence Area

Source: Contra Costa County, California, *Contra Costa County Airport Land Use Compatibility Plan*, prepared by Shutt Moen Associates, Santa Rosa, California, adopted December 13, 2000, Page 3-3,

www.co.contra-costa.ca.us/depart/cd/current/ALUCPlan/ALUCPlan.htm.

commercial and industrial development.¹⁸² This has largely been realized, although unincorporated portions of two other counties are close to Byron Airport: Alameda County lies two miles south of the runways, and the San Joaquin County line is approximately five miles southeast. No development is planned in nearby portions of Alameda County, but in San Joaquin County a long-planned 7.5-square-mile “new town” known as Mountain House is under development.

Byron Airport averages 60,000 takeoffs and landings annually, mostly from small single-engine craft.¹⁸³ The airport is used mostly for recreational aviation and skydivers. Other regular users include helicopter pilots and Korean Airlines pilots in training. A few businesses, such as U.S. Print in Brentwood, store commercial planes for trips to corporate headquarters. The 4,500-foot runway is long enough to accommodate most general aviation or corporate aircraft except large corporate jets, but there is little demand for these. In 2001, the biggest demand was for more hangars, which were full, according to Mark Grosenheider, Byron Airport’s operations specialist.¹⁸⁴

Figure 24 shows the Byron Airport vicinity.

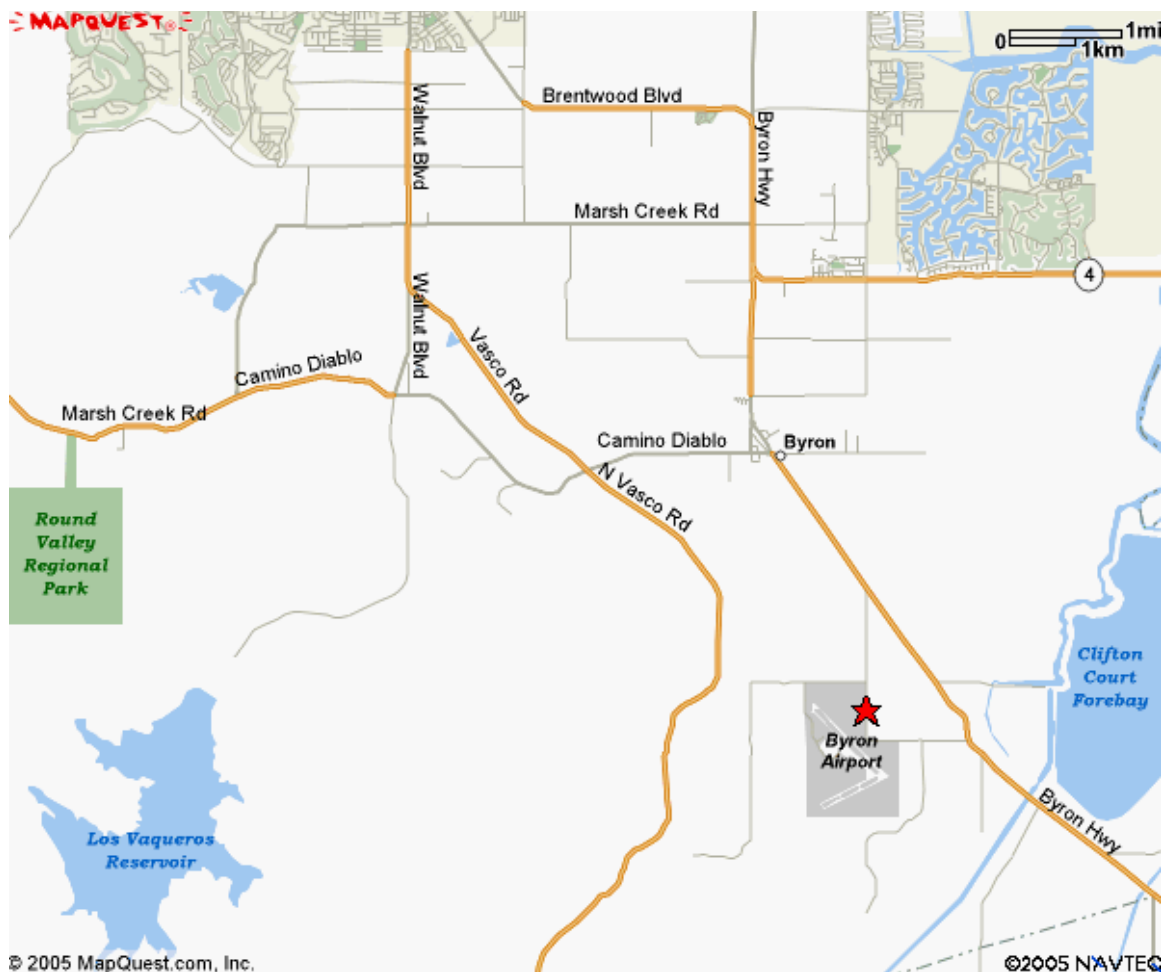


Figure 24 Byron Airport Vicinity

Source: MapQuest.com, Inc., www.mapquest.com, November 12, 2005

AIRPORT LAND USE COMPATIBILITY PLAN

Contra Costa County ALUC

In 1970 Contra Costa County established its Airport Land Use Commission. The county's ALUC consists of seven members:

- two members appointed by the Board of Supervisors
- two members appointed by a committee of mayors of the cities in the county
- two members appointed by the Director of Airports
- one member representing the general public, appointed by the balance of the ALUC members¹⁸⁵

The ALUC meets regularly, generally monthly. Agendas and minutes of the ALUC are not generally available online, but the Airport Land Use Compatibility Plan (ALUCP) is readily available. The ALUCP was adopted in December 2000. Since the consultants writing the ALUCP with the county were also assisting Caltrans with the 2002 revision of the *California Airport Land Use Planning Handbook*, Contra Costa's ALUCP is generally consistent with these guidelines.

Following the adoption of the ALUCP, changes were made to both the membership makeup of the County Aviation Advisory Committee (AAC) and the committee's purpose and objectives.¹⁸⁶ The current membership is 11, with the requirement that one member also be a member of the ALUC. The AAC membership is as follows:

- one member appointed by each of the five County supervisors
- one member from and nominated by the City of Concord
- one member from and nominated by the City of Pleasant Hill
- one member from and nominated by Diablo Valley College
- one member from and nominated by the Fixed Base Operators Association
- two members at large to represent the general public¹⁸⁷

The current bylaws ask that the AAC provide advice and recommendations to the Board of Supervisors on aviation issues related to economic viability and security of airports in Contra Costa County. They may initiate discussions, observations, or investigations, in order to make recommendations to the board. The AAC "... advances and promotes the interests of aviation and protects the general welfare of the people living and working near the airports and the county in general." The reconstituted committee has made a strong push to try to bring pilots, businesses, and the community together. In the past, many community members thought that the AAC was biased in favor of pilots and airport businesses.¹⁸⁸

ROLE OF SURROUNDING JURISDICTIONS

Buchanan Field

Buchanan Field is located on approximately 500 acres of land in unincorporated Contra Costa County (except for a small parcel in Concord). The *Contra Costa County General Plan* (2005) states that land uses “on the airport property should enhance the airport function and be consistent with its goals and operational requirements.”¹⁸⁹

The *County General Plan* acknowledges the policies and provisions of the *Airport Land Use Compatibility Plan* (ALUCP) and suggests referring land use actions to the ALUC if an ALUC referral might be warranted for all actions within the Airport Influence Area.¹⁹⁰ The ALUCP defines the Airport Influence Area as all parcels within 14,000 feet of the runway ends, plus an extension to the north with boundaries congruent with Federal Aviation Regulations (FAR) Part 77, Airspace Protection Surfaces. (See [Figure 24](#)).¹⁹¹ This area includes nearly half the city of Concord, a significant portion of the cities of Pleasant Hill and Martinez, and the unincorporated community of Pacheco.

[Figure 25](#) indicates land uses around Buchanan Field. (Note: the double image of the state highways is due to an error in the source document.) Underscoring the level of surrounding development, [Figure 25](#) indicates that the area within one mile of the airport has a population density of more than 7,000 persons per square mile.

The *County General Plan* also lists the following as appropriate uses within the ALUCP Compatibility Zones for Buchanan Field:

1. agriculture
2. open space
3. warehousing
4. light industry
5. automobile parking
6. low-occupant-density public uses, for example. sewage treatment plants.

Like the county, each of the three cities with significant territory within the Buchanan Field Airport Influence Area (Concord, Pleasant Hill, and Martinez) have general plan policies compatible with the ALUCP.

For example, Pleasant Hill’s Safety and Noise Policy 2A states that the city will “Adhere to *County Airport Land Use Compatibility Plan* development restrictions.”¹⁹² Concord’s 1994 general plan supported retention; goal 11 identified the airport as an important asset for both the city and county. Concord began a general plan update in 2003 that was completed in October 2007; the new plan also accommodates the airport and the ALUCP.

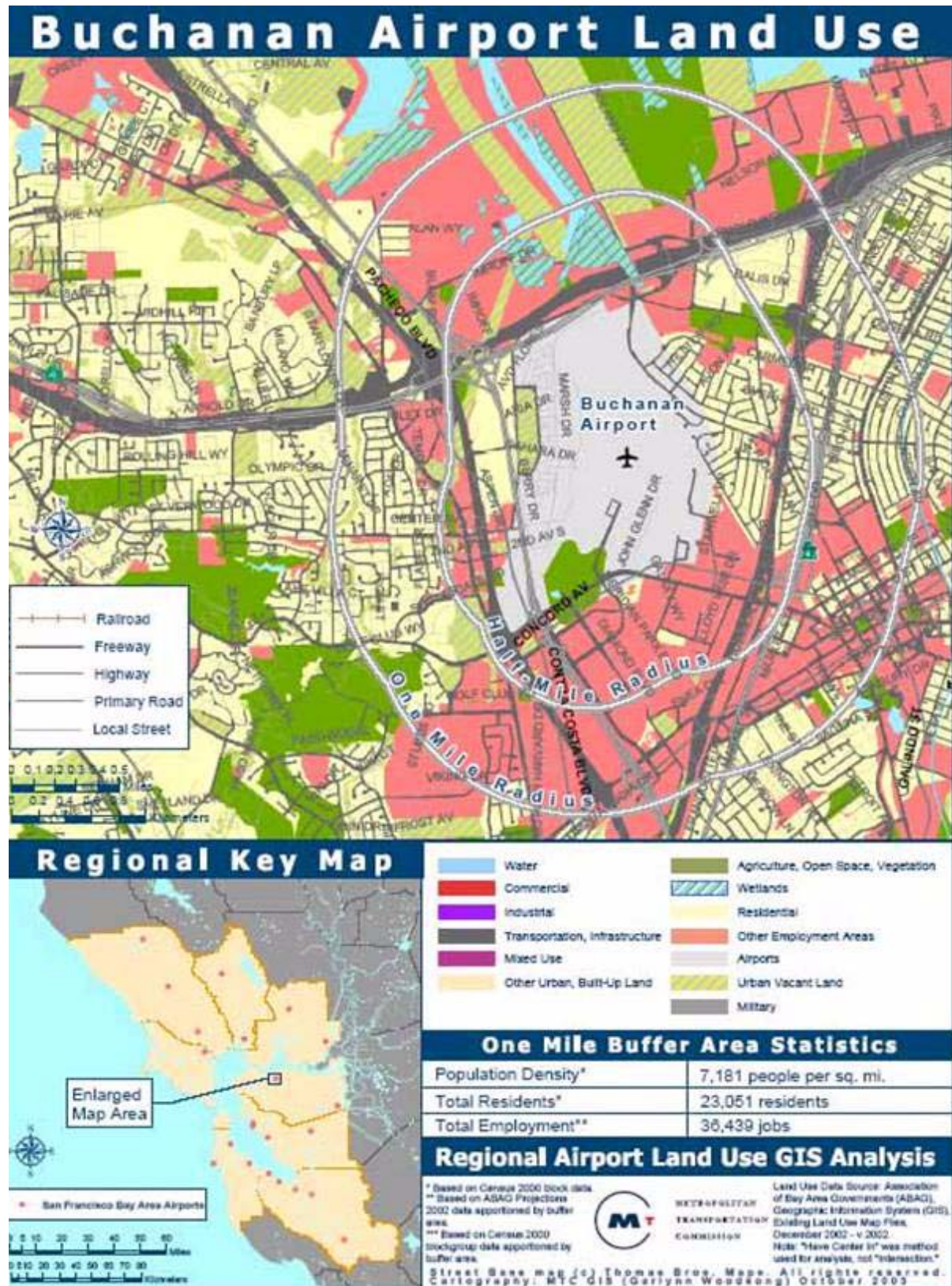


Figure 25 Buchanan Field Land Use in 2002

Source: Metropolitan Transportation Commission, October 2003, www.mtc.ca.gov/projects/air_plan/BA_airports_land_use_1mi.pdf.

The *County General Plan* acknowledges the policies and provisions of the ALUCP and suggests referring land use actions to the ALUC if there is a possibility that an ALUC referral might be warranted for any actions within the Airport Influence Area.¹⁹³

Byron Airport

Byron Airport is entirely contained within unincorporated Contra Costa County. Although more than a century old, the town of Byron is unincorporated, but there is a local advisory council.

Through its first decade of operation, Buchanan Field revenues subsidized Byron Airport—a drain on county resources to some observers. A deficit in the county's airport enterprise fund and dearth of commercial activity led to a 2000 Contra Costa County Grand Jury investigation, which found the county had neglected the facility. County officials disagreed, saying a long-range business plan was being developed. In 2001, the airport director David Mendez reported that the \$1.4 million deficit had been largely eliminated.

Development potential at Byron is limited by the fact that 60 percent of the county's holdings (totaling 1,400 acres) are in wildlife refuges.¹⁹⁴ The remaining lands are designated for agricultural uses. With the exception of the immediate airport vicinity, the surroundings are outside Contra Costa County's current Urban Limit Line.¹⁹⁵

The *County General Plan* lists the following as appropriate uses within the ALUC Compatibility Zones for Byron Airport:

1. agriculture
2. open space
3. low-intensity park and recreation uses
4. low-occupant-density public uses
5. automobile parking

Summary of Airport History and Airport Land Use Planning

The recent history of Contra Costa County's two public airports might be summarized as follows: Despite being hemmed in by urban development, and despite losing both commercial service and a significant amount of its general-aviation traffic since its 1970s peak, Buchanan Field's future as a business-oriented airport appears secure. Its new companion airport at Byron would take an increasing share of private and recreational airport, enabling the older airport to concentrate on serving business aviation.

Concerns about the impacts of aircraft operations have grown with the development around Buchanan Field. Thus, when developers and a county supervisor proposed redevelopment of the airport's 500 acres, many in the county were interested. The county requested a proposal to replace Buchanan Field, even as it simultaneously prepared to update the *Buchanan Airport Master Plan*.

THE PROPOSAL TO RELOCATE BUCHANAN FIELD

Background

In June 2003, Contra Costa County Supervisor Mark DeSaulnier announced his intent to launch a formal proposal solicitation process to transform the county-owned Buchanan Field into what was termed a “smart-growth mix of uses such as central library, museum, sports stadium, parks, homes, shops, offices and transit.” DeSaulnier initially proposed that air traffic and the investment to support it would shift to Byron Airport. This action reportedly eviscerated leaders’ efforts bring scheduled commercial flights back to Buchanan.¹⁹⁶

The idea of closing Buchanan led to a public debate over the value of that airport and of airports in general. DeSaulnier and allies argued that a mixed-use development near the junction of Interstate 680 and Highway 4 could generate hundreds of millions of dollars in extra property taxes for the county, with only a part of this new revenue needed to replace the airport. Some prominent home builders, construction trades unions, and environmentalists voiced support. The development was viewed as a way to provide jobs, support public transit, and bolster the county’s urban growth boundary.

John Dalrymple, director of the Contra Costa Labor Council, stated: “We cannot protect [the county’s] urban limit line in the long run unless we have substantial opportunities for housing within the urban limit line.”¹⁹⁷ Ron Brown, executive director of Save Mount Diablo, a group concerned with limiting urban sprawl around Contra Costa County’s principal natural landmark, stated: “We think the land where the airport is currently located is an ideal location to consider for development.”¹⁹⁸

Contra Costa developers took opposite stances on the controversial proposal. Shapell Industries envisioned erecting homes on the airport property. Prominent east Contra Costa County builder Albert Seeno Jr. appeared committed to preserving the airport. Seeno owns office buildings near Buchanan Field and uses proximity to the airport as a selling point to attract corporate tenants.¹⁹⁹

On August 18, 2003, the Concord Chamber of Commerce held an Airports Forum that included local, state, and national aviation experts. Approximately 100 members of the public attended. Speakers included Spencer Dickerson of the American Association of Airport Executives, Joe Rodriguez of the Federal Aviation Administration (FAA), Austin Wiswell of Caltrans, and Keith Freitas, the new director of Contra Costa County Airports. Panel members discussed the transportation value of Buchanan Field and Byron Airports in the local, state, and national transportation systems.

A question from a member of the public summarized the evening’s topic: “What is the value of the land so we can determine if building homes on the property would be more valuable than the airport?” Responses from the panel indicated the difficulty of such a valuation, comparing it to estimating the value of land under a state highway.²⁰⁰

In September 2003, county supervisors were belatedly presented a three-year-old report detailing the potential economic benefits of Buchanan Field. The report was commissioned by Supervisor Mark DeSaulnier before he suggested finding other uses for the Concord airport. The document was completed in 2000 and presented to an ad-hoc board committee comprising DeSaulnier and former Supervisor Joe Canciamilla. It concluded that the airport contributed \$63 million to the Contra Costa County economy; this could increase to \$163 million if air carrier service were resumed.²⁰¹

DeSaulnier wrote to FAA Regional Manager Andrew Richards, requesting an FAA position in January 2004. Richards responded it was “highly unlikely” that the proposal would be approved, and if it were considered, a substitute airport in Central County would have to be provided. The FAA pointed to the government’s 1947 deed calling for the county to run the airport in perpetuity and noted that the FAA had recently provided \$14 million in federal funds to improve it.²⁰² In fact, as recently as August 2003, the Board of Supervisors had agreed to accept \$935,000 from the FAA to draft a new Master Plan for Buchanan.²⁰³ (The plan update began in 2004 and as of June 2007 was expected to be completed in late 2007.)

In January 2004, Reps. George Miller and Ellen Tauscher sent a joint letter to the FAA opposing the proposal to replace the airport with a mixed-use development. It highlighted Buchanan’s roles as a hub during emergencies and as a reliever airport, diverting air traffic from larger, congested Bay Area airports.²⁰⁴

In March 2004, the Concord City Council officially opposed the county proposal, saying closing the airport adjacent to Concord would be harmful to the local economy, the environment, and regional air travel. Council members also said county supervisors were high-handed in seeking development proposals for the airport land without involving the city most affected. Concord officials cited the airport as a valuable economic asset generating jobs in transportation and other fields. The council vote was 3–1 to oppose closure. Council member Susan Bonilla said she voted no to avoid intensifying acrimonious feelings.²⁰⁵

In April 2004, DeSaulnier sent a letter to voters in his district criticizing the airport’s safety record. It highlighted a 1985 incident when an airplane crashed into the Sunvalley Mall, killing seven people. The letter came with a postcard questionnaire. One response stated supervisors should study moving the airport to a less populated area; the other indicated support for exploring alternate uses for Buchanan, such as a library, community center, and new playing fields. The options offered did not include leaving the airport alone.

The RFP and the Response

On July 12, 2004, the Contra Costa County Community Development Department finally released the request for proposal (RFP) “for the development of a new replacement airport and the reuse and development of the Buchanan Field Airport property.” The official request outlined extensive requirements for building a new airport in central Contra Costa County “within 20 miles” of Buchanan Field.²⁰⁶ (Byron Airport is just beyond this range.) A successful respondent would have to build a replacement Central County airport and win FAA

approval before developing Buchanan. Community Development Director Dennis Barry estimated the entire process could take a decade or more. The county also required a detailed analysis of the costs associated with the project and the projected revenue for the county and nearby cities.²⁰⁷

There was only a single response to the RFP, by Buchanan Field Partners (BFP), a consortium of three firms including Shapell Industries, Lennar Corporation, and Garaventa Enterprises. From the start, identifying an alternative airport site was the major challenge, although in one sense, the search for sites was straightforward: the relatively vacant lands north of State Route 4 are the only significant flat open space in central Contra Costa County.

BFP first proposed the Acme Landfill site near Martinez. Supervisor DeSaulnier had earlier noted that many airports, including New York's LaGuardia and JFK International airports, are built on landfills.²⁰⁸

Friends of Concord Airport, a group opposing the relocation, provided the Board of Supervisors with a report by Brown and Vence Engineering, a firm familiar with Acme and federal cleanup standards. The report estimated the cost of cleanup to be between \$1.2 and \$1.8 billion. Moreover, the landfill is located adjacent to Waterbird Preserve at McNabney Marsh (formerly Shell Marsh). Of the 900 bird species in the United States, more than 110 of them visit the tidelands there, according to Mt. Diablo Audubon President Mike Williams, who stated: "Depending on where the runways are located, it would be intensely disruptive to the wildlife habitat."²⁰⁹

BFP ultimately identified and explored three sites north of State Route 4, all within a two-mile radius of Buchanan Field. HNTB, BFP's airport consultant, did a preliminary airspace analysis and stated that the proposed replacement sites offered possible significant benefits to aviation through enhanced aviation facilities, such as a longer runway with more extension potential than Buchanan Field and precision approach capability.²¹⁰

The same document calculated a market value for Buchanan field of \$141.7 million (p. 57). A preliminary fiscal impact analysis by Brion & Associates estimated that the urban design scheme could produce new net General Fund revenue exceeding \$6 million annually.²¹¹

In August 2005, BFP announced to Contra Costa County planners that they were ceasing to pursue the airport replacement project, because none of the sites were proving feasible.²¹² It was evident that the likely costs of acquiring and preparing the replacement site would far exceed the valuation obtained by BFP for the land under Buchanan field.

NOISE ISSUES

The Debate over AB 2776 Disclosure Requirements

In an effort to reduce complaints and lawsuits from people affected by airport noise, the legislature updated the state real estate disclosure law (AB 2776) in 2002. The law requires

that counties set up an Airport Influence Area, in which property owners are required to tell buyers and renters that noise from airplanes might annoy them. The law leaves it up to the commission to define the Airport Influence Area. At the end of 2003, Contra Costa's ALUC worked with neighboring cities to finalize disclosure zones for both airports before the January 1 deadline.²¹³

Concord and Martinez differed over how close a home had to be to Buchanan Field to warrant disclosure. The disagreement between Concord and Martinez centered on the size of the area and the degree to which the required disclosure would affect real estate prices. The Martinez City Council voted to support use of the existing Airport Influence Area map that included the area within 2.65 miles from the edges of the runways.

The ALUC had established the Airport Influence Area 25 years earlier. The commission created this area not for noise issues, but to limit the occupancy and height of buildings. The area includes more than 40 percent of Concord and portions of Martinez and Pleasant Hill.

The Concord City Council contended that this zone is too wide for the real estate disclosure, and pushed for a much smaller disclosure zone. In September, the Concord City Council voted to urge the commission to use a more limited disclosure map that took in some neighborhoods to the east of Highway 242 and south of the airport. Concord Council member Laura Hoffmeister expressed the common belief that disclosure would negatively affect home prices and therefore should be limited to maintain property values.²¹⁴ David Durant, ALUC vice chairman, noted that although the state mandates that each county set a zone, it does not provide funding to study the appropriate size of a zone.²¹⁵

Ultimately, a disclosure zone considerably smaller than the AIA was established using a noise-based standard. According to ALUC member Hal Yeager, the disclosure zone includes all four safety zones (which have virtually no housing within them) and the area within the 50 dB CNEL noise contour (which takes in approximately 1,400 homes); the widest band is areas where there have been two or more noise complaints over a 15-month period—the longest period for which consistent data was available. The disclosure zone was drawn using major streets as boundaries. Several thousand homes are included, about half the number within the AIA.

The ALUC determined the disclosure zone for Byron with less debate. The disclosure zone extends 1.7 miles from the runways; the nearest current residents are 2.4 miles from the runways.²¹⁶

Community Noise Abatement and Education Efforts

In response to heightened public debate over noise, at the beginning of 2003, the Contra Costa County Airports Division published a new brochure. "How Complaints Regarding Aircraft Operations Are Handled" was created to explain the noise complaint process and give some insight into the Contra Costa County Noise Ordinances and FAA Regulations.²¹⁷

The first two public meetings held in 2005 regarding the *Buchanan Field Airport Master Plan* revealed that several community members believed that nothing was being done to resolve noise issues. In response, the county airports division published on its website a chronology of noise abatement efforts at Buchanan Field.²¹⁸ The following are some of the highlights:

- In 1965, the Contra Costa County Board of Supervisors created the Aviation Liaison Committee to provide advice and counsel on aviation matters, including noise abatement. In 1977, the committee was renamed the Aviation Advisory Committee, and it continues to meet the third Tuesday of each month.
- During the early 1980s, the aircraft traffic pattern was raised from 800 to 1,000 feet for light aircraft and to 1,500 feet for heavy aircraft to help reduce the aircraft noise in surrounding communities. In addition, preferential runways for landings and takeoffs, when wind allows, were published to minimize aircraft flying over homes.
- In 1987, the Contra Costa County Board of Supervisors authorized Airport Ordinance 87-8, which had many noise-reducing clauses. For example, it prohibited flight training Monday through Friday between the hours of 10 p.m. and 7 a.m., and extended hours on Saturday, Sunday, and holidays to 8 a.m. Older and louder (Stage 2) jet aircraft were also restricted from operating at Buchanan Field Airport.
- In 1988, the Contra Costa County Board of Supervisors authorized Airport Ordinance 88-82, which strengthened the aircraft noise restrictions provided in Airport Ordinance 87-8.
- Also in 1988, the airport hired the first employee dedicated to managing the county's Noise Abatement Program and addressing neighborhood concerns.
- In 1989, the airport completed a FAR Part 150 Noise Compatibility Program, as part of a Master Plan update.
- In 1998, noise abatement signs were installed at the runway run-up areas to remind pilots that noise-sensitive communities surround the airport.
- In 1999, the airport established annual meetings with flight schools, FAA Air Traffic Control Tower staff, and air ambulance companies to review the Noise Abatement Program and discuss current community-related noise concerns.
- In 2001, the airport updated its website to provide better information to pilots regarding the noise abatement procedures and requirements at Buchanan Field Airport. This is a resource for anyone looking for information about the airport, including links to the Airport Ordinance and the FAA Advisory Circular on which the ordinance is based. (www.buchananfield-byronairports.org.)
- In 2002, the airport published a “Noise Management Program Guide” for pilots to quickly reference preferential and less-impacted routes for flight planning purposes. Additionally, in 2002 the airport streamlined the automated call-in phone system as requested by users. Noise complaints can now be filed by a single-touch telephone message system, and a complaint report is accessible by the Internet.

- In 2003, the airport implemented a new program in which aircraft owners were notified if their specific aircraft operation caused a noise complaint.
- In 2005, the airport began an update to the Buchanan Field Airport Noise Compatibility Program, approved by the Board of Supervisors in 1989. A draft of the new FAR Part 150 study was released in June 2006.

Airport staff have expressed satisfaction with the Noise Abatement Program, but recognize that there will always be room—and demand—for improvement.

Noise control has been successful by another measure: the citizen group People Over Planes, which is generally critical of airport operations at Buchanan, has concluded that there is no need for an FAA-funded noise control programs. The group's website cites the ALUC Plan in reaching this conclusion:

As specified in Part 150 of the Federal Air Regulations (FAR), the FAA will fund and/or allow certain noise control programs if a significant portion of the land surrounding the airport is within the very noisy 65 dB CNEL contour line. The last Part 150 noise study was conducted in 1990, and resulted in a few modest programs. Since then, the number of properties within the 65 dB CNEL contour line has decreased, and the noise study of the recently completed ALUC plan indicates no significant increase in the number of such properties expected over the next 20 years, even if the number of current jet operations increases by 4 times and if the total number of operations doubles. Accordingly, we do not see a benefit to the community for conducting the proposed Part 150 study at this time.²¹⁹

Nonetheless, a Part 150 noise study is being conducted as part of the *Buchanan Field Master Plan* update.²²⁰

NEARBY COMMUNITY DEVELOPMENT ISSUES AND PLANS

Concord Naval Weapons Station Site

As noted above, the City of Concord began a general plan update in 2003. In the spring of 2004, city officials held community workshops. Two discussions about the future of the Concord Naval Weapons Station were held during summer 2004 as a culmination of those workshops. The largest part of the proposed reuse of the site called for the opening of an eight-square-mile inland area of the Naval Weapons Station, to become the largest development the East Bay has seen in years. The area is nearly nine times larger than Buchanan Field airport.

In the summer of 2005, the federal 5,200-acre inland area was declared surplus and released to the community for development. Concord already has a framework: in April 2004, city

planners presented three alternatives for the Naval Weapons Station to the city council. Homes for as many as 46,900 people and businesses offering as many as 28,000 jobs would supplant the Navy base. Although these figures are preliminary, Concord's Principal Planner Phillip Woods stated that the city would be guided by smart growth principles, and that plans would establish jobs near homes to minimize commutes and create pedestrian-friendly neighborhoods.²²¹

Land Use Issues Around Byron Airport

Grand Jury Investigation of Airport Operation and Planning

In June 2000, the Contra Costa County Grand Jury concluded in its annual report that the Byron Airport was hampered by the county's "neglect" in planning and management, and that it relied heavily on Buchanan Field revenues to stay financially afloat. Jurors also took the county to task for a "remarkable lack of scheduling" in finishing the airport land use plan. Jurors said the delay had stymied Byron's chances for development. A recommendation to update the land use plan was first made in 1991.²²²

Specifically, the report said the county should initiate better coordination and communication between the Airport Land Use Commission and the Aviation Advisory Committee, two groups that advise staff on operations and planning. It also recommended that these groups be given more authority and that there be more public involvement. Grand jurors further recommended that the county separate the airport budgets of Buchanan Field and Byron Airport to give residents a more realistic picture of Byron's financial position.²²³

In its written response, county officials rejected those recommendations, insisting the two commissions have enough authority. They also stressed that communication between the commissions, county staff, and supervisors was good. County staff members stressed that the public had been involved through public hearings on the ALUC Plan. They did, however, accept the recommendation that the county planning staff and Director of Airports report frequently to county supervisors, and they agreed that the land use report could show Buchanan Field and the Byron facilities in separate parts of the document.²²⁴

Byron Master Plan Updates

The *Byron Airport Master Plan* was developed in two phases. Phase I, the *Byron Airport Air Cargo Feasibility and Roles Assessment*, was completed in October 2003. The final report concluded that creating an air cargo hub at Byron Airport is a long-term possibility dependent upon population growth, economic development, and infrastructure improvements developing in the broader East Contra Costa County region.²²⁵ Conversely, it was infeasible for air cargo hub operations to develop within the 5- to 15-year planning window, in part because of these factors:

- Air cargo operators are demand driven, which means sites must have local demand.

- Byron Airport would compete with the established Oakland, Sacramento-Mather, and Stockton Airports for air cargo operations. The cargo capacity at existing air cargo airports still has significant room for growth; therefore, capacity constraints will not force air cargo operators to look for alternate sites in the near future.
- A majority of air cargo movements begin and end via truck, and east county roadways are restrictive.²²⁶

The final Master Plan and business plan reports concluded that Byron Airport is well positioned for long-term growth of general aviation and air cargo dependent upon population growth, economic development, and infrastructure improvements in the broader East Contra Costa County region. Regional development is necessary to bring both critical mass and infrastructure improvements nearer to the Byron Airport to help facilitate its aviation and economic development growth over time.²²⁷

The report states that growth has to come first.²²⁸ It noted that Byron Airport is hampered by competition from airports in Stockton, Livermore, and Rio Vista, and that it is currently too remote to draw business. There is not as much overflow business from Buchanan as some airport observers originally expected.²²⁹

Phase II of the *Byron Airport Master Plan* was completed in December 2004. Phase II assessed and determined existing and future facility needs to accommodate both aviation and non-aviation activities at Byron Airport. The process also included developing a business plan to assist facilitating development on and around the airport on county-owned property. To maximize access and involvement, a Project Steering Committee was created with more than 30 members representing the business, aviation, local, regional, and environmental communities, as well as surrounding cities. Airport staff and consultants had four meetings with the Steering Committee and three evening public meetings during the Master Plan development process.²³⁰

Byron Land Use Plans and the ALUC Plan

As noted earlier, Byron is an unincorporated community, planned and governed by Contra Costa County with the assistance of a local advisory council. Both the Byron Municipal Advisory Council (MAC) and the neighboring incorporated city of Brentwood believe the airport could be a key factor in bringing more jobs to their communities.²³¹

The county's urban limit line has been tightly drawn around Byron, a community of 1,000 residents. The line is intended to curb urban sprawl, but inhibits Byron's efforts to develop its downtown and limits how Byron Airport evolves. Remote and served by only two-lane county roads, Byron's transportation options are too limited to accommodate substantial growth.

In February 2004, incoming Byron Municipal Advisory Council chairman Jim Warnock said Byron needs new or better roads, and would benefit from an eBart station, a light-rail train that would connect commuters to the Pittsburg/Bay Point BART station (see [page 155](#)). Meanwhile, the Byron Union Sanitary District was struggling to save a failing treatment

facility. The state will not allow new sewage hookups until the district complies with a strict cleanup and abatement order.²³²

The *Byron General Plan* designates about 10,000 acres, most of which lie east of town, for residential development of varying densities, and about 3,000 acres for light industrial or commercial uses. “The airport has the potential for light industry and other commercial development,” said Kathy Leighton, a member of Byron’s Municipal Advisory Council (MAC) and the ALUC as well as a local historian. A new transportation corridor bisecting the residential area is planned to link Byron Highway near the Byron Airport with Highway 4 at the entrance to Discovery Bay.²³³ Officials in Byron see the airport and a nearby hot springs resort as two possible hubs for development.²³⁴

Development potential at the airport is limited by the fact that 60 percent of the county’s holdings (totaling 1,400 acres) are in wildlife refuges.²³⁵ County officials were skeptical about the latest proposal to develop the hot springs, submitted in December 2005, citing airport noise, environmental concerns, and lack of water and sewage infrastructure.²³⁶ Discussions about economic development related to the airport have fallen flat because of such restrictions and higher priorities related to economic development in surrounding communities such as Brentwood and Antioch.²³⁷

During hearings on the updated Contra Costa County ALUP in late 2000, Kathy Leighton said the plan is generally a good one, reflecting Byron’s desire to set up a commercial core near the airport by drawing in business and industry. Leighton said county staff and consultants did a good job in listening to the concerns of Byron residents regarding the airport. As a result, she said, there had been little struggle between the county and the community over the document. The few households near the airport have long ties to the land, often across several generations.²³⁸

However, some property owners near the airport objected to the land use plan, arguing it would restrict their ability to build houses on their land at some point. Alan Bradford owns an 80-acre parcel adjacent to the runway. He said the land use plan would prevent him from building on five-acre parcels, as was allowed under current zoning designations.²³⁹ Ultimately, the ALUC Plan was modified to accommodate five-acre parcels.²⁴⁰

George Hardie III, president of International Wind Companies, told the ALUC and county staff that he wanted to make sure his firm’s plans to install windmills nearby would not interfere with flight patterns. He planned to replace windmills at Buena Vista Energy with new ones that could be as tall as 200 feet. Philip Day, former MAC member and airport commissioner, also said that he was somewhat worried that height restrictions on land around the airport would hurt Byron’s chance to grow. However, “I’m pretty satisfied with it. It’s compatible with the *Byron General Plan*,” he added.²⁴¹

Mountain House, a 7.5-square-mile (4,784-acre) “new town” in San Joaquin County is the nearest major urban development to Byron Airport. According to the Mountain House website, the new town will have a population of about 43,500 residents in 20 years. Most of

Mountain House is planned for detached homes, townhomes, condominiums, and apartments, plus supporting public facilities and open space; 700 acres will be used for commercial projects with the potential for providing over 20,000 local jobs.²⁴²

Portions of Mountain House are in the ALUCP Zone D, which places no restrictions on land uses, and only requires ALUC review for proposed structures over 100 feet in height. The closest parcels are residential. According to Hal Yeager of the Contra Costa ALUC, there was a missed planning opportunity in the early 1990s for the two counties to have collaborated on planning for commercial development on Mountain House parcels located closest to Byron Airport. This might have served as a catalyst for businesses using Byron Airport and provided even more distance between the airport and Mountain House residents. As of mid-2006, only residential development and some supporting land uses had been built at Mountain House, but construction was set to begin on two commercial complexes in the hopes of wooing real estate, insurance, and other office tenants.²⁴³

eBART and Byron Airport

In December 2002, BART directors approved the system's first-ever expansion policy. Future BART extensions would be aimed at areas densely populated with residents or workers. The board also agreed to undertake an environmental study of an extension in eastern Contra Costa County that could use diesel-powered light-rail trains on existing Union Pacific tracks, at a fraction of the cost to build a traditional BART extension. The system, known as "eBART," would extend from the Pittsburg/Bay Point station, now the end of the line, to Byron, passing through Antioch, Oakley, and Brentwood. It would cost about \$800 million.

The decision to proceed with studying the Contra Costa extension shows that regions may be able to win extensions even if they score poorly on some of the new extension criteria. Eastern Contra Costa was ranked "low" or "low-medium" on its current smart growth development and policies, but BART staff said cities in that area were willing to make the needed improvements.²⁴⁴

In 2004, Bay Area voters approved Regional Measure 2, whose proposed traffic relief projects include a BART extension from the Pittsburg/Bay Point Station east to Byron. Construction was planned to begin in 2011.²⁴⁵ A request for proposals to perform detailed planning around several eBART stations was released in December 2005.

The development of eBART would appear better at attracting commuter housing than airport-oriented land uses around Byron. Thus, it could increase airport area land use conflicts in the vicinity of Byron Airport, since BART is still primarily used by commuters inbound to San Francisco and the central East Bay, rather than by reverse commuters.

POTENTIAL ROLE AND IMPACT OF SMART GROWTH

By some measures, smart growth appears to be well-established in Contra Costa County. For example, many smart growth advocates would argue that a strong regional or subregional plan

with urban limit lines enhances the realization of smart growth planning. Contra Costa County and its cities have had legally mandated Urban Limit Lines since the late 1980s. They have also jointly conducted a countywide 20-year visioning exercise known as “Shaping Our Future” (SOF), which explored smart growth concepts through GIS models and mapping. The county board and most city councils have publicly endorsed smart growth planning trends embodied in the SOF process.²⁴⁶

How will Contra Costa’s smart growth initiative impact its two airports? The now abandoned plan to replace Buchanan Field proposed a major smart growth development project as an alternative use for a very circumscribed airport. While the process may have never garnered sufficient support to have been realized, an experienced development team did examine the realities of replacing the airport in some detail, and found the complexities ultimately overwhelming. Byron Airport was ruled out as a replacement airport, even though its advocates want more traffic and industrial development. Byron Airport still lacks infrastructure and market position relative to competing airports.

The opening to urban development of an eight-square-mile portion of the Naval Weapons Station represents the largest infill development opportunity the East Bay has seen in decades. The area is nearly nine times larger than Buchanan Field airport. Although there are likely to be numerous issues with the redevelopment of the former Navy base, *prima facie*, it offers far more land for infill development in central Contra Costa County without the need to replace and redevelop an airport. With the release of the Naval Weapons Station, smart growth can be pursued without conflicting with continued airport operation and compatible land use planning in the airport area.

EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS

Contra Costa County benefits from having an up-to-date ALUCP and an ALUC that meets regularly. After two years of uncertainty as replacement opportunities were reviewed, Buchanan Field’s 500 acres appear likely remain in airport uses. The question is how to make the best of this situation for both the airport and its neighbors. Challenges remain for Contra Costa County, as job growth continues to outpace production of homes. Where needed housing will be built is unknown, but it appears unlikely that any new homes will be located within the 65 dB CNEL noise contour.

The emphasis of the *Buchanan Master Plan* update process has been on developing the airport in ways compatible with its close-in neighbors. With this end in mind, Hal Yeager of the ALUC and People Over Planes suggested certain innovative capital items for the Master Plan update. Two examples follow:

- On-demand lighting for Buchanan’s noise abatement runway, enabling it to be used for nighttime take-offs as needed.
- Buying quiet planes for FBOs and encouraging their use for touch-and-go training. The county would own the planes and lease them on favorable terms to FBOs. The more use, the lower the effective lease rate.

Yeager states that the ALUC recognizes that smart growth means finding and keeping compatible land uses at and near the airport. He would like to see the county buy land impacted by the airport and then hold and sell it conditionally to developers that will build airport-compatible uses.²⁴⁷

SUMMARY

It is nearly impossible to replace an existing airport, even when its operation and expansion is constrained by incompatible land uses. Apart from opposition by airport users and the state and federal government’s interest in protecting its substantial investment in airport infrastructure, it is rare to find a feasible replacement site that has comparable proximity to the population served by the existing airport.

Both the county and affected cities have adopted smart growth policies that respect the ALUCP. The two airports’ existence appears assured, although Buchanan Field remains surrounded by development. Development around Buchanan Field will mainly be redevelopment and generally will not be large scale. Policies that encourage infill development projects compatible with the airport are being sought, and would seem to be imperative if the airport is to prosper.

The GIS databases and techniques developed in the course of the county’s Shaping Our Future planning process may be useful in planning for compatible land uses around Buchanan Field.

At Byron, the strategy is one of long-range planning to partly supplant its now green borderlands with airport-compatible employment uses when population and economic growth make conditions ripe.

APPENDIX D

CASE STUDY—OAKLAND INTERNATIONAL AIRPORT

Oakland International Airport (OAK), Alameda County

Airport location	City of Oakland (Port of Oakland jurisdiction)
Airport size	2,500 acres
Type of facility	Regularly scheduled passenger flights, cargo, and general aviation
Level of airport activity	14.4 million passengers, 673,00 metric tons of cargo and 348,000 aircraft operations in 2005
Curfew	None, 24-hour operation
Most recent ALUCP	1986
Most recent <i>Airport Master Plan</i>	2006
Nearby cities (population 1/1/06)	Oakland: 410,600; Alameda: 74,400; San Leandro: 80,900
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Surrounded by built-up urban area with significant residential development to the east and west of the airport in the cities of San Leandro and Alameda • Airport Development Plan challenged in court over environmental documents • Private schools locating near the airport
Major issues	<ul style="list-style-type: none"> • Conflicts with residential development, especially on Bay Farm Island immediately to the west of the airport • High number of noise complaints • Pressures to build housing in industrial areas of San Leandro near the airport
Approaches to solving airport/community conflicts	<ul style="list-style-type: none"> • Quarterly reports that include single-event data • Extensive home insulation program • Changes to flight paths
Stakeholder groups	<ul style="list-style-type: none"> • Airport-Community Noise Management Forum • Airport Master Plan Stakeholder Advisory Committee • Citizens League for Airport Safety & Serenity (CLASS)
Integration with smart growth policies	Smart growth policies in surrounding cities are increasing density outside of the Airport Influence Area and decrease pressure for incompatible development closer to the airport
ALUC agency	Alameda County
ALUC staff contact name	Cindy Horvath
ALUC staff contact phone	(510) 670-5400
ALUC staff contact e-mail	cindy.horvath@acgov.org

INTRODUCTION

Oakland International Airport (formerly known as Metropolitan Oakland International Airport) is located in southwest Oakland between Interstate 880 and the San Francisco Bay and the cities of Alameda and San Leandro, as shown in [Figure 26](#). The two other commercial airports in the San Francisco Bay Area are the San Francisco International Airport (SFO) and Mineta San José International Airport.

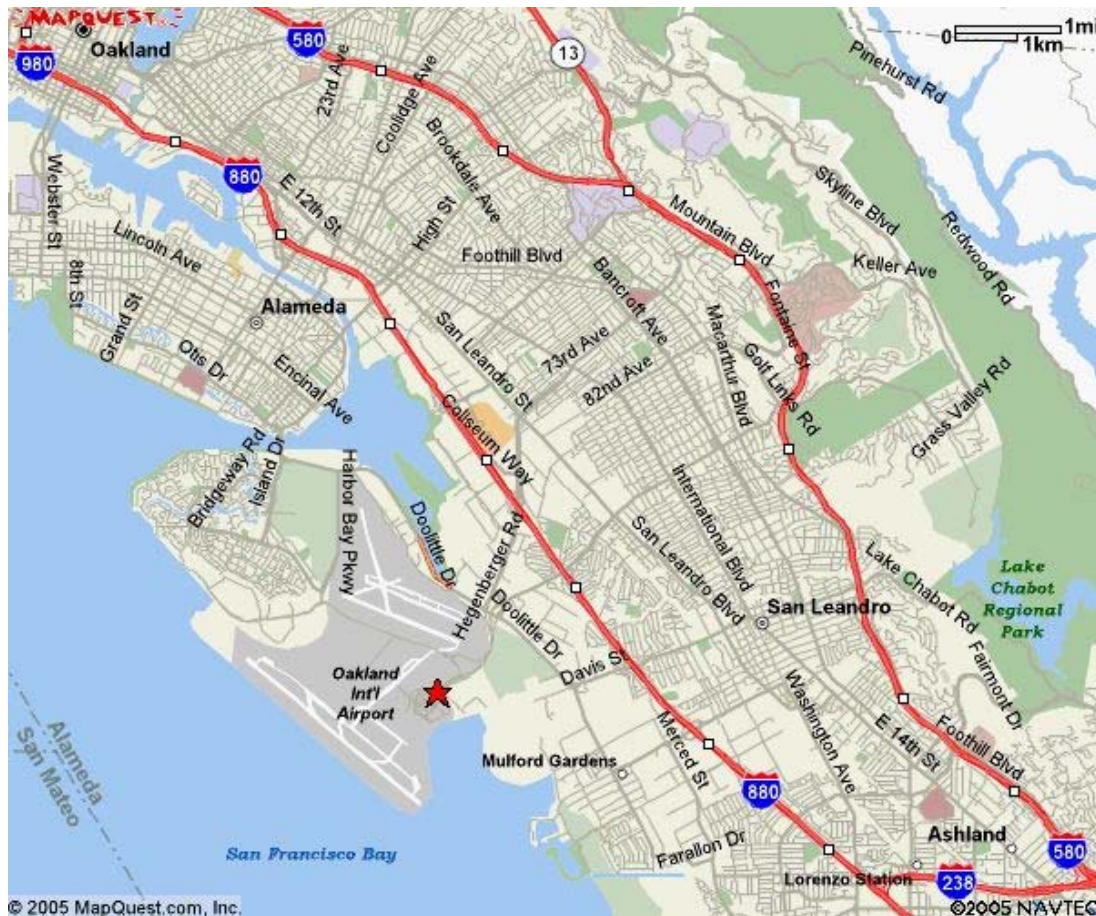


Figure 26 Oakland International Airport Vicinity

Source: MapQuest.com, Inc., www.mapquest.com (accessed July 2005).

Charles Lindbergh dedicated the Oakland Municipal Airport on September 17, 1927, at what is now the North Field. Today's Oakland International Airport (OAK) is effectively two airports—South Field, which handles all airline traffic, and North Field, which is shared by cargo carriers and general aviation. The airport is owned and operated by the Port of Oakland, which was established in 1927 as an independent department of the city of Oakland. The Port spans 19 miles of waterfront, and oversees more than 900 acres of terminal facilities, in addition to the airport.

Passenger and air cargo traffic have steadily increased at OAK since Federal Express established their western region hub in Oakland in 1988 and Southwest Airlines became the dominant passenger carrier in the 1990s.²⁴⁸ Passenger traffic was up for the seventh consecutive year in 2004, increasing by four percent to 14.1 million passengers per year. Cargo traffic was up 8.5 percent and total commercial operations increased 5.1 percent to 186,550.²⁴⁹ The airport has a significant economic impact in the region. Director of Aviation for the Port Steve Grossman said that air cargo operations in Oakland employ 4,000 people. Related development, such as distribution centers and Internet commerce operations, have led to the creation of 5,000 to 8,000 jobs in the area around the airport.²⁵⁰

In addition to OAK, there are two other public-use airports in Alameda County—Hayward Executive Airport and Livermore Municipal Airport—both of which only serve general aviation. Although Alameda County does not own or operate any airports, the county has advisory jurisdiction over airport area land use through its Airport Land Use Commission (ALUC). The ALUC planning area (Airport Influence Area) for OAK includes portions of the cities of Oakland, San Leandro, and Alameda.

The airport is predominantly surrounded by industrial, commercial, and airport-serving land uses. However, there is residential development within the Airport Influence Area (AIA), and many residences in Alameda and San Leandro are affected by aircraft noise. When the Port initiated an Airport Development Program in 1992, there was community concern. Litigation was filed in 1998, eventually leading to settlement agreements and expansion of the airport's Noise Management Program. Aspects of the expanded program include increased noise monitoring and public outreach, and stakeholder groups that work together on operation and development issues.

Smart growth is alive and well in the communities surrounding OAK. Oakland and San Leandro are increasing density in their downtowns and around Bay Area Rapid Transit (BART) stations; all three of the surrounding cities are encouraging mixed-use developments and improving infrastructure to support alternative transportation modes. Planning and development is well underway for Oakland's Coliseum transit village just beyond the AIA boundary, northeast of the airport. As of mid-2005, higher-density housing was not planned within the AIA.

AIRPORT LAND USE PLANNING

Airport Planning

In 2005, OAK was operating under the *Metropolitan Oakland International Airport Master Plan* approved in 1988. To accommodate expected growth in air traffic, the Port of Oakland initiated the Airport Development Program (ADP) in 1992. The Port first approved the Airport Development Plan in 1997.

Citizens' groups and the city of San Leandro mounted legal challenges to the Environmental Impact Report for the ADP. Settlements reached in 2001 and 2002 required a *Supplemental Environmental Impact Report* to be prepared but allowed some improvements to go forward. Those improvements included five new passenger gates, a six-lane parkway linking the airport to Bay Farm Island and I-880, and a multilevel parking facility.²⁵¹ As part of the settlement, plaintiffs agreed not to challenge the revised environmental study.²⁵²

In September 2003, the Port released the court-ordered environmental report for public comment. The project called for expanded cargo facilities, roadway improvements, and 10 added terminal gates. As ordered by the court, the analysis focused on the potential impacts on air quality, burrowing owls, and residents' sleep.²⁵³ The study found that nothing can be done

to avoid the harm caused by increased emissions of acrolein, one of dozens of toxins released from jetliner exhausts. Port environmental officials described this as a groundbreaking study into the airborne movement of pollution. Few airports had measured air in the surrounding community.²⁵⁴ The study also found that noise would be effectively dampened by quieter, next-generation jets and by noise-proofing nearby houses. The disruption to burrowing owls can be mitigated by relocating the birds to the delta.²⁵⁵

In December 2003, Oakland Port Commissioners approved the environmental study. In April 2004, construction began on projects approved under previous environmental clearances. This \$500 million project to expand and renovate Terminal Two and build a seven-story, 6,000-car parking garage was the largest in the airport's history, and just the beginning of a \$1.4 billion plan to expand and modernize the entire airport. The plan called for a new Terminal Three on the site of the abandoned United Airlines maintenance hangar and two BART connector stations.²⁵⁶

As required by the 2001 settlement agreement, the Port established the Master Plan Stakeholder Advisory Committee with about 40 stakeholder representatives from the cities of Alameda, San Leandro, and Oakland, the San Leandro Unified School District, Alameda County, citizens groups, and airport users. Development of the 20-year master plan began in June 2004, and the plan and associated environmental impact report were approved by the Board of Port Commissioners in March 2006. The stakeholder process included discussions of airspace, land use, forecasts of aviation demand, analysis of airport facilities, and environmental impacts.²⁵⁷ San Leandro and Alameda were concerned about taxiing noise related to some of the alternatives proposed. They planned to work with the airport on terminals, landside improvements, parking, and runway improvements.²⁵⁸ The 2006 *Oakland International Airport Master Plan* recommends building a third terminal in the near term, but does not include plans for runway expansion (despite limited runway capacity) because of financial and environmental constraints. The master plan also aims for low growth in air cargo traffic.

Planning for the airport development takes place within the larger context of the Port of Oakland *Strategic Plan* that was most recently updated in 2002. One of the goals in the *Strategic Plan* is to develop sustainable community relations. Specific objectives include expanding the community involvement program and maintaining good relations through proactive communication during the airport construction process.²⁵⁹

History of Land Use Issues in the Airport Vicinity

Airport Issues

OAK staff began implementing a Noise Compatibility Program (NCP) in the 1970s. The *Oakland General Plan Noise Element* describes the NCP as follows:

Oakland International Airport (OAK) has established noise-abatement policies and procedures regarding runway use, aircraft operation, and

flight patterns. The airport also operates an internal noise management office which administers a variety of noise-management programs: computerized systems to monitor airport-related noise levels in surrounding communities, sound-insulation programs for residences affected by airport noise, “flying quietly” education provided to pilots, periodic public meetings to address community concerns over noise, online information ... and a noise report hotline.²⁶⁰

The Noise Element also describes the noise environment in relation to OAK.

... noise levels in excess of 65 CNEL [Community Noise Equivalent Level] are primarily experienced at the airport, over water, and over small areas of Bay Farm Island. In addition, it is acknowledged that airplane overflights and other airport operations affect several neighborhoods in Oakland, San Leandro, and the City of Alameda that are nevertheless outside of the 65 CNEL contour.²⁶¹

Land use compatibility issues relate mainly to noise from general aviation operations at North Field. In 1997, the Port initiated an Airport-Community Noise Management Forum to work on these issues with community members, Alameda, San Leandro, the FAA, and airport users. The group agreed to three parameters: there could be no transference of noise from one community to another; there could not be commercial flights at North Field; and there could not be a curfew, although quiet hours would be encouraged. The forum educated stakeholders about airport operations and aviation regulations and used extensive noise monitoring and reporting as a basis for discussions.²⁶²

Under the settlement agreement with the City of San Leandro, the port agreed to fund the insulation of 200 homes in San Leandro. The San Leandro Airport Noise Insulation Program officially began in June 2004. About 400 homes qualified for insulation.²⁶³ In return for insulation, homeowners must sign an aviation easement releasing the airport from liability for aircraft noise. However, in December 2002, it was reported that many residents said they did not want to sign away their legal rights just to participate in the program. San Leandro’s school district also negotiated a \$5 million agreement with the Port in 1998 to insulate five of its schools in the area.²⁶⁴

In April 2003, the Port announced the third phase of its Sound Insulation Program in Alameda. About 600 homes on Bay Farm Island are eligible for insulation. Phase 1 of the program was completed in 2002, Phase 2 in 2003. The Sound Insulation Program is funded by federal Airport Improvement Program (AIP) grants. Residents are pleased with the results, which reduce interior noise levels an average of 8 dB.²⁶⁵

Airport Area Land Use Issues

There are no major new land use development issues around OAK because the area is mostly built out. The nearest transit-oriented development, the Coliseum BART Transit Village, is

outside of the AIA. This high-density, mixed-use project is discussed in more detail beginning on [page 177](#). San Leandro and Alameda avoid residential development near airport safety zones and within the CNEL noise contours. New development in the airport and port areas remains largely industrial and commercial. However, there is pressure for residential development in the industrial areas of San Leandro and Oakland west of Interstate 880, and developers continue to suggest additional residential land uses on Bay Farm Island.

The Port of Oakland has land use jurisdiction over all the land in Oakland within the AIA, except one small area along High Street next to I-880. The Port also has the responsibility to develop and manage lands within its jurisdiction and has authority over land use planning and approval. “The mission of the Port’s Commercial Real Estate (CRE) Division is to care for, promote, develop, and enhance Oakland’s urban waterfront for economic benefit and public enjoyment.”²⁶⁶ Commercial, business, recreational, and retail development is flourishing in the area with the Port’s jurisdiction.

The CRE Division has been selling port land to finance airport expansion and other capital expenditures.²⁶⁷ In February 1999, the CRE announced it was selling 73 acres of underutilized property in the Oakland Airport Business Park, just off Interstate 880 near the airport. The development was expected to include hotels, office space, distribution facilities, and other commercial and industrial uses.²⁶⁸ By December 2000, the CRE had sold the last 14 acres of land at the Business Park for a 240,000-square-foot flex-use campus, designed to service companies needing office, research and development, or distribution space.²⁶⁹ In 2001, the CRE sold land for the Hegenberger Gateway Metroport project, a planned office and hotel high-rise development at the intersection of Interstate 880 and Hegenberger Road, but by 2003 the office market collapsed. The project became a regional retail center with a Wal-Mart store. The Port made \$14.5 million on the deal.²⁷⁰

There is a trend toward conversion of former industrial facilities to medium/high-density mixed-use projects along Oakland’s waterfront. As of mid-2005, these developments were still outside of the AIA, but the trend was moving south. For example, projects were being planned at Oak Street and Ninth Avenue and at 29th Avenue near Ford Street. Pressure for general plan amendments to convert industrial land uses is continuing.²⁷¹

In February 2003, a new developer assumed control of the 300-acre Harbor Bay Business Park on the south end of Bay Farm Island near the airport. The office park was home to about 85 businesses, but almost half the land remained undeveloped. The new developer believed completion of the Cross Airport Roadway, which connects Bay Farm Island to Interstate 880 at 98th Avenue and the airport, could help attract new tenants.²⁷²

In February 2002, the ALUC voted to rescind an earlier vote against a private school on Bay Farm Island—500 feet outside of the runway safety zones and directly under the flight path of aircraft departing from two of the North Field runways. The ALUC originally had opposed the project out of concern that complaints about excessive aircraft noise might lead to costly lawsuits.²⁷³ The developer of the school hired a law firm to help them change the application,

and it was approved. The ALUC and county legal staff decided not to get involved because the project had become political.²⁷⁴ If this had been a public school project, state approval would have been necessary for a school that close to an airport (within two miles), and it is less likely that a school would have been built at this location.

Figure 27 shows existing land uses within a mile of the north end of North Field in 2002. The map demonstrates that land uses to the east of I-880 toward the airport are mostly commercial and industrial, while those to the west in Alameda are mostly residential.

Airport Comprehensive Land Use Plan

The purpose of the 1986 *Alameda County Airport Land Use Policy Plan* (ALUPP) is to provide policy direction and guidance for the Alameda County ALUC when evaluating referrals for proposed developments near airports located within the county. It also guides staff from local jurisdictions as they prepare general plan and zoning ordinance changes and propose new land uses near airports.²⁷⁵ According to Natalie Fry, a transportation planner with the City of Oakland, Oakland Councilmember Larry Reid, whose district includes OAK, follows the activities of the ALUC.²⁷⁶

The *Airport Land Use Policy Plan* (ALUPP) designates safety zones and noise impact zones for Alameda County airports and specifies allowable uses, densities, and heights of structures. Safety Zone Policy 3.2 lists new shopping centers, restaurants, schools, hospitals, and arenas as examples of incompatible uses. New housing is prohibited in safety zones and other uses are evaluated based on the density of people they generate throughout the day; incompatible uses would yield a density above 25 persons per net acre over an eight-hour period or above 50 persons over a two-hour period. Noise Zone Policy 18 requires sound insulation to ensure a maximum interior 45 dB CNEL in new residential, education, and health-related uses in noise impact zones. The ALUPP also requires that purchasers of property currently or potentially subject to normally unacceptable noise levels are aware of those conditions.²⁷⁷

Alameda County began the process of updating the ALUPP in 2003. The update was delayed by lack of funding and staff resources, but in 2004 the three airport operators in the county—the Port of Oakland, the City of Livermore, and the City of Hayward—agreed to help fund the updates.²⁷⁸ The new ALUPP will be organized as a countywide plan, combining three compatibility plans in one document. The goal is to have a plan for each airport that clearly defines the review and referral process and requirements with respect to safety, noise, height, and general referral areas (AIAs). The referral process and requirements will attempt to be “user friendly,” facilitating ALUC staff in making plan compatibility findings, and helping local staff and project sponsors understand how and when to make a referral.²⁷⁹ In August 2006, the ALUPP update was expected to be completed by the end of the year, although it was still in progress in late 2007. There were no plans to modify the Airport Influence Area for OAK, but that could change after the draft is circulated for public review. Once approved, the updated ALUPP will be available for download from Alameda County’s website.²⁸⁰

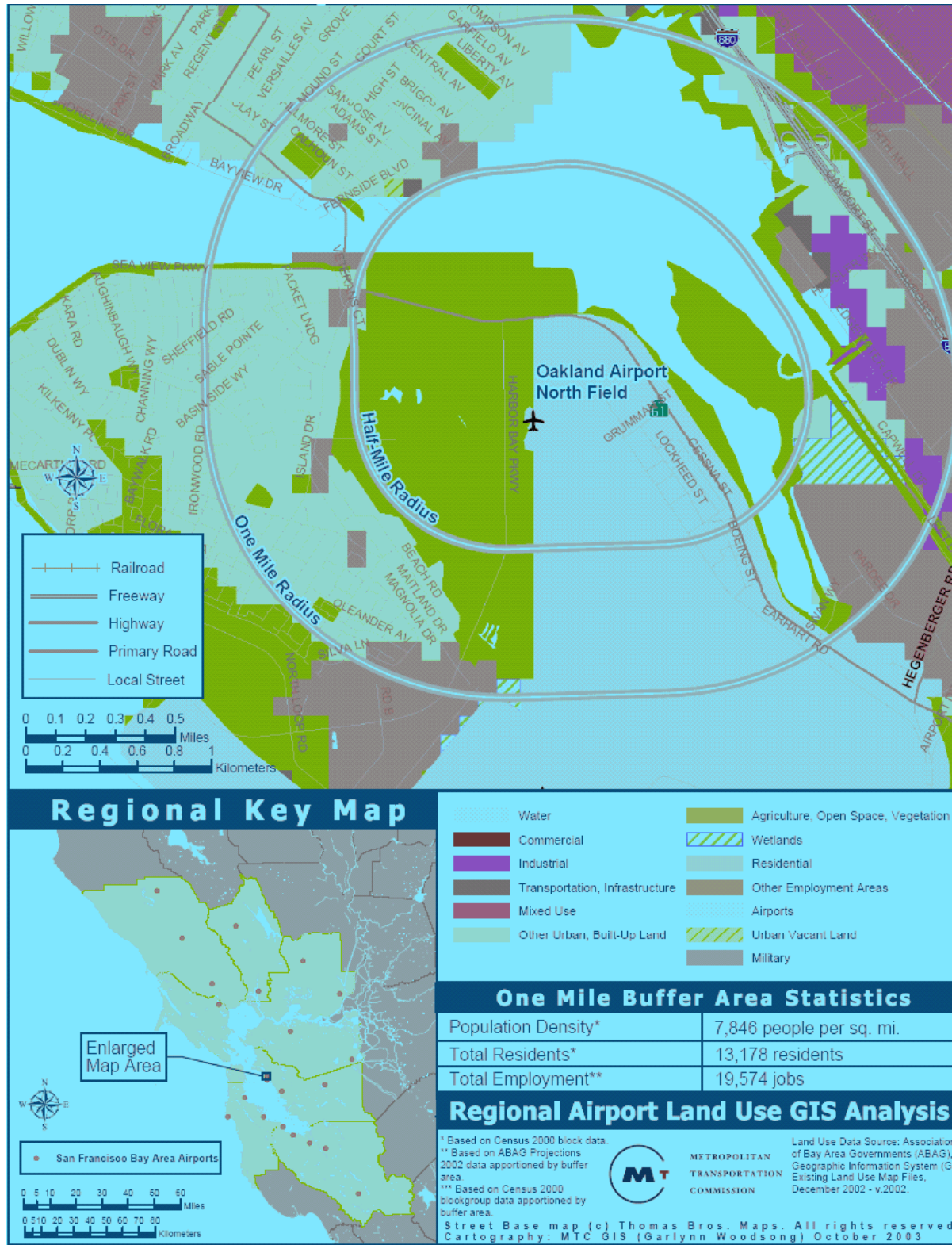


Figure 27 Oakland Airport North Field Land Use in 2002

Source: Metropolitan Transportation Commission, October 2003, www.mtc.ca.gov/projects/air_plan/BA_airports_land_use_1mi.pdf (accessed April 25, 2004).

The current ALUPP defines a single general referral area that forms a combined Airport Influence Area for OAK and Hayward Executive Airport. The resulting area includes portions of Alameda, Oakland, San Leandro, San Lorenzo, and Hayward, west of Interstate 880. The ALUC reviews projects within the AIA for consistency with the ALUPP. Oakland, Alameda, and San Leandro have referred few land use changes to the ALUC in recent years. In June 2005, San Leandro Planning Manager Debbie Pollart indicated that there had been no recent referrals to the ALUC. The last referral was an industrial park on Davis Street in 2001.²⁸¹

Role of Surrounding Jurisdictions

The area surrounding OAK is largely built up and land uses are well established. Alameda and San Leandro have residential neighborhoods that are impacted by operations at North Field; thus their general plans fully address airport-related noise issues. Oakland's general plan focuses more on economic development policies, which are also addressed in the San Leandro plan.

Alameda

In a telephone interview in June 2005, Alameda city planner Andrew Thomas said that general plan land use designations on Bay Farm Island were designed to coincide with airport noise contours. The Port was involved in establishing these boundaries, which separated commercial and residential uses based on noise levels. However, land uses in Alameda are generally not planned to take advantage of the proximity to OAK—the airport is viewed as an important economic catalyst for the region, but not as much for Alameda.²⁸²

The 1991 *City of Alameda General Plan* consolidates policies relating to airports in the Airport Environs Element. The element first reviews the framework for regulation of noise and safety issues at the federal, state, regional, and county levels. The element includes guiding policies and implementing policies for both airport impact areas and airport operations and development.

The focus of regulatory discussions in the airport element is noise. The element explains Federal Aviation Regulations (FAR) Part 36 (aircraft noise certification, including the phase-out of Stage 2 aircraft) and FAR Part 150 (funding for airport noise compatibility programs). It also explains that California airport noise standards require airports to define a Noise Impact Area—the area within the 65 dB Community Noise Equivalent Level (CNEL) contour where residential development is restricted. The information about OAK's Noise Compatibility Program (NCP) does not reflect recent developments.

The Airport Environs Element specifically states that it is consistent with the *Airport Land Use Policy Plan* and explains Airport Land Use Commission policies. The element explains a 1976 agreement requiring avigation easements for new residential development at Harbor Bay Isle on Bay Farm Island. It says that “existing low-density residential development under the straight-out take-off tracks from OAK North Field Runways 27R/L is a less-than-optimal situation, according to both ALUC and city policies.”²⁸³

When the airport element was written in 1990, the Port was studying alternatives for runway expansion. The element deemed all the alternatives controversial because of noise and environmental impacts. It urged that airport Master Plan update studies consider a “demand management” alternative that would shift activity to other locations, saying that unlimited expansion of the airport is inconsistent with both FAA recommendations and Metropolitan Transportation Commission policies.

The Airport Environs Element establishes the following guiding policies for airport impact areas:

- 7.2.a Regulate development in Alameda to minimize hazards in safety zones designated by the Alameda County Airport Land Use Commission ...
- 7.2.b Do not approve incompatible development in noise/safety sensitive areas.
- 7.2.c Seek ways to ensure provision of effective sound mitigation for all housing units in noise impact areas.
- 7.2.d Encourage [OAK] to limit night use of North Field to Stage 3 aircraft.
- 7.2.e Ensure that purchasers of property currently or potentially subject to normally unacceptable noise levels are aware of such conditions ... and of limitations to the City’s ability to abate nuisances when such properties are subject to an aviation easement.²⁸⁴

The corresponding implementation policies indicate an attempt to specify development restrictions that still allow some flexibility in land use planning:

- 7.2.g Consider approval of infill or replacement housing within the outer ALUC Safety Zone ... on a case-by-case basis. Refer proposed infill or replacement projects to the ALUC for Determination of Plan Consistency.
- 7.2.h Require acoustical analysis and noise-reduction measures ... for new or replacement dwellings, hotels, motels, schools, and health-related uses.
- 7.2.i For new or replacement residential development within 500 feet north of the 65 dB CNEL Settlement Agreement line on Bay Farm Island, insulation shall meet the standards established in the ALUC Plan ...
- 7.2.j New or replacement residential development shall be allowed between the 65 dB CNEL Settlement Agreement line and the 70 dB CNEL contour on Bay Farm Island if the property is subject to a noise easement.²⁸⁵

The Airport Environs Element discusses the character of noise and the number and types of operations at OAK. The element establishes the following guiding policies for airport operations and development:

- 7.3.a Seek adherence by airport operators to operational, development, and management policies that will minimize noise nuisance and safety concern for Alameda.

7.3.b Urge MTC [Metropolitan Transportation Commission] to address the limits of expansion of [OAK] and SFO and the need for additional commercial airport(s) at less congested locations ...

7.3.c Establish effective regular communication among the City of Alameda, Port of Oakland, and the Federal Aviation Administration regarding noise control at [OAK].

7.3.d If an additional runway is warranted at [OAK], a runway outboard of Runway 11-29 is acceptable in principle to Alameda.²⁸⁶

The corresponding implementation policies are as follows:

7.3.e To the extent permitted by the 1976 Settlement Agreement, insist that the revised Regional Airport System Plan project maximum level of activity for [OAK] that will not create noise or oversight impacts in excess of those that would result from serving 6 MAP [million annual passengers] or from a specified future maximum level of activity to be determined. ...

7.3.f Seek Port of Oakland's voluntary agreement to implement mitigation measures beyond those in the 1976 Settlement Agreement, including mitigation measures regarding operations off existing runways.

7.3.g Create and participate in a continuing working group (community forum) composed of individuals representing the City of Alameda, the Port of Oakland, the Federal Aviation Administration (FAA), and the air transport industry to monitor the airport's noise control program and to make recommendations for response to any unforeseen conditions.

7.3.h Obtain assurance that the future noise exposure for Alameda is known and that aircraft operations will be controlled to ensure that projected noise levels are not exceeded...

7.3.i Mitigation for any expansion of [OAK] should include the following operational measures:

- Use of Stage 3 (least noisy) aircraft only, on all runways directly overflying Alameda residential areas.
- Enforced flight path alterations for noise abatement, for all runways, with remote monitoring sites installed in locations mutually acceptable to the Port and the City. ...
- Enhanced transit access to the airport via a BART/light rail extension.

7.3.j Support the Port of Oakland in establishing a permanent full-time noise monitoring system that will (a) measure noise continuously, (b) separate [OAK] noise events from other noise source events, particularly overflights from other airports, (c) measure and augment CNEL values, (d) provide information on excessively noisy aircraft operations, [and] (e) monitor effectiveness of noise abatement programs ...

7.3.k Define noise exposure to incorporate Alameda's concerns about the loudness of individual events and nighttime noise.

7.3.1 Initiate an acoustical treatment program for noise-sensitive uses ... to mitigate existing and future noise exposure within residences and schools to 45 dB CNEL.²⁸⁷

The *City of Alameda General Plan* Health and Safety Element strengthens the airport policies with additional policies related to noise. Guiding Policy 8.7.d. states that the city will “maintain efforts to mitigate impacts of aircraft noise while pursuing actions to reduce aircraft noise or avoid noise increases.”²⁸⁸ Corresponding implementation policies include:

8.7.f Require new or replacement dwellings, hotels, motels, and schools within the noise impact areas ... to limit intruding noise to 45 dB CNEL in all habitable rooms. In new dwellings subject to a noise easement, noise is not to exceed 40 dB CNEL in habitable rooms.

8.7.g Minimize the impact of aircraft, railroad, and truck noise by requiring that noise levels caused by single events be controlled to 50 dB in bedrooms and 55 dB in living areas within the 60 dB contour.²⁸⁹

Figure 28 shows *Alameda General Plan* land use designations in relation to the airport influence area boundaries. As discussed above, the area within the 65 dB CNEL airport noise contour (as of 1990) is designated for open space and business park use. However, most of the land within the AIA is designated for low- to medium-density residential. Alameda does not have a geographic information system (GIS) database capable of tracking land use changes over time.

Oakland

The elements of the *Oakland General Plan* were adopted at different times—the Land Use and Transportation Element in March 1998, the *Estuary Policy Plan* in June 1999, the Safety Element in November 2004, and the Noise Element in June 2005. Surprisingly, the Safety Element does not address airport safety zones. However, the Noise Element includes background on federal, state, and ALUC policies related to airport noise, and maps showing existing (2004) and projected (2010) noise contours for OAK operations.

The following policy statements in the Noise Element relate to aviation:

- POLICY 1 Ensure the compatibility of existing and, especially, of proposed development projects, not only with neighboring land uses but also with their surrounding noise environment.
- ACTION 1.3: Continue working with the Alameda County ... and with the Port of Oakland to ensure consistency with the county’s airport land use plan of the city’s various master-planning documents, zoning ordinance, and land use development proposals near Oakland’s airport.
- POLICY 2 Protect the noise environment by controlling the generation of noise by both stationary and mobile noise sources.
- ACTION 2.3: Encourage the Port of Oakland to continue promoting its noise abatement office and programs for [OAK].²⁹⁰



Figure 28 Alameda General Plan Land Uses and Airport Influence Area

Source: Base Map derived from *City of Alameda, Environmental Impact Report, Alameda Point General Plan Amendment*, November 12, 2002, www.ci.alameda.ca.us/planning/pdf/LandUse.pdf (accessed November 27, 2004). Airport influence area boundary added from information shown in *Alameda County Airport Land Use Commission, Comprehensive Land Use Plan* (1986).

The Land Use and Transportation Element includes industry and commerce, transportation, and waterfront objectives and policies related to aviation as follows:

Industry and commerce objective I/C4:

- Minimize land use compatibility conflicts in commercial and industrial areas through achieving a balance between economic development values and community values.
- Policy I/C4.2: Minimizing nuisances. The potential for new or existing industrial or commercial uses, including seaport and airport activities, to create nuisance impacts on

surrounding residential land uses should be minimized through appropriate siting and efficient implementation and enforcement of environmental and development controls.²⁹¹

Transportation objective T1:

- Provide adequate infrastructure and land for the needs of rail, shipping, commercial, and manufacturing uses, balancing this need with those of surrounding residential neighborhoods.
- Policy T1.3 Expanding airport capacity. Expand the passenger and cargo handling capacity at Oakland International Airport.²⁹²

Waterfront land use Objective W1:

- Enhance the waterfront with a wide variety of uses. The seaport and airport should have uses which promote its economic and transportation assets ...
- Policy W1.3: Reducing land use conflicts. Land uses and impacts generated from Port or neighborhood activities should be buffered, protecting adjacent residential areas from the impacts of seaport, airport, or other industrial uses.²⁹³

Waterfront seaport and airport economy Objective W6:

- Develop the seaport and airport as northern California’s major international gateway and hubs of the national, regional, and local transportation network.
- Policy W6.2: Developing areas adjacent to the airport. Development of sites proximate to airport flight paths should be in conformance with Federal and State standards, as articulated in [FAR] Part 77 and Part 150, ALUC planning guidelines, and any other applicable regulations and amendments.²⁹⁴

Objective W7:

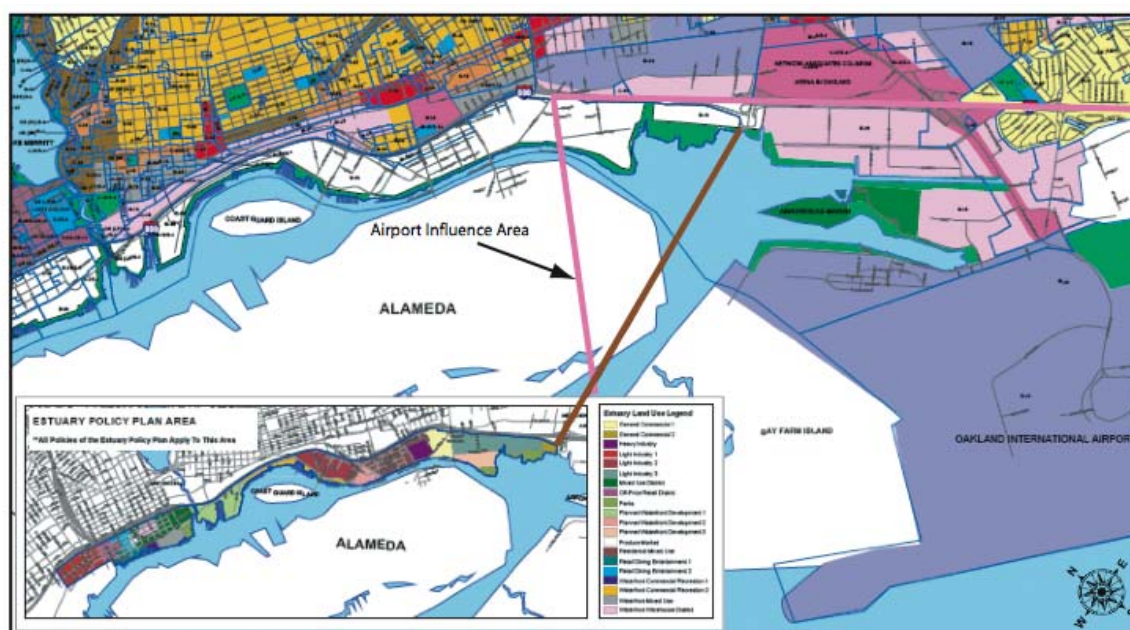
- Capitalize on the seaport and airport for increased economic activity and jobs in Oakland.
- Policy W7.1: Developing lands in the vicinity of the seaport/airport. Outside the seaport and airport, land should be developed with a variety of uses that benefit from the close proximity to the seaport and airport and that enhance the unique characteristics of the seaport and airport.²⁹⁵

The *Estuary Policy Plan* was prepared by the City of Oakland and the Port of Oakland—an unprecedented cooperative effort to plan for the 5-1/2 miles of urban waterfront within the city. The plan covers much of the land west of I-880 under Port and city jurisdiction.

The *Estuary Policy Plan* does not contain objectives related to airport planning or land use compatibility. One land use objective calls for a broad mix of uses as the waterfront shifts away from industrial and warehousing uses to commercial, recreational, and residential uses. Another objective seeks to develop the area to enhance long-term economic development, capturing opportunities for hotels, restaurants, retail, cultural facilities, and office and business park development. With respect to warehousing, the plan says that “the planning area does not offer significant locational advantages over other locations ... along the I-880

corridor. Over time, improvements that capitalize on the waterfront location and enhance the attractiveness and value of the planning area for other uses are likely to make the area less desirable for warehouse, distribution, and storage activities.”**

Figure 29 shows the Airport Influence Area drawn over general plan land use designations from the *Oakland General Plan and Zoning Map* (2005). Land use designations for the *Estuary Policy Plan* area are shown in the inset map on the lower left. The map shows that light industrial, commercial, business mix, and park and open space uses predominate west of I-880. However, there is a small amount of existing residential development in the southeastern portion of the AIA. The Planned Waterfront Development designation in the portion of the Estuary Plan area within the AIA constitutes a waterfront business park setting and does not include residential uses. Despite the flexibility of uses in the *Estuary Policy Plan* overall, land use designations do not support residential development in this area.



Source: Base Map derived from {City of Oakland, *Oakland General Plan and Zoning Map* (1 January 2005). <www.oaklandnet.com/government/ceda/revised/planningzoning/ZoningSection/ZoningMapFinal.pdf> [14 July 2005].} Airport Influence Area boundary added, from information shown in {Alameda County Airport Land Use Commission, *Airport Land Use Policy Plan* (1988).}

Figure 29 Oakland General Plan Land Use and Airport Influence Area

Source: Base Map derived from City of Oakland, *Oakland General Plan and Zoning Map* (January 1, 2005)

The City of Oakland has GIS versions of land use zoning designations going back to 2000. Otherwise, only paper versions are available.

San Leandro

The 2002 *City of San Leandro General Plan* references Oakland International Airport in the land use and environmental hazards elements.

The Land Use Element discusses both the need to address airport noise and land use conflicts in some neighborhoods, and the benefit of the airport for economic development. The section

on the West San Leandro Business District says the “area is well positioned for development that takes advantage of its proximity to Oakland Airport, major rail infrastructure, and easy access to the I-880 freeway.”²⁹⁷ The section on the San Leandro Marina, which is in the city’s largest recreation area, also highlights proximity to the airport. It says “there is particular interest in new uses which will accommodate airport-related travelers, including hotels, restaurants, and conference/meeting facilities.”²⁹⁸ The Land Use Element also includes a goal to produce new housing opportunities and includes a policy to encourage new housing on underutilized industrial sites which, among other criteria, “are not constrained by external environmental factors, including freeway, railroad, and airport noise.”²⁹⁹

The following land use policies and actions support the goal to develop strong and healthy industrial and office districts:

7.01 INDUSTRIAL ASSETS Build on the strengths of the City’s existing industrial base, transportation infrastructure, and proximity to Oakland International Airport in the City’s business development efforts.

Action 7.01-B: Hotels in Industrial Zones Amend the zoning code to allow hotels as a conditional use within appropriate General Industrial areas, including the Oakland International Airport gateway area ...³⁰⁰

7.09 WEST SAN LEANDRO BUSINESS DISTRICT

Action 7.09-A: Doolittle Gateway Pursue streetscape improvements ... that upgrade the appearance of this important gateway from Oakland International Airport. Improvements should include ... re-use of vacant or underutilized properties with higher quality uses. Where consistent with Airport Land Use Compatibility restrictions, these uses could include hotels, offices, and other activities that capitalize on the street’s proximity to Oakland Airport.³⁰¹

The Environmental Hazards Element covers aviation hazards and airport noise. The section on Aviation Hazards describes the area covered by the safety zone for North Field and refers to compatible uses from the *Airport Land Use Policy Plan*. The element says there are no homes in San Leandro within the 60 or 65 dB CNEL contours, an improvement over 1994 when there were 28 residences in the 65 dB contour and 554 within the 60 dB contour. However, the section on Airport Noise says that residential areas still deal with noise conflicts and “some areas experience dozens of short-duration incidents each day where noise levels exceed 70 or 75 dBA.”³⁰² Marina Square, the Timothy Drive/Davis West area, and the Adams Street industrial area are impacted by flights landing at North Field. In addition, the section on Noise Compatibility says that “residential areas, schools, child care centers, hospitals, churches, libraries, and nursing homes are typically regarded as noise-sensitive.”³⁰³

The Environmental Hazards Element includes a goal to minimize the local impacts created by air traffic, ground operations, and other aviation activities. The goal is supported by the following policies.

37.01 MONITORING OF AIRPORT PLANS Actively and aggressively participate in forums and discussions regarding operations and expansion plans for [OAK]. Seek local representation on task forces, commissions, and advisory boards ...

37.02 MITIGATION OF AIRPORT NOISE Pursue mitigation of airport noise impacts to the fullest extent possible. Support and advocate for operational practices, changes to aircraft ... that would reduce the number of properties in San Leandro that are impacted by noise.

37.03 CHANGES TO AIRPORT OPERATIONS Ensure that any changes to airport operations that would potentially result in higher noise levels in San Leandro incorporate comprehensive noise mitigation measures ...

37.04 COMPREHENSIVE NOISE ABATEMENT Advocate for noise abatement and mitigation programs that are based not only on the airport's noise contour maps, but that consider other factors such as the frequency of overflights, the altitude of aircraft, and the hours of operation.

37.05 USE OF NORTH FIELD Strongly discourage any long-range plans that would extend the runways at the North Field (27 L/R and 9 L/R), or increase the use of the North Field for cargo jets or commercial passenger airlines

37.06 AIRPORT SAFETY ZONES Regulate land uses within designated airport safety zones, height referral areas, and noise compatibility zones to minimize the possibility of future noise conflicts and accident hazards.

37.07 LEGISLATIVE CHANGES TO IMPROVE MITIGATION Pursue legislative changes that provide San Leandro and other cities with greater leverage regarding the mitigation of noise impacts, air pollution impacts, and other off-site impacts resulting from aviation.

37.08 MONITORING PROGRAMS Promote ongoing monitoring of noise levels associated with airport operations and support expanded monitoring of other off-site impacts, such as air quality. ...³⁰⁴

San Leandro Planning Manager Debbie Pollart said general plan policies do not help existing residents impacted by airplane noise, but they show that it is an issue for the city. The general plan provides the background policy to prevent residential encroachment, but it is also important for the city to have knowledgeable staff. San Leandro does not have a database capable of tracking land use changes over time.

Figure 30 shows the general plan land use designations in west San Leandro in relation to the airport influence area boundaries. The area is primarily designated for industrial and commercial uses, but there are some residential neighborhoods in the AIA as well.



LEGEND

Residential Categories		Industrial Categories	
	Garden Density		Light Industrial
	Low Density		General Industrial
	Low-Medium Density	Public/Open Space Categories	
	Medium Density		Public/Institutional
	High Density		Parks and Recreation
Commercial Categories			Resource Conservation
	Neighborhood Commercial	Sites noted with two colored diagonal stripes may be developed with either use, subject	
	General Commercial		
	Office		
	Downtown Mixed Use		
	Corridor Mixed Use		

Figure 30 San Leandro General Plan Land Uses and Airport Influence Area

Source: Base Map derived from City of San Leandro, *San Leandro General Plan, Land Use Element* (June 2002). Airport influence area boundary added from information shown in *Alameda County Airport Land Use Commission, Comprehensive Land Use Plan* (1986).

POTENTIAL ROLE AND IMPACT OF SMART GROWTH

Smart growth practices such as high-density, mixed-use, and transit-oriented development are currently concentrated along the BART line, east of I-880 and not within the AIA for OAK. Much land west of I-880 in Oakland and San Leandro is within redevelopment areas, and there is potential for mixed-use in-fill development. This may include high-density, pedestrian-oriented residential projects in the future, but currently there is much effort to preserve industrial and commercial uses near the airport. In many ways, current development patterns near the airport follows Kasarda's Aerotropolis concept.

Although smart growth development has not yet occurred in the redevelopment area west of I-880, bicycle and public transportation infrastructure continue to be promoted and developed in the airport and waterfront area. There is much interest in developing the waterfront with recreational uses and amenities that will attract travelers who use the airport.

The 1991 *City of Alameda General Plan* does not address smart growth specifically, but a major theme of the plan is a commitment to “vigorous support of transit improvements, ferry service, reduction of peak-hour use of single-occupant vehicles, and an enjoyable pedestrian environment.”³⁰⁶ In 1999, Alameda completed a *Bicycle Master Plan* that proposes enhanced connections to Oakland, new bike lanes, and new bicycle support facilities.³⁰⁷ High-density residential development is restricted in Alameda by Measure A, which was approved by voters in 1973. The law allows a maximum of two units per building and a minimum lot area of 2,000 square feet per unit.

The 2002 *City of San Leandro General Plan Land Use Element* describes smart growth in the section on Major Planning Concepts. Concepts for smart growth in San Leandro include:

- making neighborhoods safer for pedestrians and bicyclists with convenient places for shopping and recreation
- high-density housing, pedestrian-oriented buildings, and mixed-use projects around the Downtown BART station and along commercial corridors
- mixed-use in-fill development in commercial areas

To support the concept of sustainability, San Leandro will place the needs of pedestrians above those of cars. The city completed a *Bicycle and Pedestrian Master Plan* in November 2004.

San Leandro's smart growth policies are not being applied in the Airport Area (bounded by East 14th Street, McArthur Boulevard, San Leandro Boulevard, and Washington Avenue) or in the Doolittle industrial area. Therefore, Planning Manager Debbie Pollart does not see a relationship between smart growth and airport land use compatibility in San Leandro, although she conceded that the policies do make the other side of town more attractive for residential development.

The concept of sustainability appears throughout the *City of Oakland General Plan Land Use and Transportation Element*. The plan encourages concurrent land use and transportation planning through smart growth policies and strategies such as the following:

- offering opportunities for added high-density residential and high-intensity office, commercial, and retail development in Downtown Oakland and in the Jack London District
- introducing the concept of a “housing business mix” district
- designating Transit-Oriented Districts to take advantage of Oakland’s eight BART stations and the Eastmont Town Center, which is served by multiple bus lines. ... these districts will link transit to higher-density housing

As with San Leandro, these policies are focused downtown and near BART stations and have not been applied west of I-880 near the airport.³⁰⁹

The Land Use and Transportation element includes a *Bicycle Master Plan* (1999) and a *Pedestrian Master Plan* (2002). The *Bicycle Master Plan* identifies two key bikeway corridors to improve bicycle access for airport employees from major transit centers and East Oakland neighborhoods. The plan also includes a policy action item to “ensure that development and redevelopment plans in and for the Coliseum, Coliseum BART, and East Oakland incorporate bicycle access to and from ... Oakland International Airport.”³¹⁰

In April 2001, the Oakland Community and Economic Development Agency and BART completed the *Coliseum/Oakland Airport BART Station Area Concept Plan*. The plan calls for a mixed-use transit village on the east side of San Leandro Street, connecting to existing residential neighborhoods and improving pedestrian connections to transit. On the west side of San Leandro Street, closer to the freeway and the airport, the plan calls for airport commercial hotel and office buildings or a research and development campus.³¹¹ In May 2003, Oakland received a \$350,000 smart growth grant to fund planning for the Coliseum BART Transit Village.³¹²

In mid-2005, the transit village project was in the predevelopment stage. A feasibility and market study was taking place—ridership for a planned automated people-mover between the Coliseum BART station and OAK, termed the Oakland Airport Connector, was estimated at 14 million passengers a year, which should create retail demand. The biggest land use compatibility issues the project faces relate to industrial uses and existing neighborhoods. The *Concept Plan* includes 600 to 800 units of housing using a podium design (four floors above ground-floor retail, garage underneath). The adjacent Coliseum Gardens HOPE VI project will be completed sooner and will have 350 to 400 units.³¹³

In late 1999, BART began to work on plans for the Oakland Airport Connector between the Coliseum Station and OAK, three miles away. In March 2002, BART directors certified the environmental impact report for an elevated monorail link called Automated Guideway Transit link. The original plan, with two intermediate stops, never got off the ground as a result of funding difficulties and cost increases. In April 2006, BART was seeking proposals to partner with a private operator to build and operate the system with one intermediate stop.³¹⁴ As of mid-2005, there were no plans for transit-oriented development at intermediate stops (which are within the airport influence area).³¹⁵

In June 2005, a new Amtrak station opened within walking distance of the Coliseum BART station and the Oakland Air-BART shuttle to Oakland International Airport.³¹⁶ AS of 2002, plans for a proposed high-speed rail line between Los Angeles and San Francisco envisage a connection to OAK at the Coliseum BART station as well.³¹⁷

Oakland, Alameda, and San Leandro are promoting smart growth practices such as transit-oriented development, improved alternative transportation infrastructure, and mixed-use infill development. For the most part, these practices are steering high-density residential development away from the airport. However, developers are proposing higher-density mixed-use projects at locations closer to the airport that are currently designated for industrial uses. This aspect of smart growth is most likely to create airport land use compatibility issues.

CHANGES IN LOCAL LAND USE

It may be difficult for Alameda, San Leandro, and Oakland to prevent incompatible development in areas affected by aviation noise. As discussed above, a private school opened in 2003 on Bay Farm Island less than two miles from the airport runways. Harbor Bay Isle Associates (HBIA) obtained permission to build a second private school nearby, despite an agreement with the Port of Oakland not to build public schools on the land. Based on the recommendation of the FAA, the Port approved an agreement with HBIA in November 2005 to allow 100 homes to be built on the site as long as no school is built, state-of-the-art noise insulation is used, easements are in place, and HBIA indemnifies the Port from resident lawsuits for 10 years. The land is between the 65 and 70 dB CNEL contours.³¹⁸ HBIA entered into an agreement with the city of Alameda for expedited processing of a General Plan Amendment/Rezoning. Environmental review, including additional noise and traffic analysis, to be completed by the end of 2006.³¹⁹

The airport and the port are big economic development factors, but few industries need to locate immediately adjacent to an airport—businesses such as consulting firms and just-in-time manufacturers think that being within about five miles is sufficient.³²⁰ The Port of Oakland and the city of San Leandro work hard to attract compatible development to the airport area. San Leandro is careful about industrial conversion, but developers continue to propose residential projects in industrial areas—they are not educated about land use compatibility issues.³²¹ In Oakland, there has also been a trend towards industrial conversions to medium/high-density mixed-use projects. These developments are moving south toward the airport, which may be an issue for airport land use compatibility in the future.³²²

Alameda, Oakland, and San Leandro all have golf courses within the airport influence area. Oakland and San Leandro are looking to expand around their golf course with development aimed at attracting airport users. San Leandro is investigating the feasibility of conference center and hotel development near the golf course.³²³

EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS

The 1997 *Airport Development Plan* (ADP) for OAK had many difficulties as a result of residential land use conflicts in San Leandro and Alameda. The ADP was challenged in court by the City of San Leandro and by the Citizens League for Airport Safety & Serenity (CLASS), a grassroots organization that represents homeowners associations from Bay Farm Island. These conflicts have resulted in more involvement by nearby cities and residents in airport planning and noise mitigation activities, in particular the Airport-Community Noise Management Forum and the Airport Master Plan Stakeholder Advisory Committee.

All parties believe that these forums have improved relations between the Port and the surrounding communities, mostly through education and improved communications. Doug Mansel, aviation planner for the Port, said the groups also have initiated some physical projects such as a Ground Runup Enclosure (as opposed to runway lengthening).³²⁴ The forums receive quarterly reports, which include single-event data. The Port is making an effort to educate the public, but there is still distrust of the Port and the FAA because the Port has used FAA guidelines as an excuse for not making changes in the past. The stakeholder groups keep lines of communication open for exchange of issues and ideas and foster a more positive, honest relationship.³²⁵

The North Field Research Group of the Noise Management Forum developed the voluntary “Salad One” departure procedure, a new nighttime instrument departure procedure from North Field, to reduce noise impacts. The Port and forum jointly requested that the FAA study and adopt this new flight procedure. Salad One is now a published instrument departure procedure.³²⁶ Through an educational process, the airport encourages pilots to use Salad One, which includes “a right crosswind or additional downwind segment avoiding Bay Farm Island and the main island of Alameda.”³²⁷

The Alameda County Airport Land Use Commission and *Airport Land Use Policy Plan* do not have much influence on land use in the area around OAK. The ALUC is scheduled to meet every month, but meetings are often cancelled because there are no projects to review. ALUC planner Cindy Horvath said the county may require the ALUC to meet at least twice a year.

The Alameda and San Leandro general plans closely reflect ALUPP policies and contain additional policies relating to noise mitigation, airport operations, and community involvement. However, Alameda city planner Andrew Thomas said that the Airport Environs Element has less influence than the neighborhood group CLASS. He noted that CLASS members are knowledgeable about and sensitive to airport issues. They monitor the airport and bring issues to the city’s attention.³²⁸

Oakland’s general plan simply says the city will work with the ALUC to ensure consistency with ALUPP. The communities in Oakland near the airport are poor and are not mobilized about airport noise or airport development. The planning department is not involved with airport issues. There is not much comprehensive planning done, so development is mostly based on the market.³²⁹

SUMMARY

Metropolitan Oakland International Airport (OAK) is largely surrounded by built-out areas. The airport is located in a commercial and industrial area west of Interstate 880—existing land uses are largely compatible with the airport. Oakland’s port, airport, and highway infrastructure all support further development of this type. These conditions resemble the land use structure of the Aerotropolis concept described by John Kasarda. The geographic location of OAK in an industrial waterfront area is the main factor that resulted in these compatible land uses.

Most of the opportunities for smart growth in Oakland and San Leandro are east of I-880 in the downtown areas, along commercial corridors, and at BART stations. This situation should relieve pressure for infill and high-density residential development west of Interstate 880 within the Airport Influence Area. High-density residential development is not an issue in Alameda because the city has strict ordinances that prohibit the construction of multifamily dwelling units.

There are some single-family residences in Oakland and San Leandro impacted by aircraft noise, but both cities are working hard to encourage business development west of I-880 and prevent conversion to residential development. However, developers continue to propose such residential conversions, and residential development along Oakland’s waterfront is marching steadily south toward the airport.

Land uses in Alameda generally are less compatible than those in San Leandro and Oakland. The city is largely residential and many parts of the city are impacted by aircraft noise. Bay Farm Island is especially impacted, and residential development and schools have been built right up to allowable noise boundaries. It is no surprise that Alameda’s general plan has an Airport Environs Element and that the extremely effective citizen’s group CLASS came out of this community. However, developers have proposed that the noise boundaries be moved back so additional housing can be built, even closer to the airport.

Lawsuits, improved communication, and increased stakeholder involvement have helped to advance the cause of airport-compatible land use around OAK. Stakeholder groups include the Airport-Community Noise Management Forum and the Airport Master Plan Stakeholder Advisory Committee. The airport’s noise compatibility program has evolved to include extensive noise monitoring and reporting and home insulation programs for homes outside the 65 dB CNEL contour. Flight paths have been altered to decrease impacts on residential areas.

Plenty of land use compatibility issues still exist. There appears to be a need to maintain strict land use policies in areas most impacted by aviation noise, and to clearly communicate to developers that there will be no changes or exceptions to these policies. In addition, there appears to be little cooperation on land use issues such as smart growth and airport land use compatibility between the three cities whose policies were studied in this report. Such cooperation could lead to better outcomes in both of these land use policy areas. There are many opportunities to benefit from such collaboration. Alameda, Oakland, and San Leandro

have the geographical setting to support airport-compatible land use, and all these cities have policies and plans that apply smart growth principles. However, there is no experience with cooperation and communication on land use policies such as smart growth and airport land use compatibility. Therefore, it is unclear whether the surrounding communities will take full advantage of these geographic, land use, and policy assets.

APPENDIX E

CASE STUDY—LIVERMORE MUNICIPAL AIRPORT

Livermore Municipal Airport (LVK), Alameda County

Airport location	City of Livermore
Airport size	643 acres
Type of facility	General aviation
Level of airport activity	170,000 aircraft operations in 2005
Curfew	None, 24-hour operation (voluntary program, see below)
Most recent ALUCP	1986
Most recent <i>Airport Master Plan</i> draft master plan released	1975 update commenced in 1999, draft master plan released in 2003, work suspended in 2004
Nearby cities (population 1/1/06)	Livermore: 81,300; Pleasanton: 67,700; Dublin: 41,800
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Surrounded by agriculture and open space, mining, recreational uses • Conflicts over annexation and expansion toward the airport • Encroaching residential (medium- to high-density)
Major issues	<ul style="list-style-type: none"> • Many noise complaints • Lack of noise monitoring system to quantify the problem
Approaches to solving airport/community conflicts	<ul style="list-style-type: none"> • Airport Protection Area (5,000 to 7,100 feet out from runways) protects from incompatible uses • Livermore Pilot Information Guide and Voluntary Restraint from Night Flying policy (10 p.m. to 6 a.m.) • Independent actions by the City of Pleasanton including a <i>Livermore Municipal Airport Altitude and Noise Study</i>
Stakeholder groups	<ul style="list-style-type: none"> • Livermore Airport Master Plan Update Advisory Committee • Livermore Airport Citizens Group
Integration with smart growth policies	<ul style="list-style-type: none"> • Smart growth policies leading to higher densities and developments encroaching on the airport • Lack of subregional cooperation on these issues
ALUC agency	Alameda County
ALUC staff contact name	Cindy Horvath
ALUC staff contact phone	(510) 670-5400
ALUC staff contact e-mail	cindy.horvath@acgov.org

INTRODUCTION

There are three public-use airports in Alameda County—Oakland International Airport, Hayward Executive Airport, and Livermore Municipal Airport. The county does not own or operate any airports. Livermore Municipal Airport (LVK) is located in west Livermore, near the cities of Dublin and Pleasanton, as shown in [Figure 31](#). The airport, which opened in 1965, currently covers 643 acres including safety areas used for agriculture. As the airport operator, the city of Livermore is responsible for funding airport operations, managing noise complaints, implementing noise mitigation measures, and updating the *Airport Master Plan*.

Alameda County has advisory jurisdiction over airport area land use through its Airport Land Use Commission (ALUC). The ALUC general referral area (Airport Influence Area) includes land in the cities of Livermore, Pleasanton, and Dublin.

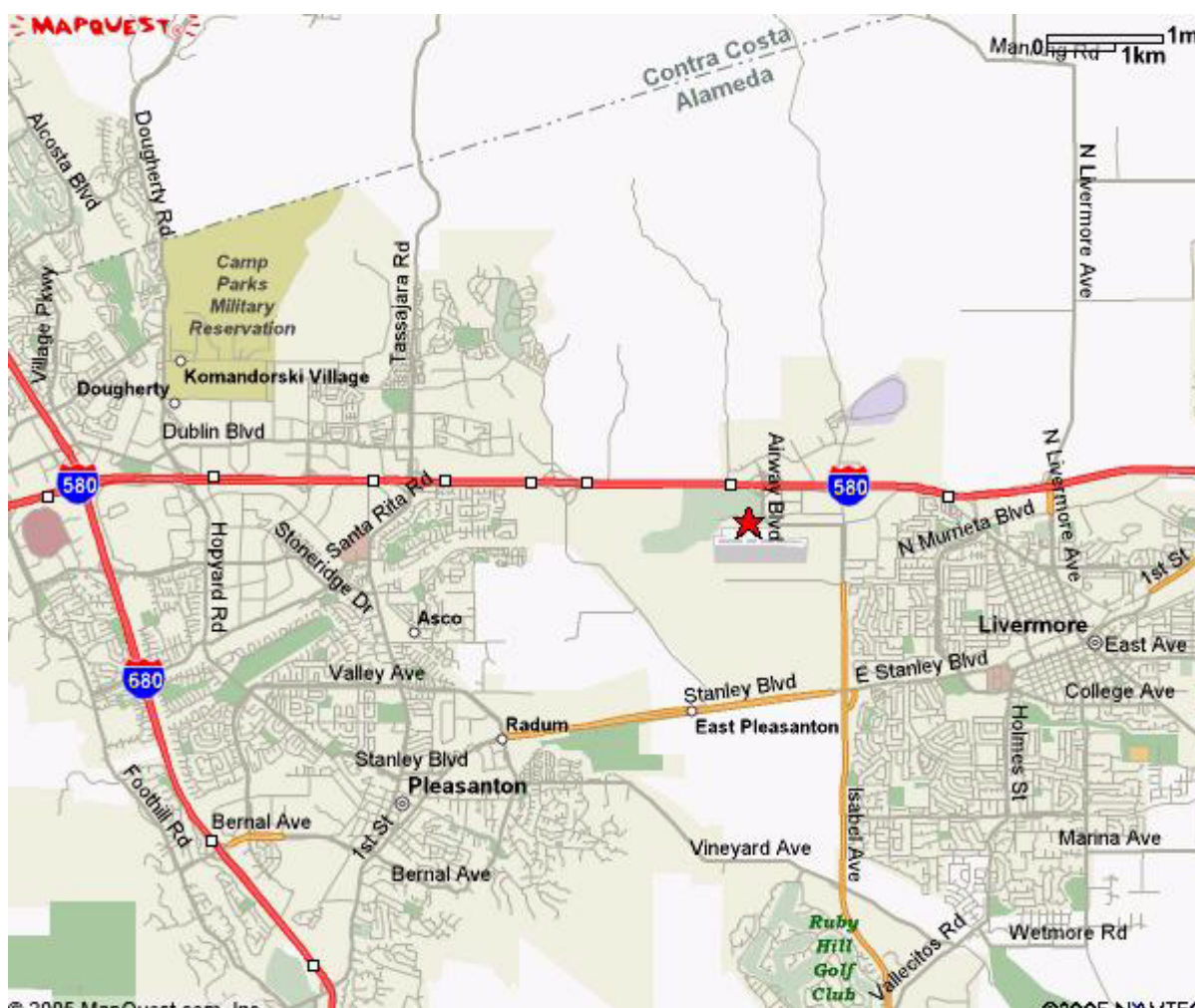


Figure 31 Livermore Municipal Airport Vicinity

Source: MapQuest.com, Inc., www.mapquest.com (accessed September 23, 2005).

Livermore Airport is classified as a general aviation reliever airport in the *National Plan of Integrated Airport Systems* (NPIAS).³³⁰ It was the tenth-busiest airport in California in 1999, with about 250,000 takeoffs and landings annually.³³¹ The airport serves private businesses, corporate tenants, and individual aircraft owners. It has two parallel runways: a 5,255-foot runway with 24-hour lighting for general traffic and a 2,700-foot training runway. The control tower is staffed from 7 a.m. to 9 p.m. New hangars were completed in 1987, and a runway extension was completed in 1989.³³²

Since 1982, Livermore Airport has received about \$24 million in Federal Aviation Administration (FAA) grants, mostly to acquire land for a noise buffer zone.³³³ As a result, the 65 dB annual Community Noise Equivalent Level (CNEL) noise contour is contained within

the boundaries of the airport. The 65 dB CNEL noise contour is projected to remain within the airport boundary in the future, even with the 370,000 operations forecast for 2020. Based on sound studies in nearby residential areas, Livermore Airport is not classified as “noise-sensitive.”³³⁴

The Livermore Valley is part of fast-growing eastern Alameda County. Growth-related issues such as water and sewage capacity, open space protection, traffic, and airport compatibility continue to dominate local politics. Concern about aircraft noise led the Livermore City Council to terminate the 2004 *Livermore Airport Master Plan* adoption process, declaring that the 1975 *Airport Master Plan* would remain in effect. Unfortunately, noise problems may increase, especially if airport usage increases, because residential development is also increasing in eastern Dublin and Pleasanton under the airport’s flight path.

AIRPORT LAND USE PLANNING

History of Land Use Issues in the Airport Vicinity

Livermore Airport was moved to its present site in 1965, in part to escape housing encroachment. Efforts have been made to protect the airport from residential encroachment and ensuing neighborhood complaints. In 1991, Livermore established an Airport Protection Area (APA) in participation with Alameda County, Pleasanton, and Dublin. The purpose of the APA is to keep surrounding land uses compatible with aviation activities and protect “the Airport from the encroachment of incompatible uses, particularly the construction of new, or expansion of existing, residential areas.”³³⁵ The *Airport Master Plan* describes the APA as follows:

The key land use compatibility document for Livermore Municipal Airport is the Airport Protection Area plan ... It defined a zone around the airport in which new residential development is prohibited. This zone extends outward from the airport’s runways 5,000 feet to the north, south and east, and 7,100 feet to the west.³³⁶

The APA has increased attention on airport land use compatibility issues, but residential development continues within the ALUC general referral area. Pleasanton and Dublin have been annexing land for development, including residential development. Much of this land lies within the APA and/or the Airport Influence Area.

Because of concerns about the airport, Pleasanton published a *Livermore Municipal Airport Altitude and Noise Study* in May 2003. The study, completed by consultants Brown-Buntin Associates, Inc. and Walter E. Gillfillan and Associates, documented 11 specific objectives:

- Accurately portray the issues of concern for Pleasanton residents affected by aircraft operations at Livermore Municipal Airport.

- Document noise levels, frequency of noise events, and altitudes of aircraft flights over the Mohr Elementary School and adjacent communities under current and forecast future conditions.
- Discuss historical decisions that have affected aircraft operations and development in the vicinity of Livermore Municipal Airport.
- Document the regulatory framework affecting Livermore Municipal Airport, especially with respect to operations over Pleasanton.
- Document current noise and safety abatement measures employed by Livermore Municipal Airport with respect to operations over Pleasanton.
- Determine whether there are currently deviations from federal aviation regulations at the Livermore Municipal Airport with respect to operations over Pleasanton.
- Describe options available to the cities of Pleasanton and Livermore to address the issues of concern to the citizens of Pleasanton.
- Describe land use options that will enhance the compatibility of future land development in the areas affected by aircraft operation at Livermore Municipal Airport.
- Describe potential improvements to noise disclosure practices for new development in the areas affected by aircraft operations at Livermore Municipal Airport.
- Define the limits of controls over airport operations by the [c]ities of Pleasanton and Livermore.
- Provide recommendations for actions that may be considered by the [c]ities of Pleasanton and Livermore.³³⁷

The *Altitude and Noise Study* summarizes federal, state, regional, and local government controls, and airport proprietor and aircraft operator controls, over aircraft noise. Historical issues discussed include the *Stoneridge Drive Specific Plan*, the APA, resident complaints, the need for an updated Airport Master Plan, and attempts by Livermore and the FAA to address issues raised by Pleasanton. Half the study's findings relate specifically to land use as follows:

1. Residents of Pleasanton are concerned about past and potential future increases in aircraft operations at the Livermore Municipal Airport and potential increases in noise levels as a result of those changes. In addition, there is concern that the city of Pleasanton has had very little input to the airport development process in the past.
2. The FAA has made evolutionary changes to flight procedures at the Livermore Municipal Airport, which may affect airport planning documents adopted by the city of Livermore and the Alameda County Airport Land Use Commission. Residents are concerned that the city of Pleasanton has had little or no input to such changes.
3. Residents of Pleasanton wish to ensure that future land use decisions in Pleasanton consider aircraft noise exposure, and that new developments should include suitable noise mitigation measures when aircraft noise exposures are potentially significant. Similarly, the city of Livermore and the [ALUC] are concerned that development in proximity to the Livermore Municipal Airport should protect the viability of the airport. The City of

Pleasanton has adopted a Noise Element of the general plan, and a specific plan for the Stoneridge Drive area, which address these concerns. . . .

4. Residents of Pleasanton are concerned that aircraft on approach to Livermore Municipal Airport may constitute a hazard to students at Mohr Elementary School due to noise and altitude.
5. The noise measurement program revealed that aircraft noise exposures were below the California airport noise standard of 65 dB CNEL in the residential areas of Pleasanton.
6. The noise measurement program revealed that total noise exposures (aircraft and nonaircraft sources together) at the Mohr Elementary School during the winter period were above the City's overall 60 dB CNEL standard.
7. Noise measurements confirmed that single-event noise levels experienced in the Stoneridge area are high enough to warrant the sound insulation requirements of the Noise Element of the general plan, and of the *Stoneridge Drive Specific Plan*.
8. The noise measurement program revealed that aircraft noise exposures inside classrooms of the Mohr Elementary School were within the guidelines recommended by the FAA.³³⁸

The recommendations related to these findings include:

1. Seek participation by the city of Pleasanton in the current update of the *Livermore Municipal Airport Master Plan*.
2. Seek participation of the City of Pleasanton in the City of Livermore Airport Commission.
3. Request consideration by the city of Livermore and the Alameda County Airport Land Use Commission (ALUC) of the effects of the adoption of the Livermore One SID [the Standard Instrument Departure to the west] upon the Airport Protection Area (APA).
4. Ensure continued implementation of land use compatibility controls concerning aircraft noise in the city of Pleasanton.³³⁹

In July 2003, Pleasanton Mayor Tom Pico asked the Livermore City Council to add one voting member on the Livermore Airport Advisory Commission from Pleasanton and one from Dublin. Pico said that Livermore's neighbors are increasingly affected by the airport as the valley grows. The council declined the request, but encouraged representatives from neighboring cities to attend commission meetings.³⁴⁰ In October 2003, Pico submitted written comments on the *Livermore General Plan Draft Environmental Impact Report* (EIR), asking Livermore to address specific issues related to the airport in more detail. Pico said the Airport Protection Area was created with the assumption that airport operations would not change dramatically.³⁴¹

Dublin Community Development Director Eddie Peabody said that Dublin also has concerns related to noise, aircraft mix, flight patterns, and operational limits on new uses at the airport. He thinks that the airport should involve all the cities and should deal with all the impacts that airport changes will have.³⁴²

Despite the protections in place, the airport is becoming restricted. Any growth in airport operations could be an issue as more housing is built near the airport. Local jurisdictions are asking the airport operator to prevent any increase in aviation-related impacts. This creates a difficult situation because federal law does not allow the airport to restrict the number of operations.

Airport Master Plan

The *Livermore Municipal Airport Master Plan*, last updated in 1975, defines the projected future type and level of airport operations, addresses noise and environmental issues, and identifies facilities construction needs. The City of Livermore began working on an *Airport Master Plan* (AMP) and *Business Plan* update in August 1999, after FAA grants were received. A plan was developed with public input, but work on the AMP was suspended while an environmental review was undertaken starting in 2002. The *Initial Study and Mitigated Negative Declaration* was completed in February 2004.³⁴³

The *Draft Airport Master Plan*, released for public review in March 2003, relied on airport-specific demand influences that reflected the existing conditions at the airport. Important factors included the airport's role in the growth of business aviation; the lack of a full-service fixed-base operator; demand for hangar space; and the combination of increasing population and economic growth in the Livermore region. The most controversial change envisaged by the draft AMP was extension of the 2,700-foot runway to 3,950 feet. Many argued that lengthening the runway would reduce noise, but nearby residents objected because they felt it would lead to more large and noisy aircraft using the airport. Opponents also objected to plans for a full-service fixed-base operator, which they said would encourage more activity.

Both Airport Manager Leander Hauri and Livermore Councilmember Lorraine Dietrich said the negative response to the AMP was excessive. Hauri suggested that the length of time—almost five years, between outreach and approval of the plan—was a problem.³⁴⁴ Dietrich suggested that the high activity forecasts, especially the forecast increase in jet traffic, were also a problem because opponents used the numbers to generate alarm over the plan.³⁴⁵ The public review period was originally scheduled to end in April 2004, with possible adoption of the AMP by the City Council in June.³⁴⁶ Instead, growing opposition to the plan culminated with more than 600 people attending a Planning Commission meeting in May. In April, the Livermore City Council had agreed to form a 21-member task force, with representatives from Livermore, Pleasanton, and Dublin, in an attempt to resolve disagreements over airport expansion.³⁴⁷

In June 2004, the Livermore City Council appointed the Airport Master Plan Update Advisory Committee and agreed to suspend the AMP review process. The committee, made up of expansion opponents, pilots, and representatives from the cities, would make recommendations to the City Council about what, if any, changes should be made to the master plan.³⁴⁸ In January 2005, the committee recommended that most of the suggested improvements to the airport go forward, with several conditions. First, the demand forecasts

should be revised to reflect the recent decline in aviation. Second, the airport should start a noise monitoring and mitigation program, which should be part of the AMP. Last, a full Environmental Impact Report (EIR) should be prepared to analyze the changes proposed in the AMP.³⁴⁹

The Livermore City Council used the committee's suggestions to lay out a new update process, starting with the council identifying guiding principles for the plan and followed by changes to the AMP update based on those principles and full environmental review in the form of an EIR. The following principles were proposed: basing AMP revisions on guidelines aimed at reducing existing airport noise levels, developing a noise monitoring program, outreach to pilots promoting voluntary noise-reduction efforts, working with the FAA to reduce impacts from other Bay Area airports, continuing to operate the airport as a self-supporting enterprise, and participation in lobbying efforts to require phase-out of noisier jets.³⁵⁰ In June 2006, airport staff delivered a report updating the council on the airport noise monitoring and noise reduction program and hanger construction at the airport. There was no mention of the master plan update in the report.³⁵¹

In July 2006, the council approved a noise monitoring system, but did not grant final approval for installation, deciding to wait another month to see if Pleasanton would agree to share some of the cost. At the same July meeting, they approved construction of 65 hangers at the airport (allowed under the 1975 master plan). Although construction only begins after environmental review is complete, residents protested what they see as airport expansion before noise issues are fully addressed.³⁵² Airport Manager Hauri and Councilmember Dietrich see noise monitoring as a good tool for educating the public, but not necessarily for reducing noise. Therefore, it is important to educate the public before going forward with noise mitigation measures. Hauri said the airport also could do a better job of marketing the benefits of the airport, such as jobs and tax revenues.³⁵³

The *Airport Business Plan*, part of the failed master plan, also states that the benefits of general-aviation airports in attracting businesses are often “overlooked and seen as invisible to the economy.”³⁵⁴ Instead, nonusers focus on detrimental issues associated with noise and land uses. The *Business Plan* includes the following recommendations related to airport land use planning:

- Maintain internal review of long-range city planning efforts (General Plan and, if applicable, specific plan) to influence land use decisions that remain compatible with airport objectives, FAA requirements, and future airport improvements. This could be achieved through compatibility checks with the adopted ALUC's *Comprehensive Land Use Plan* (CLUP) for LVK.
- Work with economic development and planning staff regarding off-site development within a three-mile radius of the airport, regardless of noise contours. The airport manager should always review planned and proposed developments within the city and provide recommendations prior to any decision by the planning commission or city council.

- Discourage a full-time residential population around the airport beyond the Airport Protection Area (APA). An additional 0.5- to 1-mile buffer should be used outside of the compatible CNEL. ...
- The city should encourage its planning agency, and those of the surrounding cities, to implement a real estate disclosure document signed by all new residents acknowledging the existence and proximity of the airport and resulting disturbances.³⁵⁵

All the planners interviewed for this study said their councils were involved in the AMP update process with support from their planning departments. This involvement shows that airport land use is an important issue throughout the Livermore Valley and will continue to be a focus as airport improvements move forward.

Airport Area Land Use Issues

In May 2002, Dublin and Livermore approved a “memorandum of understanding” (MOU) over Dublin’s plans to annex and develop 1,120 acres to the east of the city. The memorandum said Livermore would not sue over the project as long as Dublin met certain conditions. Those conditions included taking measures to keep an open-space buffer between the cities and submitting plans for the 92 acres closest to Livermore Airport to the county ALUC for review.³⁵⁶

In early 2005, developer Braddock & Logan proposed an amendment to the plan for those 1,120 acres. The new plan included 3,108 housing units, about 2.5 million square feet of commercial and office space, two elementary schools, and 187 acres of open space. The project would comprise 12 percent of the city’s total land area. The homes range from high-density to single-family, and the plans include a neighborhood square surrounded by retail. When the city annexed the property in 2002, the developers had announced plans for 2,526 housing units and about 1.4 million square feet of office space. At a Dublin City Council meeting in April 2005, Vice Mayor George Zika expressed concern about the number of housing units and traffic circulation. The suitability of development near the Livermore Airport Protection Area was also discussed.³⁵⁷

When the Livermore City Council reviewed the original project in 2001, the staff report discussed many issues related to the project, “including aesthetics, agricultural resources ... air quality, biological resources ... conflict with airport uses, exacerbation of downstream flooding conditions, increased salt loading on the main basins, community separation in the Doolan Canyon area, the impacts of Measure D (requires voter approval for any urban development in unincorporated areas), jobs-housing balance issues, transportation/traffic including substandard levels of service on I-580 and Isabel Parkway and State Route 84, utility and service systems including demands for potable water supply, wastewater disposal impacts, cumulative electrical demand, and cumulative solid waste disposal.”³⁵⁸

Airport Manager Hauri said that Dublin has proposed extremely high-density housing right up to the APA boundary and under the airport approach and departure paths. The airport has complained to the city of Dublin about these proposals. Livermore city planner Jennifer

Criven said that Livermore and Dublin have different visions. Livermore is committed to preserve the quality of life and is not planning residential densities above 20 dwelling units per acre (DU/AC). Dublin is building more densely, with densities up to 70 DU/AC.³⁵⁹

Growth Issues

It is difficult to separate airport area land use from the other growth-related land use issues in the Livermore Valley. Recent urban growth and open space initiatives have been aimed at preventing sprawl. In November 2005, the City of Livermore sought voter approval for a sewage treatment and pipeline project to expand wastewater capacity. The local water provider began a project in 2005 to build the first new water treatment plant in Livermore Valley since 1975, which will serve new development in Livermore, Pleasanton, Dublin, and the Dougherty Valley.³⁶⁰

Alameda County's Measure D open space initiative, passed in 2000, effectively established an Urban Growth Boundary (UGB). In 2002, after a UGB petition garnered 10,000 signatures, the Livermore City Council adopted its own UGB for North Livermore and part of East Livermore. An Urban Growth Boundary for South Livermore was passed by voters in 1999.³⁶¹ The *Pleasanton General Plan* also designates a UGB that "is intended to be permanent and to define the line beyond which urban development will not occur."³⁶² Any development outside these boundaries requires voter approval.

Three contentious growth issues were addressed on Livermore's November 2005 ballot: a proposed 2,450-home project by Pardee Homes in North Livermore, the expanding sewage-export capacity mentioned above, and the slow-growth balance of the Livermore City Council. Supporters argued that additional sewage capacity was needed for already-planned Livermore growth, but opponents feared that it would spur additional North Livermore development. Voters had rejected a ballot initiative authorizing a sewage-export pipeline in 1998 over concern about North Livermore growth potential.³⁶³ However, the sewage-export pipeline measure passed, although the measure allowing the Pardee Homes development outside the existing UGB failed and the City Council retained its slow-growth majority.

Airport Comprehensive Land Use Plan

The *Alameda County Airport Land Use Policy Plan* (ALUPP) was last updated in 1986. The plan designates safety zones for Alameda County airports. Plan policies prohibit new housing in safety zones. Other uses are evaluated based on the density of people they generate throughout the day. Safety Zone Policy 3.2 lists new shopping centers, restaurants, schools, hospitals, and arenas as examples of incompatible uses. The ALUPP specifies allowable uses, densities, and heights of structures, and identifies noise impact areas, generally areas where the CNEL is greater than 65 dB.³⁶⁴ Livermore's Airport Protection Area has been incorporated into the ALUPP.³⁶⁵

Under Policy 18, the plan requires sound insulation to ensure a maximum interior 45 dB CNEL in new residential, education, and health-related uses in aircraft noise areas. Under

Policy 24, the ALUC may make findings that permit in-fill development (where 80 percent of the parcels within 250 feet are developed). The plan also requires that purchasers of property currently or potentially subject to normally unacceptable noise levels are aware of those conditions.³⁶⁶ The purpose of the ALUPP is to provide policy direction and guidance for the Alameda County ALUC when evaluating referrals for proposed developments and infill projects near airports located within the county. It also serves as guidance to staff from local jurisdictions and neighboring counties as they prepare general plan updates, plan amendments, and zoning ordinance changes, and propose new land uses near airports.³⁶⁷

Alameda County began updating its ALUPP in 2003. The update was delayed by lack of funding and staff resources. In 2004, the three airport operators in the county—the Port of Oakland, the City of Livermore, and the City of Hayward—agreed to help fund the updates.³⁶⁸ The new ALUPP would be organized as a countywide plan, containing all three compatibility plans in one document. The goal was to have a plan for each airport that clearly defines the review and referral process, the requirements and airport planning boundaries with respect to safety, noise, and height, and general referral areas for each airport. The referral process and requirements would attempt to be user friendly, facilitating ALUC staff in making plan compatibility findings and helping local staff and project sponsors understand how and when to make a referral.³⁶⁹ In August 2006, the ALUPP update was expected to be completed by the end of the year, but was still in progress in late 2007. There were no plans to modify the Airport Influence Area for Livermore Municipal Airport, but that could change after the draft is circulated for public review. Once approved, the updated ALUPP will be available for download from Alameda County’s web site.³⁷⁰

The Airport Influence Area (AIA) for Livermore Airport extends two miles from the ends of the airport runways and one mile in a parallel direction from the runways. The AIA includes portions of Livermore, Pleasanton, and Dublin. The ALUC reviews projects within the AIA for consistency with the ALUPP.³⁷¹ According to Airport Manager Hauri, the AIA may be revised based on noise complaint origins, as opposed to the current geographical definition. The AIA includes portions of downtown Livermore, the Staples Ranch property in Pleasanton, and several residential projects in fast-growing eastern Dublin.

Role of Surrounding Jurisdictions

The Livermore and Pleasanton general plans cover airport planning and airport area land use in some detail, but Dublin’s does not. As the airport operator, Livermore has a vested interest in protecting the airport. Pleasanton, which has long-established residential developments toward its eastern edge, also has been active with respect to airport planning, compatible land use, and mitigation since the late 1980s. Dublin only recently began to develop its eastern edge, and therefore was previously less impacted by the airport.

Livermore

The *City of Livermore General Plan* (2004) Land Use, Circulation, Noise, and Public Safety Elements refer to Livermore Airport. The Noise Element refers to the Airport Protection Area and shows the anticipated noise contours for Livermore Airport in 2020. The Land Use Element includes a community facilities land use designation, CF-Airport, that applies to the airport. Land use policies and actions protect the airport from encroachment by incompatible uses as follows:

Policies

P1. The City shall encourage development of property within the immediate vicinity of the Airport for light industrial and transportation uses to the extent that noise standards and flight clearance requirements are maintained and environmental impacts are adequately mitigated.

P2. New residential land use designations or the intensification of existing residential land use designations shall be prohibited within the Airport Protection Area (APA)

P3. Development at the Airport shall be subject to Federal Aviation Administration, Airport Land Use Commission, and City building/structure height restrictions.

Action

A1. Pursue the feasibility of acquiring urban development rights or fee title to property within the Airport flight approach areas west of the runways to the City limits³⁷²

Transportation policies aim to meet the aviation needs of the local and regional economy and protect airport operations and development from incompatible land uses as follows:

Policies

P1. Future development and operations at the Municipal Airport shall be in conformance with an approved master plan. The overall scale of operations at the Municipal Airport shall not exceed the thresholds listed below.

- a. Livermore Municipal Airport is a general aviation airport. Scheduled passenger service flights shall be prohibited.
- b. To the greatest extent feasible, jet flights shall be restricted to approximately 5 percent of the total annual aircraft operations.
- c. To the greatest extent feasible, annual aircraft operations shall not exceed 370,000 operations in any given year, including itinerant and local operations.
- d. To the greatest extent feasible, the total number of aircraft to be stored/parked at the Municipal Airport shall not exceed 900 in any given year, including hangar and apron space areas.
- e. No more than 60 percent of the Airport area designated Community Facility-Airport (CF-AIR) shall be covered with impervious surfaces, including but not limited to, buildings, taxiways, runways, parking areas, fuel areas, and wash areas.

- f. Night-time flights between 10:00 p.m. and 6:00 a.m. shall be discouraged to the greatest extent feasible.
- g. Aircraft and airport operation noise levels shall be consistent with the thresholds established in the General Plan Noise Element.

Action

A1. Develop and periodically update a master plan for the Airport to implement Policy CIR-8.1.P1.³⁷³

The Public Safety Element defines the Airport Protection Area and says that the ALUC “reviews new development projects proposed in the cities of Dublin, Pleasanton, and Livermore for consistency with APA policies and airport land use compatibility.”³⁷⁴ Safety policies in the general plan aim to minimize the risks of aircraft operations by regulating land uses near Livermore Municipal Airport as follows:

P1. All construction in Livermore shall be consistent with the required setbacks and height restrictions for the Airport Protection Area, as well as the policies of a master plan adopted to plan for future Airport operations.³⁷⁵

Figure 32 shows existing land uses in the airport area in relation to the APA and AIA. The airport is largely surrounded by agriculture, open space, commercial, and industrial uses.

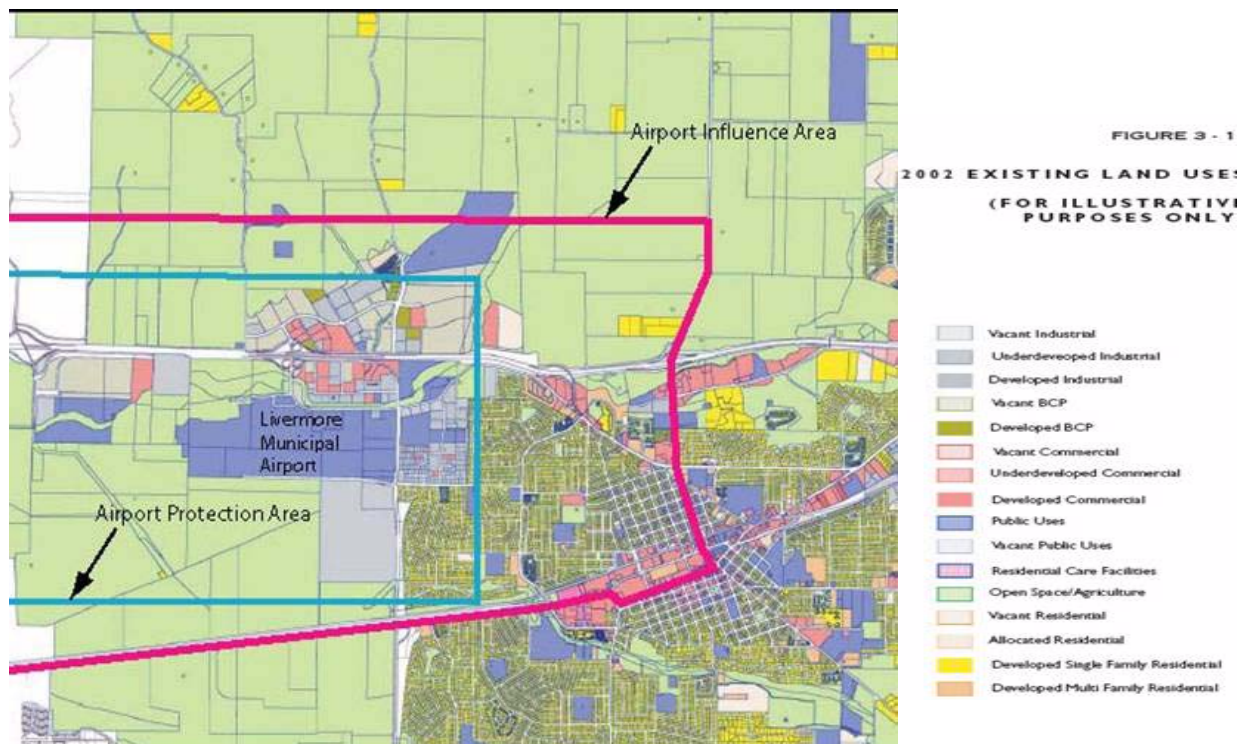


Figure 32 Livermore Existing Land Uses and Airport Influence Area

Source: Base map derived from City of Livermore *General Plan, Land Use Element*, February 2004. Airport Influence Area and Airport Protection Area boundaries added from information shown in Alameda County Airport Land Use Commission, *Airport Land Use Policy Plan* (1986).

However, the area to the southeast of the airport is mostly single-family residential, including part of the APA. Livermore planner Jennifer Criven said that aviation easements are required within the APA, and more easements would probably be created in the future.³⁷⁶ The easements are recorded on the title. Councilmember Lorraine Dietrich said that land use and zoning together with the APA are the city's main policies for airport land use compatibility.³⁷⁷

According to *The Pleasanton General Plan*, the 1996 general plan and the *Stoneridge Drive Specific Plan* (1989) must be consistent with the ALUC and APA policies. The general plan Public Safety, Noise, and Subregional Planning Elements refer to Livermore Airport.

The general plan Public Safety Element says noise and safety impacts from Livermore Airport affect land uses in Pleasanton. "In order to mitigate these impacts, the Plan includes building height restrictions, allowable uses of land, and building standards, such as soundproofing, in areas affected by airport operations."³⁷⁸ Public safety policies in the general plan related to aviation include:

Air Navigation Hazards

Goal 6: To minimize the risks to lives and property due to air navigation hazards generated by the Livermore Municipal Airport.

Policy 18: Deny any development plan which would create any air navigation hazards due to electrical interference, smoke, glare, lighting, or other navigational hazard in the General Referral Area.

Program 18.1: Refer all General Plan amendments, specific plan amendments, and rezonings proposed within the General Referral Area to the Alameda County Airport Land Use Commission....

Program 18.2: Refer all General Plan amendments, specific plan amendments, and rezonings which lie within the Livermore Municipal Airport Height Referral Area and which may create buildings exceeding airport height standards to the ... ALUC.

Program 18.3: Review and evaluate potential air navigation hazards through the City's environmental review process.

Program 18.4: Prohibit residential uses within the Livermore Municipal Airport Protection Area.³⁷⁹

Noise goals, policies, and programs in the general plan related to aviation include:

Policy 8: Encourage other agencies to reduce noise levels generated by roadways, railways, airports, rapid transit, and ...

Program 8.1: Work with the County Airport Land Use Commission, State Office of Noise Control, and other agencies to reduce noise generated from sources outside the City's jurisdiction.

Program 8.2: Update aircraft noise projections as operations at the Livermore Municipal Airport change.³⁸⁰

Subregional goals, policies, and programs in the general plan related to aviation include:

Policy 11: Maximize the efficiency and minimize the negative environmental impacts of the Livermore Municipal Airport.

Program 11.1: Encourage the establishment of a process for providing subregional input into decisions relating to the operation and potential expansion of the Livermore Municipal Airport.³⁸¹

In 1989, Pleasanton adopted the *Stoneridge Drive Specific Plan*, which redesignated the area for a mix of low-, medium-, and high-density residential, commercial, parks, and school uses. The area is located about one mile west of the airport's main runway, resulting in possible safety and noise issues from aircraft overflights. The specific plan section on "Environmental Impact Mitigation" addresses these concerns. In addition, the plan states:

The City of Pleasanton recognizes the regional significance of the Livermore Airport and will continue to cooperatively seek methods with the City of Livermore to reduce incompatibilities between airport operations and adjacent land uses through airport operational changes as well as land use mitigation.³⁸²

The placement of land uses in the specific plan area also mitigates potential safety concerns. Land directly in line with the airport runway is designated for light industrial/service commercial and a community park. Retail uses are located to the northwest of the runway and residential uses are located at least 7,450 feet from the end of the runway. At the time of the plan, the nearest existing residential area in Pleasanton was 7,750 feet from the runway, and the nearest residential area in Livermore was 4,000 feet east of the runway.

The specific plan proposed an elementary school site approximately 10,600 feet from the end of the runway. The plan says the "City of Pleasanton has received a favorable report from the state Board of Education regarding the location of an elementary school site within the Specific Plan area."³⁸³ The *Stoneridge Drive Specific Plan* was approved in 1989, the same year that California statutes first required agencies to notify the Department of Education of any Tentative Map with a proposed public school site within two miles of an airport. Mohr School opened in 1997—before Pleasanton completed the *Livermore Municipal Airport Altitude and Noise Study* in 2003. The study found that the city's noise standards were violated at the school.

Environmental Impact Mitigation policies in the *Stoneridge Drive Specific Plan* include:

- a. Continue to cooperatively seek methods with the City of Livermore to reduce incompatibilities between Livermore Airport operations and Specific Plan land uses through airport operational changes as well as land use mitigation.
- b. Prior to construction of new homes east of the proposed school site, as shown on the Specific Plan Map, a noise monitoring study is required of airport noise to plot the 55 Ldn aircraft noise contour in the Specific Plan area.
- c. Future residential uses within the 55 Ldn aircraft noise contour will be required to be developed to meet single event interior noise levels of 50 dBA in bedrooms and 55 dBA in other rooms.
- d. All new and resold homes within the 55 Ldn aircraft noise contour shall be subject to a real estate disclosure notice indicating the location of the airport, aircraft operational levels, and project noise levels.³⁸⁴

Interestingly, the Specific Plan uses Ldn (Day-Night Average Sound Level) to specify mitigation requirements rather than CNEL, which is used in the *Alameda County Airport Land Use Policy Plan*. It would be easier to evaluate compatibility if the measures were the same.

The *Stoneridge Drive Specific Plan* included the Staples Ranch property, which was still under county jurisdiction in 2005. The plan permits retail, office, and park uses on the site. In early 2004, Pleasanton was nearing build-out of available residential sites and needed to identify additional sites to fulfill the state requirement for several thousand more units to meet regional housing needs. Pleasanton looked at the 126-acre Staples Ranch property, where some land might be available for housing, although much of the property is in the Livermore Airport Protection Area.³⁸⁵ In April 2006, the Pleasanton City Council agreed to sign a Memorandum of Understanding (MOU) with Alameda County to proceed with plans to buy and annex the Staples Ranch site.³⁸⁶ In June 2006, an initial study and notice of preparation were released for the project to rezone the land for an auto mall, an 800-unit senior care facility, an office and retail site, and a 17-acre public park. The EIR will consider ALUC height restrictions and noise impacts. The initial study and notice of preparation was revised and reissued in March 2007, reflecting some minor changes to the project, and work on the EIR was still underway in late 2007.

[Figure 33](#) shows the APA and AIA drawn over part of the 1996 *Pleasanton General Plan* map. The orange area with red stripes is the *Stoneridge Drive Specific Plan* area. Other land in the area is designated for industrial and low-density residential uses.

The 1985 City of Dublin General Plan (updated November 2002) references Livermore Airport in its land use and noise elements. The noise element says that airports are not a factor in Dublin's planning, so they are not addressed. The land use element only refers to the airport when discussing the Eastern Extended Planning Area, as follows:

The Plan allows some low- and medium-density residential uses within the Livermore Airport Protection Area (APA) if, at the time of rezoning, the residential designations are not inconsistent with the

APA. If, at the time of rezoning, the residential designations are inconsistent with the APA, the residential designations will convert to Future Study Area with an underlying Rural Residential/Agriculture designation.³⁸⁷

The Eastern Extended Planning Area is projected to build out over the next 30–40 years, adding roughly 13,930 new housing units to the City.³⁸⁸

This text appears to be inconsistent with the intent of the APA policies, which prohibit new residential development within the APA boundary. However, Dublin Community Development Director Eddie Peabody said that no residential development is planned within the APA, and that the airport does influence land use decisions in the city. There are also industrial uses within the APA in Dublin.³⁸⁹

In December 2005, the city council approved the EIR for Fallon Village, which covers the easternmost portion of the Eastern Extended Planning Area—1,134 acres or about 12 percent of the city’s land area. The council also approved plans for the first phase to be developed by Braddock & Logan (one of 11 property owners). This project includes over 1,000 low-density homes, two elementary schools, open space, and a neighborhood park and square. Fallon Village will eventually have about 3,100 homes, and light industrial, commercial, office, and retail uses.³⁹⁰ At the approval hearing, Mayor Lockhart said that uses near the Airport Protection Area should be carefully considered for compatibility when future projects are reviewed.

POTENTIAL ROLE AND IMPACT OF SMART GROWTH

The population of the Livermore Valley is growing quickly. The previously rural atmosphere is becoming suburban, and residents want something to be done to preserve the character of the valley. Like other growing communities throughout California, Livermore, Pleasanton, and Dublin are trying to curb suburban sprawl using smart growth strategies such as increasing densities, especially near transit or retail and other services.

The Open Space and Conservation Element of the *Livermore General Plan* includes the following policy to help minimize air pollution:

P5. The City shall attempt to increase the employment to population ratio to reduce commuting rates and associated vehicle-related pollution emissions.... High-density, transit-oriented developments shall be strongly encouraged and promoted through the use of specific planning, density transfer, the planned development concept, and zoning designations.³⁹¹

The Housing Element identifies areas for higher-density residential development directly adjacent to transit, including the vicinity of the ACE (Altamont Commuter Express) station downtown. The ACE station is just outside the Airport Influence Area.

The Circulation Element includes these objectives to promote alternative transportation modes:

Objective CIR-3.1 Provide viable alternatives to single-occupant vehicle travel.

Objective CIR-3.2 Encourage vehicle trip reduction.

Objective CIR-3.3 Provide a bicycle and trails network.

Objective CIR-3.4 Provide a pedestrian network that encourages walking for transportation and recreation.³⁹²

Livermore planner Jennifer Criven said that smart growth is new in the 2003 *General Plan*, with clustered mixed-use development concentrated in Downtown Livermore and three transit-oriented development areas near ACE train stations and the future Greenville BART station.³⁹³ A Livermore BART station in the airport/industrial area close to a corporate business park has been discussed, but there are no projects currently planned for that area.

The following *Pleasanton General Plan* land use policy parallels many smart growth policies.³⁹⁴

Policy 13: Integrate land use and transportation planning in order to ensure patterns that facilitate safe and convenient mobility of people and goods at a reasonable cost, and to increase travel alternatives to the single-occupant automobiles.

Program 13.1: Reduce the need for vehicular traffic by locating employment, residential, and service activities close together, and plan development so it is easily accessible by transit, bicycle, and on foot.

Program 13.2: Encourage the reuse of vacant and underutilized parcels and buildings within existing urban areas.

Program 13.3: Encourage transit-compatible development near BART stations, along transportation corridors, in business parks and the Downtown...to create effective destinations for transit.

Program 13.4: Promote pedestrian-oriented mixed-use centers, including residential, commercial, and employment activities, easily accessible by foot, bicycle, or transit.

Program 13.5: Permit higher residential and commercial densities in the proximity of transportation corridors.

Program 13.6: Assure that new major commercial, office, and institutional centers are adequately served by transit.

Pleasanton is currently updating its general plan, and the update will likely reflect smart growth principles to a greater degree than the 1996 plan. A concurrent specific plan will attempt to create a transit oriented development in Hacienda Business Park, which is served directly by BART.

The *Dublin General Plan* does not mention smart growth specifically, but advocates some related policies for the eastern planning area, as follows:

The City encourages a balance of employment and housing opportunities in the area in terms of both quantity and economic characteristics in order to reduce the import or export of labor that results in increased traffic congestion and air pollution. Development patterns will be encouraged that support the use of transit, both on a local and regional level.³⁹⁵

Development Elevation Cap policies support the City's existing policies of ensuring that any new development requiring urban levels of service within the Eastern Extended Planning Area occurs in a logical, orderly manner adjacent to existing development; and incorporating open space systems.³⁹⁶

Dublin is regarded as a leader in smart growth and housing production. In 2004, more than 11,800 housing units were either under construction or in various stages of the planning process.³⁹⁷ Dublin's smart growth practices include transit villages at BART stations, horizontal and vertical mixed-use projects, pedestrian-oriented projects, building at densities up to 55–60 DU/AC, and reduced parking requirements. According to Dublin Community Development Director Eddie Peabody, project R07A, which is within the AIA, is a smart growth project³⁹⁸ (see [Figure 35](#)). It is pedestrian-oriented and has high-density residential mixed with retail and commercial uses. As of early 2005, the project was already under construction—with almost 1,400 units planned for about 40 acres.³⁹⁹ Peabody stated that he did not see any connection between the city's smart growth practices and airport land use compatibility.

At this point, it is not clear how the smart growth practices of Livermore Valley's cities will influence airport land use compatibility. However, the cities are all implementing some level of smart growth within the airport influence area: Livermore in the downtown, Pleasanton in the Stoneridge Drive area, and Dublin in the *East Dublin Specific Plan* area.⁴⁰⁰ These developments are introducing higher densities near the airport compared to existing residential developments, which will increase the number of people exposed to significant levels of airport noise. With the current uproar over airport noise from residents in these areas, it is easy to see how such an influx of people might negatively impact Livermore Airport.

CHANGES IN LOCAL LAND USE

In 2003, the Metropolitan Transportation Commission (MTC) published maps showing airport area land use for the region's general aviation airports. The map for Livermore Airport is shown in [Figure 33](#). Livermore, Pleasanton, Dublin, and Alameda County do not have historical land use data in geographic information system (GIS) format, although previous plans and maps are archived in paper format. The *Livermore Municipal Airport Master Plan* describes nearby land uses as a municipal golf course to the northwest, industrial/business parks to the north and east, residential areas to the east in Livermore and to the west in Pleasanton, and aggregate mining to the south. Aside from the residential areas, Airport Manager Hauri said that these uses are compatible with the airport. In 2004, the airport was

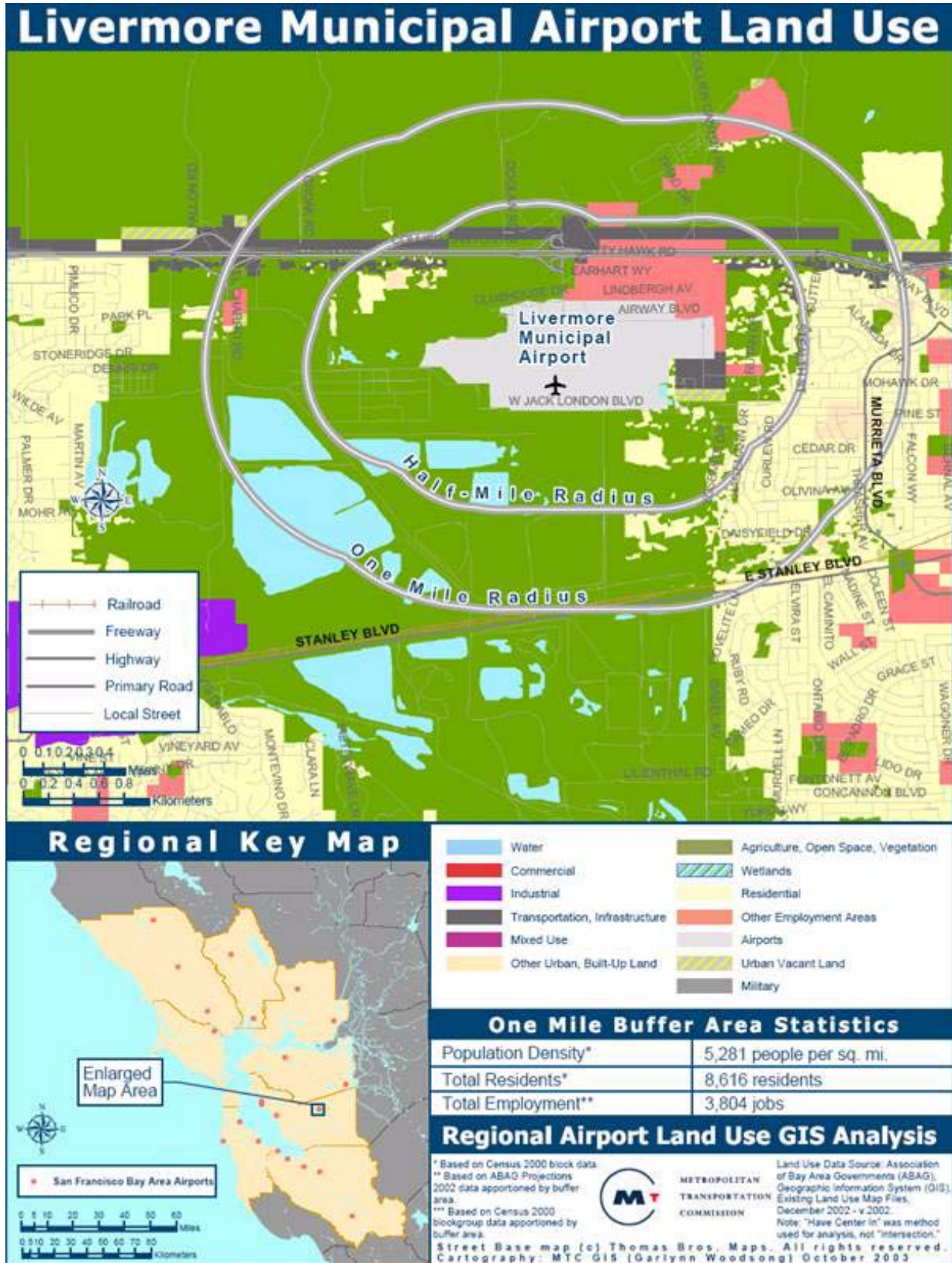


Figure 33 Livermore Municipal Airport Land Use in 2002

Source: Metropolitan Transportation Commission, October 2003, www.mtc.ca.gov/projects/air_plan/BA_airports_land_use_1mi.pdf (accessed April 25, 2004).

less than a mile from houses in western Livermore and about 1-1/2 miles from houses in Pleasanton.⁴⁰¹

The Airport Protection Area has prevented residential development in the airport's safety zones. However, new residential projects continue within the ALUC referral boundary—projects based on smart growth land use concepts such as high-density housing, mixed uses, and integration with alternative transportation modes. The *Stoneridge Drive Specific Plan* brought residential development in Pleasanton closer to the airport. In Dublin, several large, high-density residential projects have been proposed within the referral area boundary. The status of residential development in eastern Dublin is not clear. Overall, it appears that Dublin is more concerned about meeting housing needs than about airport land use compatibility. With residential development in eastern Dublin, more people will be living near the airport in the future. This residential encroachment could result in pressure to change airport operations and apply noise mitigation measures.

Conflicts over residential development in eastern Dublin led to the 2002 MOU between Livermore and Dublin, establishing measures to keep an open-space buffer between the cities and requiring ALUC referral. Conflicts over airport impacts and lack of participation in the airport development process led Pleasanton to conduct an independent *Altitude and Noise Study*, which was discussed in detail beginning on [page 185](#).

Despite issues with residential development near the airport, proposals have been put forward to develop areas of open space north of Livermore and east of Dublin near the airport. The Pardee Homes proposal on the November 2005 ballot (described above) failed to overturn the urban-growth boundary established when citizens approved County Open-Space Measure D (in part to end a city-county plan to develop 12,500 homes in North Livermore).⁴⁰²

Livermore Valley cities have policies and programs for economic development. In general, they want to improve the jobs-to-housing balance and increase tax revenues.

Livermore has the largest amount of available industrial land in the Tri-Valley.⁴⁰³ According to Livermore planner Jennifer Criven, the industrial and commercial areas near the airport have not seen much development.⁴⁰⁴ Unrelated policies such as limited building heights (to protect views from the freeway) and the desire to attract high-quality jobs have restricted development. Airport Manager Hauri said the airport is a catalyst for commercial and industrial development—the Chamber of Commerce and the Economic Development Department have told him that companies ask about the location of the airport more and more.⁴⁰⁵ However, the city does not have specific strategies to attract such business to the airport area.

[Figure 34](#) shows available lots designated for commercial, office, and industrial (COI) use in the 1996 *Pleasanton General Plan*. Lots 39 (the Staples Ranch property) and 54 are directly west of Livermore Airport. Current land use designations for these properties include retail, research and development (R&D), light industrial, and sales and service. In June 2006,

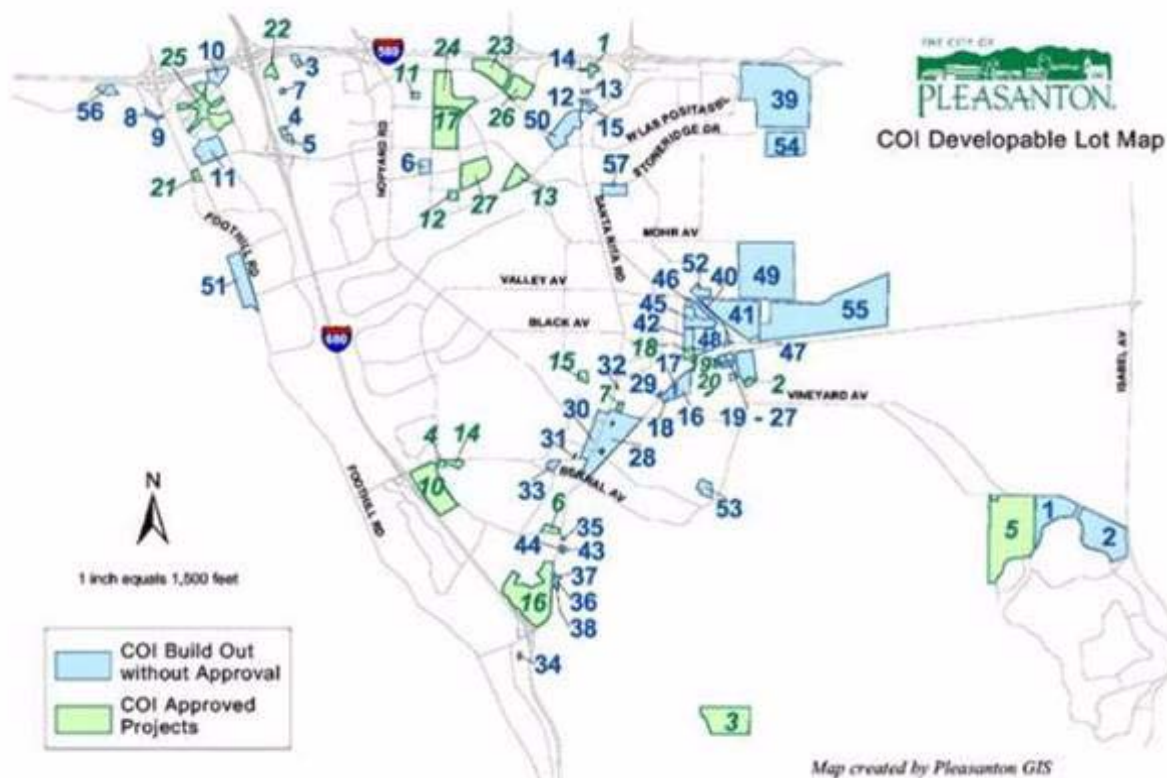


Figure 34 Pleasanton Commercial/Office/Industrial Developable Lot Map

Source: City of Pleasanton, "Vacant Land Survey 1998," www.ci.pleasanton.ca.us/landsur.html.

Pleasanton began moving forward with an EIR for mixed land uses, including residential uses, on the Staples Ranch site.

EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS

Land use compatibility issues relating to Livermore Municipal Airport generally have been handled at the subregional level. The most notable examples are the creation of the Airport Protection Area (APA), Pleasanton's noise study, and the subregional Livermore Airport Master Plan Update Advisory Committee. In interviews, local planners and politicians focused on the prohibition of residential development in the APA.

Airport Manager Hauri said that Pleasanton and Livermore had good leadership with respect to land use compatibility in the past, especially when the APA was put in place.⁴⁰⁶ Now, airport staff is working more closely with the Community Development Department to raise awareness about airport land use compatibility. Hauri suggested that airport and planning staff should attend each other's meetings to improve communication about land use issues. Council member Lorraine Dietrich said that Livermore worked hard to inform Pleasanton and Dublin about the APA, which has helped.⁴⁰⁷ However, communication depends on personalities and has not always led to appropriate action in the past. Dietrich was not

optimistic about efforts to cooperate on either the airport or airport land use compatibility in the political climate of 2005.

Pleasanton has independently taken actions to address airport compatibility issues since the late 1980s. The 1987 *Stoneridge Drive Specific Plan* put residential uses as far as possible from the airport and requires specific interior noise levels. The 2003 *Livermore Municipal Airport Altitude and Noise Study* conducted by Pleasanton confirmed that noise levels were high enough to require noise mitigation in the area. The general plan also has extensive airport-related policies. Pleasanton planner Robin Giffin confirmed that there are more noise-related requirements near the airport. She also said that the airport influence area does have an impact on land use and construction, especially in regard to noise requirements.

The *Alameda County Airport Land Use Policy Plan* requires that general plan, specific plan, and zoning changes within the AIA be referred to the ALUC for review. The *Pleasanton General Plan* specifically includes all the ALUC referral policies. The *Livermore General Plan* states simply that development is subject to ALUC building/structure height restrictions. Livermore planner Jennifer Criven said that the ALUC has recommended conditions of approval for projects within the AIA, including both height and density restrictions in certain areas.⁴⁰⁸ Dublin has no specific policies for ALUC referral.

Cindy Horvath, ALUC planner for Alameda County, said that Livermore, Pleasanton, and Dublin do refer projects when appropriate.⁴⁰⁹ The *Eastern Dublin Specific Plan* has come before the ALUC a few times in recent years. Dublin Community Development Director Eddie Peabody said that Dublin refers general plan amendments, but no residential projects had been planned within the AIA or the APA as of 2005.⁴¹⁰ However, in January 2005, the status for project R6 ([Figure 35](#)) indicated that 930 residential units were currently under construction on the site, which is in both the APA and the AIA.⁴¹¹

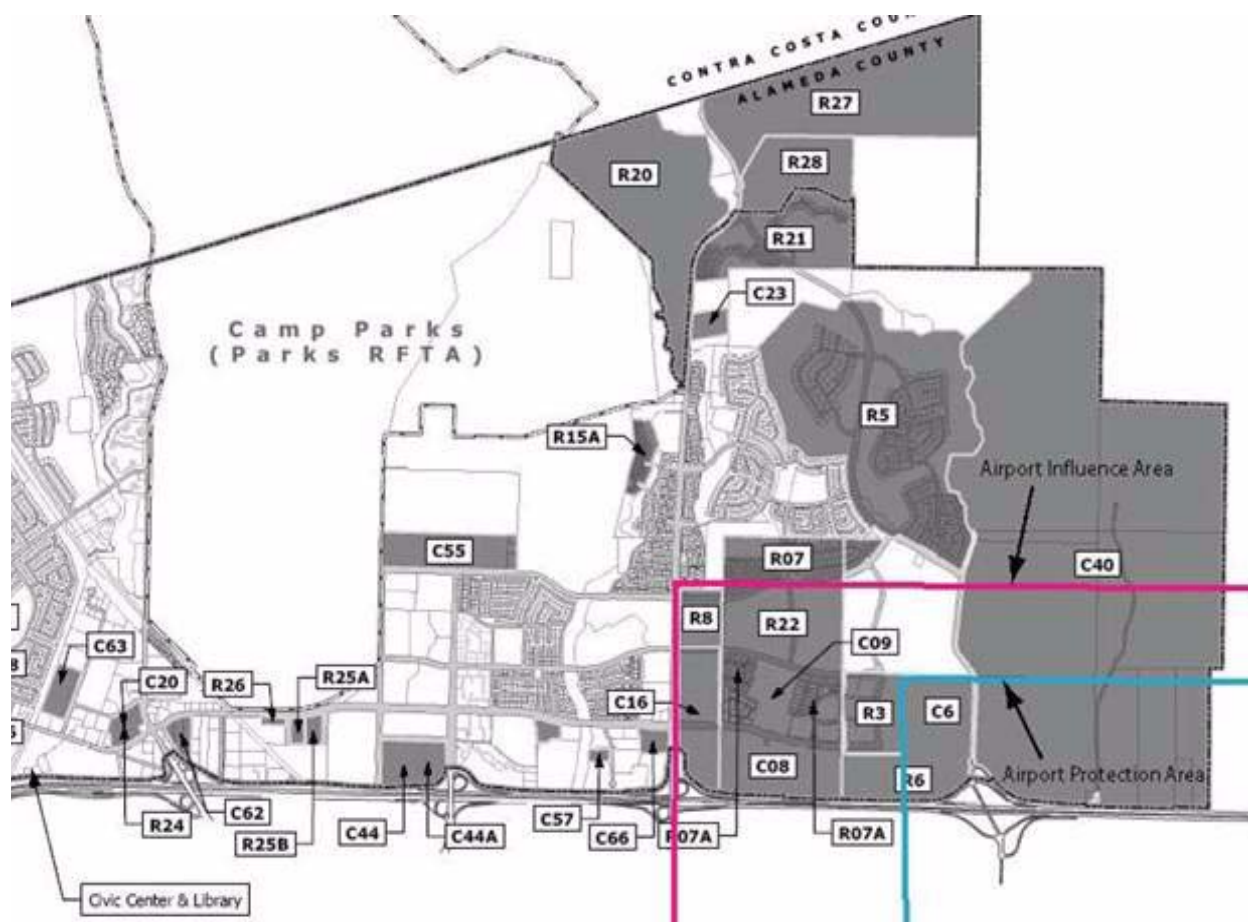


Figure 35 Dublin Planned Development Projects

Source: Base map derived from City of Dublin, "Commercial and Residential Development Projects," October 2004, www.ci.dublin.ca.us/pdf/Development-Projects-2004-12small.pdf (accessed January 19, 2004).

Airport Influence Area and Airport Protection Area boundaries added from information shown in Alameda County Airport Land Use Commission *Airport Land Use Policy Plan* (1986).

The Alameda County ALUC is not very active overall. The ALUC often cancels meetings due to lack of referral activity and only met three times in 2004.⁴¹² In addition, the 1986 Alameda County ALUPP is out of date. Hopefully, the updated ALUPP will increase attention to airport land use compatibility planning. The referral process and requirements in the new plan will be written to help local staff and project sponsors understand how and when to make referrals, which should clear up any confusion about the referral process. The status of residential development in eastern Dublin is not clear. Dublin appears to be more concerned about meeting housing needs than about airport land use compatibility. If the trend toward high-density residential development in Dublin continues, more and more people will be living in the airport influence area in the future.

The *Airport Land Use Plan* should involve Livermore, Pleasanton, and Dublin. This outreach could increase the chances that Livermore and Dublin include ALUC referral policies in their general plans.

Efforts to protect Livermore Airport from residential encroachment and ensuing neighborhood complaints have been relatively successful, compared to many other airports. The APA

brought attention to airport land use compatibility, and it restricts residential development. However, the need for housing is increasing the amount of residential development in eastern Pleasanton and Dublin, within the Airport Influence Area and just outside the APA.

SUMMARY

In addition to controversy over the *Livermore Municipal Airport Master Plan* update, cities in the Livermore Valley are dealing with issues such as housing needs, traffic congestion, preserving open space, and implementing smart growth plans.

The following obstacles to airport-compatible land use identified in the literature apply to Livermore Airport: multiple jurisdictions, competing community needs, demands of airport neighbors, and lack of funding and technical support for land use compatibility planning. The problem of “misaligned incentives” identified by Leora Waldner also applies.⁴¹³ That is, the airport wants to promote compatible land uses but has no authority over land use, and the local governments that have authority over land use have little incentive to promote compatible uses.

The main obstacle to airport land use compatibility in the Livermore Valley is the pressure to provide housing. Local jurisdictions are aware of airport land use compatibility issues, but the housing shortage is a bigger issue. In 2004, Pleasanton was required to accommodate several thousand more units to meet regional housing needs, illustrating the magnitude of the problem. At the same time, the slow economy and lack of demand for office or industrial space make housing the only feasible development option. Given these circumstances, it is not surprising that residential development is occurring within the ALUC referral area, closer and closer to Livermore Airport.

New and proposed residential developments in eastern Dublin and Pleasanton are bringing attention to noise from Livermore Airport. However, until recently the airport had no plans to monitor or address noise impacts since the state and federally established 65 dB Community Noise Equivalent Level (CNEL) noise contour is contained well within the boundaries of the airport, even with 370,000 operations forecast for 2020. If no residential areas are exposed to the 65 dB CNEL, now or in the future, the airport is not legally considered “noise sensitive” and is not eligible to receive federal grant monies for noise-compatibility planning or noise-monitoring equipment. This situation has led to conflicts that impede cooperation between the airport and local jurisdictions. In particular, the contentious *Airport Master Plan* process clarified the need for subregional cooperation with regard to airport planning and land use compatibility. The process initiated a broader discussion about airport noise. An official noise monitoring program with continued involvement and education of all parties might lead to fewer conflicts and more cooperation on land use planning in the future. Noise monitoring is important because it results in the objective data needed to analyze and discuss the magnitude of the problem and possible solutions. Pleasanton’s suggestion to form a Tri-Valley Airport Advisory Committee could add to the effectiveness of these efforts, creating an ongoing forum

to discuss airport issues and competing needs in the region. However, Livermore has so far resisted creation of such an advisory body.

Some solutions to improve airport land use compatibility that have been tried in Livermore are an overlay zone (Airport Protection Area), interjurisdictional cooperation on airport issues, and disclosure regulations. Buying development rights is also suggested in the Livermore General Plan, and much land has been purchased surrounding the airport. The Alameda County Airport Land Use Commission has reviewed specific plans for East Dublin and the Stoneridge Drive Area, which are within the Livermore Airport ALUC referral boundary. Pleasanton has specifically incorporated ALUC referral requirements in the *Pleasanton General Plan*. Livermore and Dublin should do the same.

Despite the protections in place, residential encroachment continues around Livermore Municipal Airport, and future development of the airport is becoming restricted. Smart-growth developments within the airport influence area are introducing higher densities near the airport compared to existing residential developments, increasing the number of people living under airport flight paths. Growth in airport operations is becoming an issue as more housing is built near the airport. Local jurisdictions are asking the airport to prevent any increase in aviation-related impacts. This creates a difficult situation because federal law does not allow the airport to restrict the number of operations. More communication, greater regional cooperation, and stronger local policies for airport land use compatibility may help to lessen or slow this conflict, but regional growth issues will continue to create competing demands that require trade-offs between airport compatibility and other needs.

APPENDIX F

CASE STUDY—SAN FRANCISCO INTERNATIONAL AIRPORT

San Francisco International Airport (SFO), San Mateo County

Airport location	San Mateo County (City and County of San Francisco jurisdiction)
Airport size	2,383 acres
Type of facility	Regularly scheduled passenger flights, cargo
Level of airport activity	33.4 million passengers, 520,00 metric tons of cargo and 354,000 aircraft operations in 2005
Curfew	None, 24-hour operation
Most recent ALUCP	1996
Most recent <i>Airport Master Plan</i>	1998 (developed in 1989, environmental approval in 1998)
Nearby cities (population 1/1/06)	San Bruno: 41,500; Millbrae: 20,700; South San Francisco: 61,800; Daly City: 104,800
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Surrounded by built-up urban area • Surrounded by a mix of land uses, with a high proportion of single-family residential uses • San Francisco owns the airport but the aircraft noise impacts occur predominantly in San Mateo County
Major issues	<ul style="list-style-type: none"> • Continuing high level of noise complaints from a wide geographic area • Lack of coordination of airport land use planning with other planning activities
Approaches to solving airport/community conflicts	<ul style="list-style-type: none"> • Real-time flight-tracking web site for aircraft noise monitoring and reporting • Extensive home insulation program • Fly Quiet Program includes quarterly reports that grade airlines on their contribution to aircraft noise • Airport works closely with surrounding communities through the Airport/Community Roundtable, as well as with the airlines and FAA air traffic control service, to identify feasible changes to flight procedures that reduce aircraft noise and encourage their use
Stakeholder groups	Airport/Community Roundtable
Integration with smart growth policies	<ul style="list-style-type: none"> • Direct BART connection to the airport • Smart growth programs underway to encourage development of high-density housing near jobs and transit in the communities to the west of the airport, placing some residential development in areas exposed to aircraft noise
ALUC agency	City/County Association of Governments of San Mateo County
ALUC staff contact name	David Carbone
ALUC staff contact phone	(650) 363-4686
ALUC staff contact e-mail	dcarbone@co.sanmateo.ca.us

INTRODUCTION

San Francisco International Airport (SFO) is the second-busiest airport in the state and the primary commercial service airport for the San Francisco Bay Area. It is a major international gateway, particularly for flights between the United States and countries in the Far East and Pacific region, and is the principal West Coast hub for United Airlines. The airport is located in San Mateo County on the western shore of San Francisco Bay about 15 miles south of downtown San Francisco and adjacent to the cities of Millbrae, San Bruno, and South San Francisco, as shown in Figure 36.

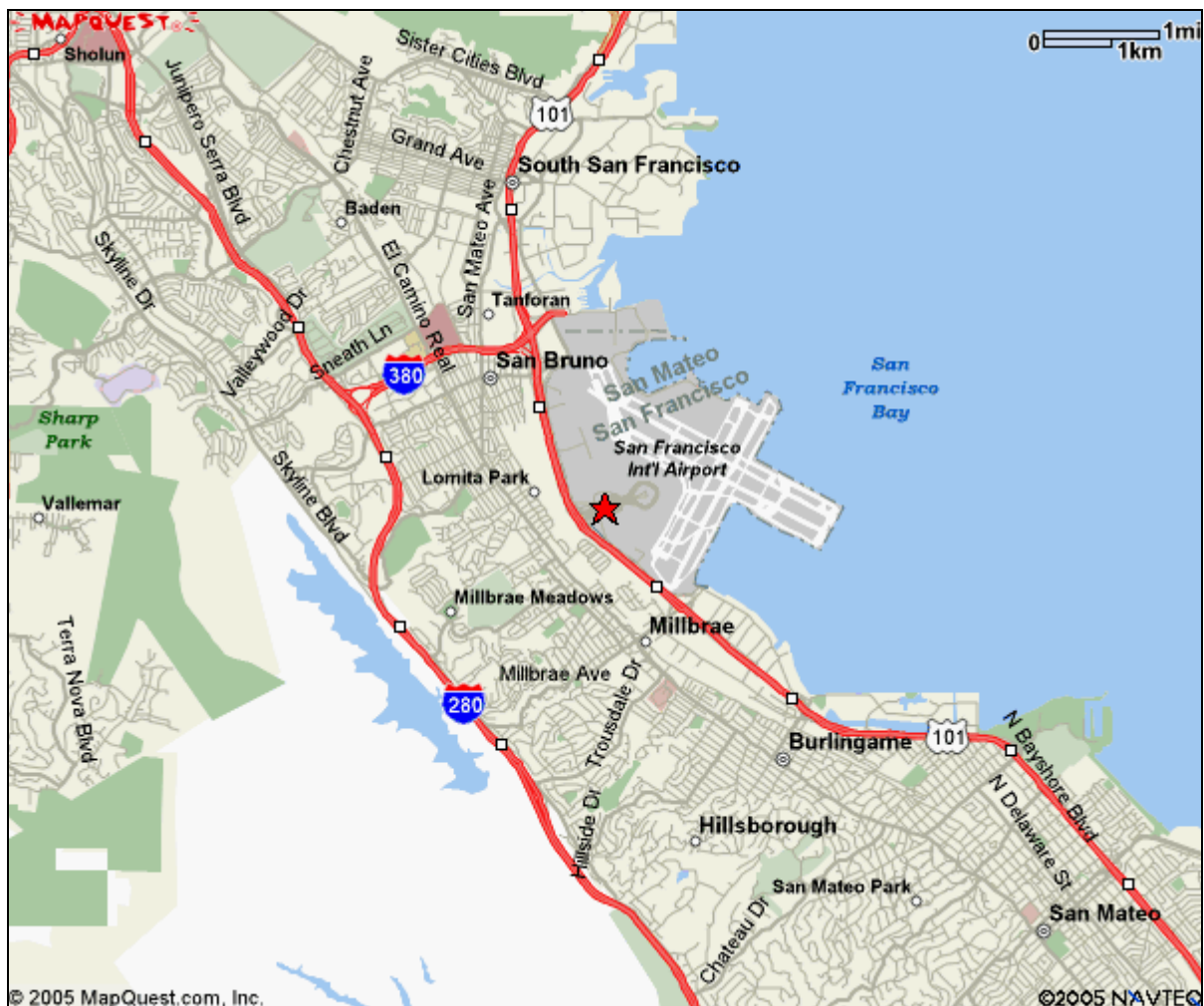


Figure 36 San Francisco International Airport Vicinity

Source: Mapquest, Inc., www.mapquest.com (accessed December 3, 2005).

Although it lies in San Mateo County, the airport is owned and operated by the City and County of San Francisco. U.S. Highway 101 forms the western boundary of the airport. The land immediately to the west of the freeway is undeveloped with some wetlands, and serves as a utility and rail corridor. The tracks of the former Southern Pacific Railroad, which now serve the Caltrain commuter rail service between Santa Clara County and San Francisco, form the

western boundary of the corridor. The corridor also contains the tracks of the Bay Area Rapid Transit (BART) system that was extended to San Francisco International Airport and Millbrae in 2003.

Beyond the Caltrain line, the land is almost completely developed, predominantly with single-family homes and some commercial and multiunit residential. Most of the development is along El Camino Real, which forms the principal arterial down the Peninsula corridor a few blocks west of the Caltrain line. To the west of El Camino Real, the land rises steadily for about a mile toward Interstate 280 that runs along the ridge that forms the spine of the peninsula.

Because of the configuration of San Francisco International Airport, with two pairs of closely spaced parallel runways intersecting at right angles, and the predominant westerly winds, the usual pattern of operations is for aircraft to land toward the northwest on the Runway 28 pair and depart to the northeast on the Runway 01 pair. This keeps both the arrivals and departures over the bay. However, particularly heavy aircraft, such as long-haul flights across the Pacific or flights to Europe, usually have to take off on Runway 28R, the longest runway. Because these aircraft are operating close to their maximum take-off weight and the land rises to the west, they remain fairly close to the ground for some distance from the airport. Other operating configurations are used less often when strong winds do not allow the usual runway use pattern. During strong northeasterly or southeasterly winds, such as sometimes occur during winter storms, aircraft may land on the Runway 10 pair or the Runway 01 pair, resulting in the arrival flight paths coming in over the communities to the west of the airport.

The close spacing (750 feet) of the two pairs of runways has a significant adverse effect on the arrival capacity of the airport during periods of low cloud or fog. In order for arriving aircraft to make simultaneous approaches to each runway of a pair, the flight crew of each aircraft must have visual contact with the other aircraft because the lateral separation between the aircraft is far less than the minimum allowed for instrument flight procedures. Airport capacity is further constrained by the fact that the two pairs of runways intersect at right angles. This allows both arrivals and departures to take place over water during the most common operating configurations, but it has the disadvantage that gaps have to be left in the arrival stream of aircraft to allow departures to take place. To minimize these gaps, the arriving and departing aircraft need to be paired, which further constrains airport capacity.

When the predominant departure pattern is in use on the Runway 01 pair, because the land rises to the south and west of the runway end, some of the communities beyond the El Camino Real corridor in this direction have complained about aircraft engine noise during the takeoff roll (termed “backblast” noise). Communities quite some distance from the airport have also expressed aircraft noise concerns because of overflights by aircraft arriving at or departing from the airport. In particular, when the airport is operating in its usual configuration, with aircraft landing on the Runway 28 pair, aircraft arriving from the west cross the peninsula south of the airport at a navigation beacon (the Woodside VOR [VHF Omni Range]) located in the city of Woodside before turning onto final approach over the bay. Because of the height of the terrain,

these aircraft are closer to the ground than they are when they cross the shoreline of the Bay further east, and the resulting aircraft noise levels have become a concern of the community.

Since the airport is located in San Mateo County, land use compatibility planning is the responsibility of the San Mateo County Airport Land Use Commission (ALUC). In addition, for many years the airport has participated in an Airport/Community Roundtable that brings together airport staff and representatives of neighboring cities and other interested parties on a regular basis to develop and implement strategies to reduce aircraft noise impacts. The ALUC staff members also serve as staff to the roundtable.

AIRPORT LAND USE PLANNING

The land around SFO to the west of the U.S. 101 freeway has largely been built out with predominantly suburban residential development for many years. As air traffic at the airport has continued to grow and jet aircraft were introduced, the levels of aircraft noise became an ongoing community concern. In recent years there has also been infill development, particularly along the bay shoreline to the north and south of the airport, and some redevelopment along the El Camino Real corridor to the east of the U.S. 101 freeway. San Mateo County has been a strong advocate for transit-oriented development, with increased density around the Caltrain (and more recently BART) stations.

Thus, while the primary focus of the SFO airport management and Airport/Community Roundtable has been on reducing aircraft noise impacts, there are also concerns that infill development does not create new incompatible uses and exacerbate community conflicts over aircraft noise. Given the location of the Caltrain and BART corridor fairly close to the airport, the need for more housing in the county, and policies favoring higher-density transit-oriented development, there are inherent conflicts between the desire to increase residential density around the Caltrain and BART stations and the proximity of some of those locations to the airport.

In addition to pursuing measures to reduce aircraft noise, SFO has worked with surrounding communities to fund sound insulation programs for homes and schools using a combination of its own money and FAA grants.

History of Land Use Issues in the Airport Vicinity

Since the area around SFO has been largely built out for many years, airport land use compatibility discussion has tended to focus on reducing aircraft noise rather than preventing further development. The phase-out of the noisier Stage 2 commercial jet aircraft by 2000 under the 1990 federal Airport Noise and Capacity Act significantly reduced aircraft noise levels around the airport, although in 2000, the average Community Noise Equivalent Level (CNEL) exceeded 65 dB on most days in parts of several communities near the airport, including South San Francisco, Daly City, Pacifica, Millbrae, and San Bruno. However, overall noise level had been cut in half between 1997 and 2000, with the installation of quieter

engines on passenger and cargo aircraft accounting for much of that reduction. Even so, the SFO Aircraft Noise Abatement Office received 2,231 noise complaints from 296 callers in January 2000.⁴¹⁴

Communities a long way from the airport also experienced noise impacts. In January 2000, the Neighborhood Council in Point Richmond, a community in the East Bay well to the north of the airport, voted to ask the FAA to reduce noise over Richmond, and to ask that a Richmond representative be appointed to the SFO Airport/Community Roundtable and a similar forum for Oakland International Airport. Both panels have had some success convincing the FAA to increase the elevation of some arriving flights, change certain arrival routes, and direct most arriving and departing flights over water. One early success was the adoption of a nighttime flight procedure at SFO called “Quiet 7” that keeps aircraft over the bay instead of above cities in Alameda and San Francisco counties between 10 p.m. and 7 a.m. However, those same nighttime procedures adversely impact Richmond, because the additional traffic over the bay intersects above Richmond. Richmond did not get a representative on the SFO Roundtable. “Representation is based on cities closest to the airport that have more dramatic intrusion,” SFO spokesman Ron Wilson said. “If we allowed Richmond on board then other counties would want to join and we’d end up with 75 people and nothing would get done.” That does not exclude Richmond residents from attending the panel’s monthly meetings, he added.⁴¹⁵

Richmond has the unfortunate position of being adjacent to a major air route intersection and turning point used by most Bay Area aircraft headed toward or returning from points north and east. Established by the FAA some 50 years ago and used by airplanes from both Oakland and San Francisco airports, the route over Richmond—dubbed the Richmond/REBAS Intersection—is not likely to change without political support, FAA spokesman Mitch Barker said. The authority to establish air traffic routes lies with the FAA, while pilots and airlines have their own concerns regarding safety, efficiency, and fuel costs. A seven-day study, conducted by SFO from September 13 to 19, 1999, found that of 1,202 aircraft using the airport each day, about 170 flew over Point Richmond. The study also found that most of the flights were by departing aircraft, which tend to be accelerating and are louder than arriving aircraft. Oakland International Airport measured noise levels in Point Richmond but found nothing higher than the 65 dB limit used for noise compatibility planning around Bay Area airports.⁴¹⁶

In February 2000, \$34.2 million was approved by the San Francisco Airport Commission to install roof insulation, solid exterior doors, double-pane windows, and other noise-reduction measures for houses near the airport. These funds were in addition to \$120 million that had already been approved for home insulation. The additional money was needed in part because officials misjudged the number of new homes that would be built near the airport when sound insulation funding was originally approved in the early 1980s. Millbrae and South San Francisco were among the first to take advantage of the airport’s noise-reduction offer. Burlingame and Foster City declined to take part, fearing that the measure would decrease property values. Under the program, local governments oversee the construction work and

homeowners must sign an agreement that they will not sue the airport over noise issues once the insulation is installed. The additional \$34.2 million was to be divided between Daly City, which would get \$22.4 million to insulate 1,260 homes; San Bruno, which would get \$11 million for 490 homes; and San Mateo County, which would get \$800,000 to insulate 14 homes and several schools.⁴¹⁷

In April 2000, after years of complaints from midpeninsula residents, SFO officials agreed to work with the FAA to raise jet altitude requirements in an effort to reduce flight noise over those neighborhoods. The new policy required pilots coming into the airport to fly at an altitude of at least 5,000 feet when crossing the Menlo Park intersection, an air route intersection directly above the Menlo Park/Palo Alto border, said airport spokesman Ron Wilson. The previous guideline called for an altitude of at least 4,000 feet. Although supported by Menlo Park officials, Palo Alto and Los Altos leaders had been frustrated in their attempts to have a say in airport matters because the two Santa Clara County cities were denied general admission to the Airport/Community Roundtable. Although noise levels in midpeninsula communities rarely broke the 65 dB threshold, the change was predicted to decrease noise in the area by about 41 percent. This altitude adjustment may have been the last of its kind in the Bay Area. In 1997, the altitude of aircraft flying over southern San Mateo County into the airport in the early morning was increased from 6,000 to 7,000 feet.⁴¹⁸

More distant communities continued to express concerns over aircraft noise. In April 2001, the FAA, reacting to growing complaints from along the coast north of the Golden Gate, eliminated a nighttime shortcut over southern Marin County that was a source of aggravation for officials at Point Reyes National Seashore and coastal residents. The change affected a route sometimes called the “Bollinas shortcut” because it brought jet aircraft directly over the Bollinas Lagoon between 10 p.m. and 6 a.m. during departures from SFO. When they reached Bollinas, aircraft could still be as low as 3,500 feet. “This was a very noisy setup for those folks who were under that ‘Bollinas shortcut’ flight plan,” said Michael McEneaney, an Inverness resident and founding member of the West Marin Coalition on Aircraft Noise. The shortcut has been eliminated between 10 p.m. and 6 p.m. Instead, aircraft leaving SFO will stay on a westward heading for an additional 13 miles before turning north at a point several miles off the tip of Point Reyes.⁴¹⁹

In August 2002, after nearly two decades of insulating peninsula homes to protect them from aircraft noise, SFO officials announced that they had met state noise abatement standards for the first time since the standards were set in the 1970s. “We are seeing far fewer complaints now about noise,” said Jon Long, noise abatement officer for SFO. “The average number of noise complaints has decreased from 3,600 a month last year to about 1,400 a month in 2002.”⁴²⁰ The Airport/Community Roundtable said it was auditing the report to make sure the claims were accurate. If it holds up, SFO would be the first major airport in California to comply with the state’s Title 21, which requires SFO (among other airports in the state) to reduce the noise impact on surrounding communities or sound insulate all remaining homes within the 65dB CNEL noise contour. “This in no way means the noise problem is solved,”

said David Carbone, coordinator of the Airport/Community Roundtable and a senior planner for San Mateo County. “The airport has pledged to continue to work on efforts to cut noise.” SFO began its home sound insulation program in 1983 and has completed work on nearly 12,000 homes at an average cost of \$15,000 per home. The cities of South San Francisco, San Bruno, Millbrae, Daly City, and Pacifica and the county of San Mateo have participated and managed their own program with airport and FAA money. Along with the insulation program, SFO is relying increasingly on new technology and quieter aircraft to contribute to the overall noise reduction in the northern peninsula area, Long said. Shifting flight patterns and the Fly Quiet noise abatement program, which grades each airline’s compliance with the airport’s noise reduction procedures, have also helped.⁴²¹

In May 2006, the South San Francisco Aircraft Noise Insulation Project was nearing its end, but the city had about \$2.5 million of interest accrued on the \$60 million it had received from SFO. Jeff Baca, South City’s construction manager for the project, said about 500 homes just outside the existing project boundary could be soundproofed with the money. Other peninsula cities, including Daly City, Millbrae, Pacifica, and San Bruno, have completed their programs, soundproofing thousands of homes, apartments, churches, and schools. Between 1990 and 2005, funds were used to soundproof 2,470 residences in San Bruno and 506 single-family homes in Pacifica.⁴²²

Airport Noise Management

Because of the strong community concerns about aircraft noise, SFO management has vigorously pursued ways to reduce aircraft noise impacts and was one of the first major airports to establish a dedicated Aircraft Noise Abatement Office. The airport acquired its first noise monitoring system in 1975 and adopted the first set of noise abatement regulations in 1978. Since then, the noise monitoring system has been regularly updated, improved, and expanded with better technology. In 1987, SFO installed the first passive aircraft identification system that enables noise events and complaints to be associated with the specific aircraft that caused them.⁴²³ The system currently comprises 29 noise monitor microphone locations, as shown in [Figure 37](#). The digital noise monitors are part of an integrated system that not only provides a continuous record of sound levels at the monitor locations but also can analyze flight tracks to identify specific aircraft, including the aircraft type and airline, the origin or destination of a flight, its flight path over the ground, and its altitude over a given location.⁴²⁴

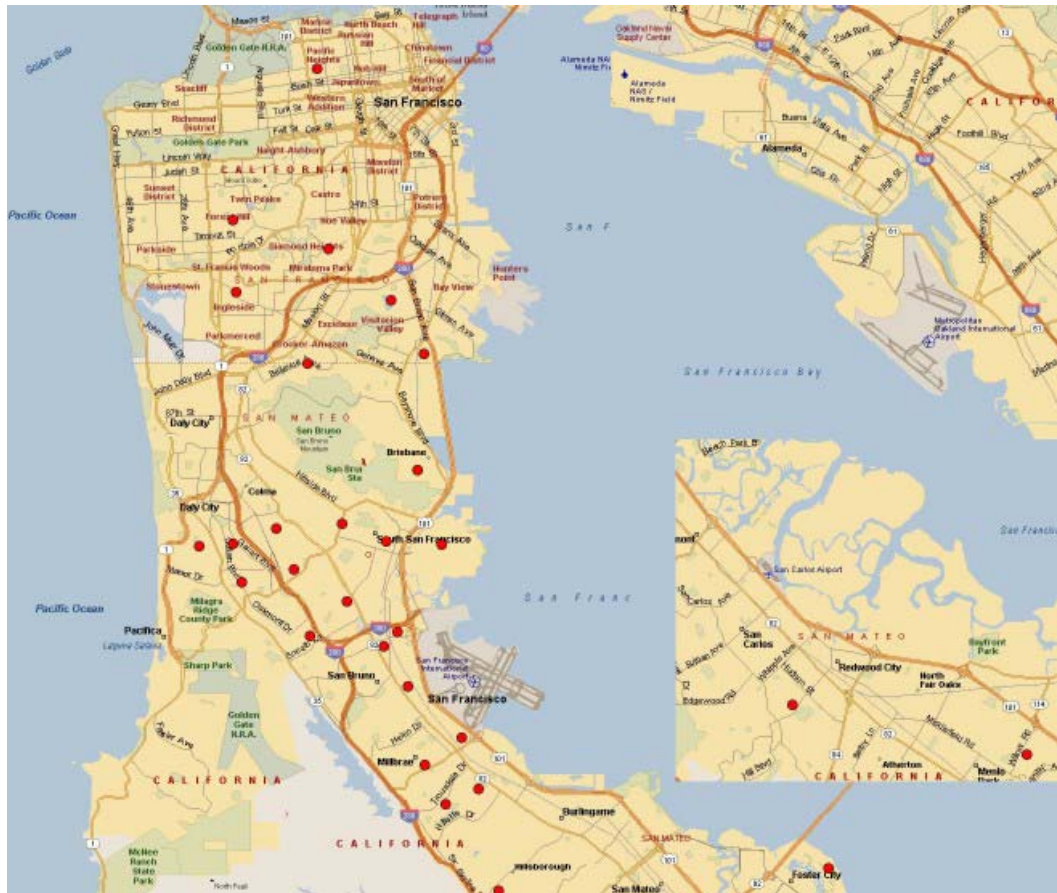


Figure 37 Noise Monitoring System Microphone Locations

Source: www.flyquietsfo.com/NoiseMonitoring.htm (accessed October 15, 2006).

Using information from the noise monitoring system (NMS), the airport has developed a Fly Quiet Program with the goal of encouraging the airlines using the airport to operate as quietly as possible. The program generates quarterly reports that compare airlines on the basis of quantitative scores that allow airline management and flight personnel to compare their performance to other operators and see how their efforts to reduce noise have affected the noise levels around the airport.⁴²⁵ The program involves five elements:

- the overall noise quality of each airline's fleet
- an evaluation of single overflight noise level exceedances
- a measure of how well each airline complies with the nighttime preferred noise abatement runways
- an assessment of how well each airline adheres to the Gap Departure procedure for departures from the Runway 28 pair that climb out to the northwest over the cities of South San Francisco, San Bruno, Daly City, and Pacifica
- an assessment of how well each airline adheres to the Shoreline Departure procedure for departures from the Runway 28 pair that turn to the northeast soon after takeoff and climb

out over industrial and commercial areas to the east of U.S. Highway 101 and then over the bay

The Nighttime Preferential Runway Use Program, developed in 1988, attempts to minimize the number of flights over populated areas between 1 a.m. and 6 a.m. by encouraging flight crews to request a departure runway that puts the aircraft over water after takeoff whenever conditions permit.

In May 2001, the airport implemented a first-of-its-kind web site that is linked to the noise monitoring system to show aircraft activity in near real time. Local community members can log on to the web site and within 10 minutes of a noise event can identify the aircraft that generated the noise and determine its direction and altitude. A new, more accurate noise monitoring system, the Aircraft Noise and Operations Monitoring System Version 8 (ANOMS8), was inaugurated in March 2006.

Airport Development

By the late 1990s, the capacity constraints imposed by the configuration of the four runways at SFO were becoming a significant cause of flight delays at the airport, and the SFO management and city officials began to explore ways to increase the airfield capacity. In 1998, the then-mayor of San Francisco, Willie Brown, and development groups launched the Runway Reconfiguration Project to reconfigure the runway layout to provide greater lateral separation between the parallel runways by extending the airfield area into San Francisco Bay. Environmental organizations expressed concern that the project could ruin key Bay wildlife habitats and cause erosion, water stagnation, and other problems. The effect of the proposed changes on aircraft noise levels was more debatable. The arrival and departure flight paths would be moved further out into the Bay; however, the changes would allow more flights to use the airport. Following the drop in air traffic in 2001 and 2002, the delay problems disappeared, at least for a while, and as airport revenues declined with the drop in traffic and airlines became more concerned about controlling costs, the combination of environmental concerns and the cost of the proposed project caused it to be abandoned in 2003.

In October 2004, a new procedure for simultaneous landings on the closely spaced parallel runways was approved. A “precision runway monitor” radar system allows two aircraft to make almost simultaneous approaches to the runways under conditions of lower cloud ceiling than had been possible previously. The aircraft using one of the two runways follows an angled approach to ensure adequate lateral separation between the two aircraft until they have descended below the clouds and the flight crew can see the other aircraft. Airport officials said that the system would cut delays by 25 percent on overcast days.

Airport Comprehensive Land Use Plan

The City/County Association of Governments of San Mateo County (C/CAG) acts as the ALUC for the county. As of 2007, the most recent update of the *Comprehensive Airport Land Use Plan* (CLUP) for the county was adopted on November 14, 1996, and published in December

1996,⁴²⁶ although several minor amendments have been adopted subsequently. The CLUP covers the three airports in the county: San Francisco International Airport, Half Moon Bay Airport, and San Carlos Airport. The latter two airports are relatively small general-aviation airports. The plan contains an introduction to the role of the C/CAG and the ALUC; a chapter that provides an overview of the CLUP, general policies, and plan implementation; and a separate chapter on each of the three airports.

The chapter on SFO contains a description of the airport; a discussion of the airport noise monitoring system; a map of noise contours dating from 1983; a set of land use criteria to determine aircraft noise and land use compatibility for different uses and levels of aircraft noise expressed as Community Noise Equivalent Level; a discussion of the SFO variance from the noise standards established by California state law; and a description of the airport's aircraft noise insulation program and the Airport/Community Roundtable. The chapter also discusses safety guidelines and height restrictions and includes maps showing the Federal Aviation Regulation (FAR) Part 77 height restrictions around the airport and the Airport Obstruction Chart. Land use development issues around the airport are not discussed.

The CLUP also contains several appendices presenting legislative, regulatory, and guidance material, including FAA Advisory Circulars, sample aviation easement documents, and chapters from the *County of San Mateo General Plan* and zoning regulations addressing hazards, airport noise, and height of structures.

The CLUP is not available on the C/CAG web site, but must be obtained in hard copy from C/CAG staff. The C/CAG web site does not explain how to obtain a copy. Given the changes that have taken place over the past 10 years in the activity level at SFO, the type of aircraft being operated, and the noise abatement and sound insulation programs at the airport, by 2007 the CLUP was clearly long overdue for a major update.

Although the Airport/Community Roundtable meets on a regular basis, the ALUC only met intermittently until 2007, when meetings resumed on a more regular basis. The C/CAG web site contains the meeting schedule, meeting agendas, and minutes of the meetings.⁴²⁷ The most recent meetings before February 2007 reported on the web site were in April 2005 and September 2004. Meetings were held in February, May, July, and August 2007. The most recent minutes posted on the C/CAG web site as of December 2007 were for the meeting held on July 26, 2007.

In 2006, the C/CAG was awarded a planning grant by the FAA to update the CLUP for San Francisco International Airport under Section 160 of the federal *Vision 100—Century of Aviation Reauthorization Act* that authorizes the FAA to fund joint airport land use compatibility planning by local agencies and airports. C/CAG was the first local planning agency to receive a grant under Section 160 of the Act. The selection of a consultant to perform the update was completed in November 2007.

Role of Surrounding Jurisdictions

Although SFO is owned and operated by the City and County of San Francisco, its location in San Mateo County results in several cities having land use control over the surrounding areas and even more cities significantly impacted by aircraft operations. As noted above, departures to the northwest off the Runway 28 pair have to climb out through a gap in the hills that form the spine of the peninsula, which takes them over four different cities. The area immediately surrounding the airport is under the jurisdiction of four cities: South San Francisco, San Bruno, Millbrae, and Burlingame. To the south of Burlingame, the cities of San Mateo and Foster City extend to the shoreline of the San Francisco Bay to the southwest of the arrival flight path to the Runway 28 pair; the city of Hillsborough occupies rising ground to the south of the airport beyond Burlingame. Further south, several other cities, including Redwood City, Atherton, Menlo Park, Woodside, and Portola Valley, experience overflights by aircraft arrivals for SFO that cross the peninsula from the west and southwest before turning northwest to begin their final descent to the Runway 28 pair.

Airport/Community Roundtable

The Airport/Community Roundtable was established in 1981 and currently comprises elected representative from 45 municipalities near SFO. It is one of the oldest and most respected community-based organizations established to work with airport staff to reduce and mitigate aircraft noise, and is often used as a model by other communities to work cooperatively with the aviation industry to improve airport noise abatement programs. The Roundtable meets monthly and establishes a work program that is discussed and pursued at each meeting. Activities are funded through SFO, San Mateo County, and member cities. These funds pay for staff time, consulting support, and maintaining a web site (www.SFOroundtable.org).⁴³⁰

Roundtable meetings include monthly reports from the SFO Airport Director on the performance of the Airport Noise Mitigation Program, review of correspondence and information items, opportunity for public comment, reports from subcommittees studying specific issues, and presentations on items on the work plan.

The Roundtable work program for the year from July 2006 to June 2007 included informational updates on noise-related FAA regulations and programs and the Bay Area Regional Airport Planning Committee efforts to evaluate alternatives to new runways at the three major commercial service airports in the Bay Area; an update to the Fly Quiet Program Video Project; development of recommendations on aircraft crossing altitudes at the Woodside VOR; discussion of the feasibility of constructing an aircraft ground runup enclosure at the airport; and discussion of future steps after completion of local noise insulation programs.⁴³¹

Although the terms of reference of the Roundtable do not preclude addressing airport land use issues, and the Roundtable has discussed such issues from time to time, the primary focus is on measures to reduce aircraft noise at the source, pursue sound insulation of homes and schools, and monitor changes in the aviation industry or airport planning in the Bay Area that could

affect aircraft noise levels in the member communities. Because the Roundtable members include elected officials from each of the jurisdictions surrounding the airport, the Roundtable could be an important advocate for ensuring that land use planning in the surrounding communities gives full and appropriate consideration to aircraft noise and safety concerns. However, it is much easier politically for elected officials to pursue efforts to reduce the noise at source, which is likely to generate widespread support in the local communities, than to tackle more difficult questions about changing land use patterns or preventing inappropriate development.

Over the years, the Roundtable has worked with SFO management and the FAA to identify a large number of ways to reduce aircraft noise. The Roundtable successfully convinced the FAA to increase the altitude of some arriving flights, change certain arrival routes, and direct most arriving and departing flights over water. The regular reporting of statistics from the Fly Quiet Program to the Roundtable helps the airport management maintain a focus on efforts to reduce the noise generated by the worst offenders and provides political support for the airport management to press the airlines to strive to reduce the noise impacts that they generate.

POTENTIAL ROLE AND IMPACT OF SMART GROWTH

The C/CAG is a strong advocate for smart growth and transit oriented development (TOD), both as a way to meet the county's housing needs since most developable land is already built out, and to reduce highway traffic in the U.S. 101 corridor. The principal focus for TOD projects are the Caltrain and BART stations, several of which lie fairly close to SFO. The most significant of these is the joint Caltrain/BART station in Millbrae, which is currently the end of the BART line in the county and also provides a transfer point for Caltrain passengers to reach SFO by using BART. The San Bruno BART and Caltrain stations are not colocated, but both lie fairly close to the airport between El Camino Real and the U.S. 101 freeway. The South San Francisco BART and Caltrain stations are quite far apart farther north (the BART line and Caltrain line diverges at San Bruno), with the Caltrain station adjacent to U.S. 101 and the BART station farther inland.

Traditional smart growth projects involve a combination of employment and housing. However, adding more jobs to the already densely developed corridor is likely to make traffic congestion worse, even if some of the workers live nearby. Also, SFO is already a major center of employment and significant areas of commercial development have occurred near the airport, including areas on the Bay shoreline to the north and south of the airport. Expanding housing close to these areas, in conjunction with local retail, could help reduce commute distances, although with the good rail access to downtown San Francisco it is more likely that the majority of the residents attracted to these developments would commute to San Francisco.

In November 2004, the California High-Speed Rail Authority released a tentative plan for the proposed high-speed rail system between San Francisco and Los Angeles. This included a stop

at the Millbrae BART/Caltrain station to provide a connection with SFO. If the proposed system is built with a stop at the Millbrae station, this could add significantly to the development pressures around the station. However, it remains to be seen if the high-speed rail system comes to pass. A \$9 billion bond measure to fund system implementation is scheduled for the November 2008 ballot.⁴³²

CHANGES IN LOCAL LAND USE

Recent changes in local land use have taken two different forms, infill development and redevelopment of areas near the Caltrain and BART stations. In addition to local infill development, there has been a significant expansion of commercial development along the shoreline to the north and south of the airport. While some of these areas are fairly close to aircraft arrival and departure flight paths, the nature of the development is generally compatible with the levels of aircraft noise.

However, the development of higher-density residential complexes in the vicinity of Caltrain and BART stations as part of a countywide smart growth strategy has added a significant number of new residential units in relatively close proximity to the airport. Whether the design of these units and the lifestyle of their occupants will be such that they will not be bothered by the proximity to the airport remains to be seen. The two areas with most potential for future problems are the development around the Millbrae BART and Caltrain station and the area further north near the San Bruno BART station. The former lies directly under the arrival flight path to Runway 01R and less than a half mile from the runway end, while the latter lies directly under the departure flight paths from the Runway 28 pair and about a mile and half from the runway ends.

EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS

The Airport/Community Roundtable has had considerable success at working with the SFO management to develop and implement aircraft noise mitigation measures, but this does not appear to have been balanced by comparable efforts at effective airport land use planning in the surrounding communities. The pressures for increased housing and transit oriented development have been largely shaping land use decisions, with little consideration for the proximity to a major international airport. This situation is compounded by the fact that much of this development is taking place in areas that are not restricted by the existing land use compatibility criteria. Although the Roundtable members stress that the CNEL metric is not an appropriate measure of community impacts of aircraft noise and the 65 dB CNEL criterion is no longer a reasonable basis for making decisions about residential land use, the CLUP bases its general land use compatibility criteria on CNEL and indicates that residential and other noise-sensitive uses in areas with noise levels below 65 dB CNEL are generally compatible, with little noise impact and requiring no special sound insulation requirements

for new construction.⁴³³ There is clearly a need to better coordinate the efforts of the ALUC and the Roundtable, as well as to update the CLUP to reflect the current reality.

The lack of activity by the ALUC in updating the CLUP and working with the local jurisdictions to better coordinate local land use plans with appropriate airport land use compatibility guidelines may be due in part to the effort devoted to the Airport/Community Roundtable. Although the ALUC has the most experienced airport land use planner among the Bay Area counties, this staff member has also served as the Roundtable Coordinator. Given the frequency of Roundtable meetings and the number of jurisdictions involved, as well as the complexity of some of the issues being faced, it would appear that the C/CAG might need to fund additional staff or consultant resources to adequately support its responsibilities as the ALUC.

With the increasing emphasis on smart growth and transit-oriented development, it is important to ensure that these planning efforts are appropriately coordinated with airport land use planning. C/CAG staff have indicated an active interest in using city specific plans to promote better airport land use planning and are also interested in finding ways to better coordinate expenditure of ground transportation funds and airport development funds to provide benefits to both the airport and the surrounding communities.

SUMMARY

San Francisco International Airport (SFO) is one of the best examples in the state, if not the nation, of a proactive aircraft noise abatement and mitigation program. The combination of the various programs of SFO's Aircraft Noise Abatement Office, the airport's efforts to work with local jurisdictions to undertake noise insulation of homes and schools, and the work of the Airport/Community Roundtable has significantly reduced the levels of aircraft noise in surrounding communities and mitigated the interior noise levels of many of those homes and schools that are exposed to aircraft noise levels in excess of the state standards.

As of 2007, the current state of land use compatibility planning for the surrounding communities was long overdue for an update. The *San Mateo County Comprehensive Airport Land Use Plan* (CLUP) for SFO had not been updated for more than 10 years and was based on data that was more than 10 years old when it was adopted. The County Airport Land Use Commission (ALUC) had met infrequently for several years, the information on its web site was often not up to date, and essential documents, including the CLUP, were not available online. However, by the end of 2007, an effort was underway to update the CLUP for SFO with funding from the Federal Aviation Administration, and a consultant team had been retained to perform the update.

The parent organization of the ALUC, the City/County Association of Governments of San Mateo County (C/CAG), has become a strong advocate for smart growth and TOD. However, the principal transit corridor in the county runs just to the west of the airport and several of the potential TOD development nodes are located close to aircraft arrival and departure flight

paths or experience aircraft engine noise from the use of reverse thrust or takeoff power while on the runways.

While these smart growth developments may not lead to significant incompatibility problems with aircraft noise in the future, the failure of the CLUP to address these issues and provide appropriate guidance to the local jurisdictions means that this would be the result of luck more than good planning. The C/CAG staff members have expressed an interest in better coordination of airport ground transportation investments to support smart growth and TOD goals. This is an interesting idea, but the absence of any guidance on how to modify traditional smart growth concepts for locations in the vicinity of major airports means that currently there no accepted approach to accomplish this.

APPENDIX G

CASE STUDY—SOUTH COUNTY AIRPORT

South County Airport (E16), Santa Clara County

Airport location	Santa Clara County
Airport size	179 acres
Type of facility	General aviation
Level of airport activities	56,000 aircraft operations in 2005
Curfew	None, 24-hour operation
Most recent ALUCP	1992, update commenced in 2003, draft CLUP released December 2007
Most recent <i>Airport Master Plan</i>	2007
Nearby cities (population 1/1/06)	San Martin (unincorporated): 4,230 (2000 census); Morgan Hill: 37,200; Gilroy: 48,600
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Surrounded by agriculture and open space, county facilities and low-density residential uses • Plans for expansion conflict with the rural nature of the area
Major issues	<ul style="list-style-type: none"> • San Martin wants to incorporate to have more land use control and is opposed to expansion of the airport • Pressures on other general aviation facilities in the county due to incompatible land uses have forced growth to South County
Approaches to solving airport/community conflicts	Plans to purchase land around the airport and lease back to owners to ensure compatible land uses
Stakeholder groups	<ul style="list-style-type: none"> • San Martin Neighborhood Alliance • South County Joint Planning Advisory Committee
Integration with smart growth policies	Smart growth policies and urban growth boundaries throughout the county alleviate pressure for more development in South County
ALUC agency	Santa Clara County
ALUC staff contact name	Mark Connolly
ALUC staff contact phone	(408) 299-5786
ALUC staff contact e-mail	mark.connolly@pln.sccgov.org

INTRODUCTION

South County Airport is located in the unincorporated Santa Clara County community of San Martin, north of Gilroy and south of Morgan Hill, as shown in [Figure 38](#). There are four public-use airports in Santa Clara County—San José International, Palo Alto Airport, Reid-Hillview Airport, and South County Airport.⁴³⁴

Over the past 10 years, several factors have led to more interest in developing and expanding South County Airport. An increase in commercial aviation has resulted in pressure to decrease general aviation uses at San José International Airport, and the other two general aviation airports in the county have land use constraints that prevent expansion. Demand for general aviation hanger space throughout the San Francisco Bay region is particularly high. Despite

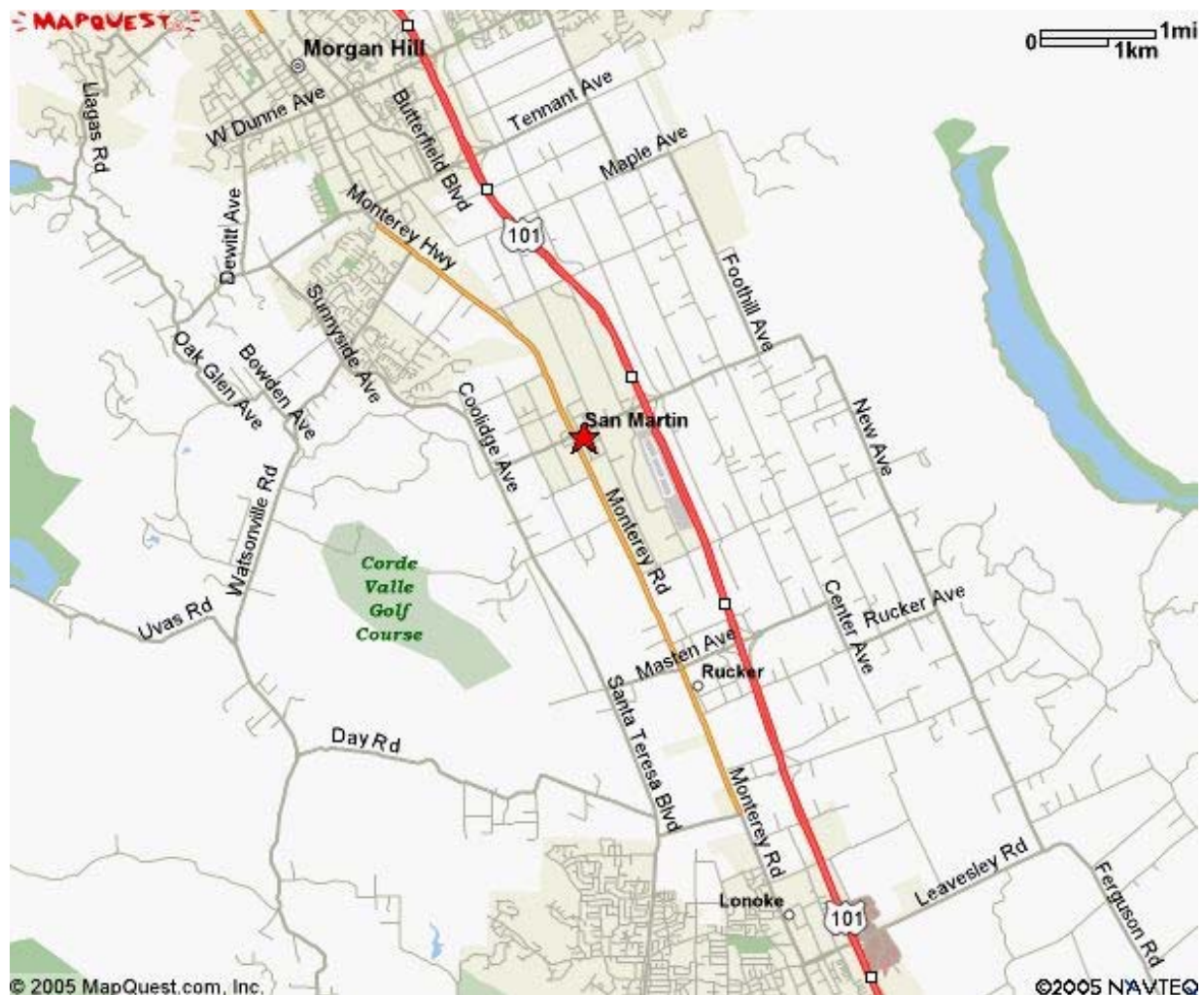


Figure 38 South County Airport Vicinity

Source: MapQuest.com, Inc., www.mapquest.com (accessed October 25, 2005).

the events of September 2001, general aviation demand forecasts show general aviation demand continuing to increase over the next 20 years.⁴³⁵

Since 2002, the County Airports Administration has been working on a 20-year update to the *Airport Master Plan and Business Plan* for each of the three general aviation facilities it operates.⁴³⁶ Final Master Plan reports for all three airports were completed in June 2007. Concurrent with the Master Plan updates, the County Airport Land Use Commission (ALUC) is updating the *Comprehensive Land Use Plan (CLUP)* for each of the four public-use airports in Santa Clara County. The updated CLUP for Reid-Hillview Airport was adopted by the ALUC on October 24, 2007. As of late 2007, no draft updates for other airports had been prepared.

The expansion of South County Airport is the biggest land use issue in San Martin at this time. San Martin residents are attempting to incorporate as a town, an effort that could have substantial land use impacts if successful. However, there is an emphasis by all jurisdictions in

South County on keeping the area rural in nature. This desire to protect open space has led to strong urban growth boundaries, and the use of smart growth policies and practices in Gilroy and Morgan Hill.

Figure 39 shows existing land uses in the vicinity of South County Airport.

AIRPORT LAND USE PLANNING

South County Airport is a small airport surrounded mostly by compatible agricultural land uses. Airport compatibility has not been an issue in the past, so there is little attention to land use compatibility planning in the area. However, the communities surrounding the airport have worked hard to preserve open space and a rural quality of life. The following sections elaborate on how these factors affect land use planning in South County as it relates to South County Airport.

Hanger Project

South County Airport is the only existing airport in Santa Clara County with room to expand. In an effort to meet demand for hanger space, the Santa Clara County Board of Supervisors approved a project in May 2003 to build 100 new hangars at South County Airport.⁴³⁷ In June 2003, the San Martin Neighborhood Alliance filed a lawsuit against Santa Clara County that challenged the approval of the new hangars and the adequacy of the environmental study. In September 2003, the county and San Martin residents reached an agreement under which the county could go ahead with its plan to build new hangar spaces at the airport; at the same time, in an effort to work more closely, the County Roads and Airports Department would send a monthly report of its activities and proposals to the San Martin Planning Advisory Committee, which advises the Santa Clara County Planning Commission.⁴³⁸ In addition, two of the major points of the agreement were as follows:

- If any proposal is made to extend the runway at South County Airport, the county will not use the size of the planes occupying the four largest hangars as a basis for justifying the extension.
- The county will reanalyze noise impacts caused by the hangar project within the full-scale environmental review of the airport's master plan.⁴³⁹

In November 2004, County Director of Airports Carl Honaker said the hangars were 80 percent built and should be completed by January 2005. The hangars will increase capacity at South County airport from 175 to 275 based aircraft. There is already a waiting list for the new hanger spaces. No more hangars can be built under the existing master plan. Economic feasibility is also an issue, as projects need to fit into the business planning model for the county airports.⁴⁴⁰

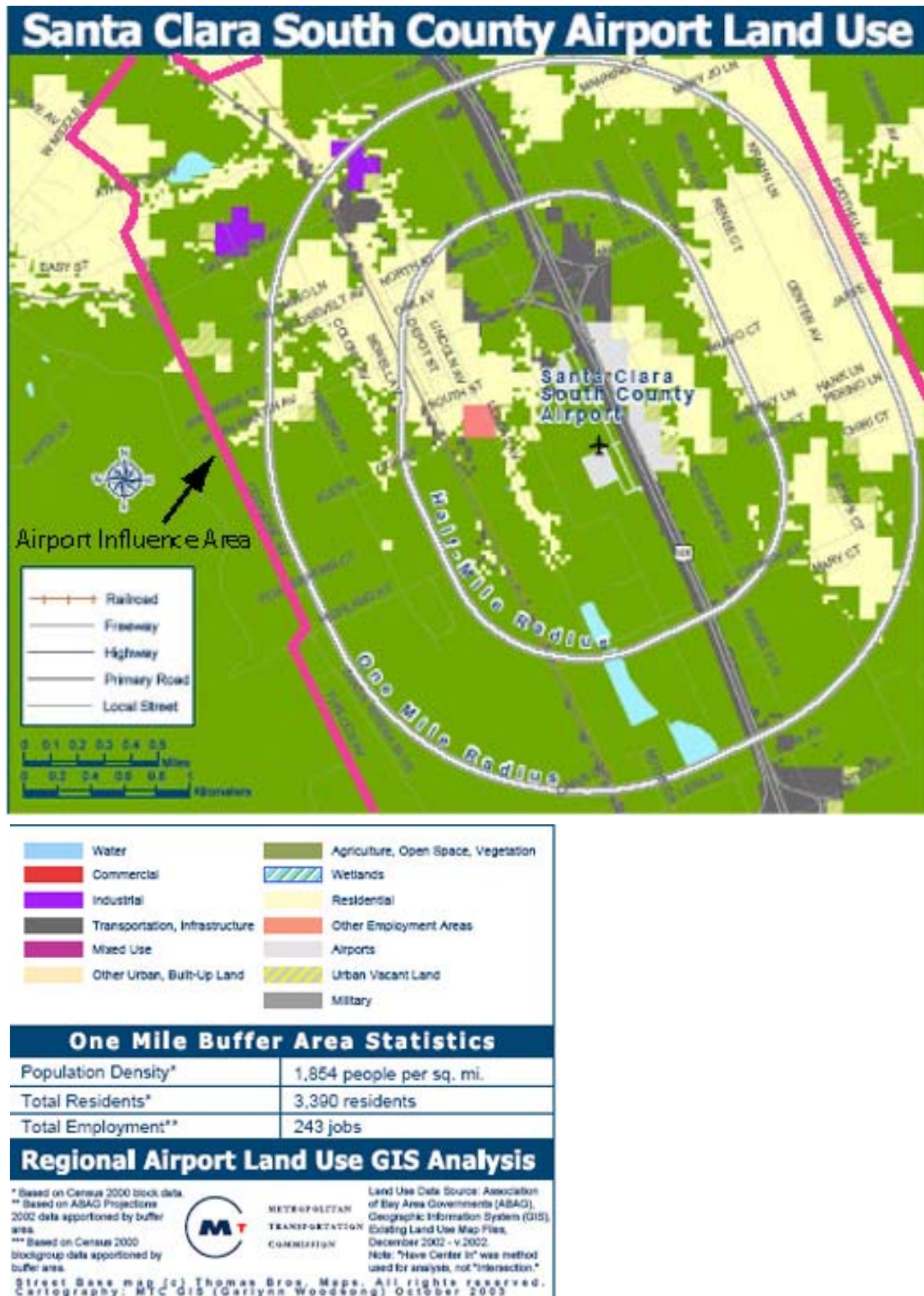


Figure 39 South County Airport Land Use in 2002

Base Map derived from Metropolitan Transportation Commission, October 2003, www.mtc.ca.gov/projects/air_plan/BA_airports_land_use_1mi.pdf (accessed April 25, 2004). Airport Influence Area boundary added, from information shown in County of Santa Clara Planning Office, *Land Use Plan for Areas Surrounding Santa Clara County Airports*, September 1992.

Airport Master Plan

The Airports Administration began updating the 1982 master plan for South County Airport in 2002. In November 2002, the Santa Clara County supervisors approved Chapter 2 (“Airport Roles and Forecasts”) of the *Airports Master Plan* update. Chapter 2 proposes accommodating most general-aviation growth in the county over the next two decades at South County Airport. San Martin residents argued that the county was unfairly shifting North County’s aviation demand—and community-altering, quality-of-life impacts like aircraft noise—to South County in violation of its own land use policies. But District 1 County Supervisor Don Gage called the planned expansion of activity a good compromise, noting the county could have set even higher growth capacities at South County. He also said the county can’t make everyone happy during major land use decisions.⁴⁴¹

Under the recommendations, the San Martin airfield will grow to a maximum capacity of 418 planes by 2022. There is room to expand at San José’s Reid-Hillview airport, but the plan essentially capped growth there by adding only 24 more planes to its capacity of 726. Reid-Hillview is hemmed in by subdivisions and a major shopping mall. Palo Alto’s airport would also be slated for limited growth, taking on 23 more planes. The growth limits are not officially set in stone, but are critical because they will be the basis for further studies on physical development, business plans, and environmental reviews at each airport.⁴⁴²

At South County Airport, adjacent vacant land could be acquired to expand the single 3,100-foot runway to as much as 6,000 feet for larger aircraft.⁴⁴³ Supervisor Gage said lengthening the runway could reduce noise impacts, increase safety, and provide economic development benefits for South County. However, San Martin’s planning committee does not agree that corporate planes coming to the airport will be locally serving, and expressed concerns that expanding the runway and safety zones could displace residents or put heavier restrictions on hundreds of acres of surrounding land.⁴⁴⁴

In September 2004, county airport officials released two more draft chapters of the *South County Airport Master Plan* (Chapters 3 and 4, “Airfield Design” and “Building Area Design”). Chapter 3 recommended lengthening the runway from 3,100 to 5,000 feet. The plan recommended purchasing an estimated 332 acres surrounding the 180-acre airport to eliminate residential opposition to its operations in the future. The plan suggested that the county lease parcels back to their original owners, especially if that keeps the land in agricultural use. FAA grants would be used to achieve the buffer.⁴⁴⁵ Runway expansion was justified by the substantial projected growth in Gilroy, Morgan Hill, and Coyote Valley, which will require increased accommodation of aircraft that San José International Airport cannot handle.⁴⁴⁶

In March 2005, the Santa Clara County Board of Supervisors authorized submittal of an application for a \$570,000 Airport Improvement Program (AIP) grant from the FAA to complete environmental review of the draft master plan.⁴⁴⁷ The draft plan was completed in July 2005, but as of January 2007 the FAA had not approved the grant. Appendix C of the updated plan covers land use compatibility concerns—noise, overflight, safety, and airspace

protection. Each concern is addressed in terms of compatibility objectives, measurement, compatibility strategies, and the basis for setting criteria. Compatibility strategies discussed include limiting development of noise-sensitive land uses, limiting height and density, noise insulation, and avigation or overflight easements, recorded deed notices, and/or real estate disclosure statements.⁴⁴⁸

Carl Honaker explained that the county wants to systematically acquire land when money is available and owners are willing to sell.⁴⁴⁹ Honaker thought that this would be 20-year process. The county will mostly wait for parcels to become available, but some landowners may come forward. Although Supervisor Don Gage had supported protection of South County Airport from incompatible land use, elected officials change. Therefore, Honaker believed that acquiring land would be the best solution for future protection of airports.

Supervisor Gage was chair of the Housing, Land Use, Environment, and Transportation Committee of the Board of Supervisors. This committee oversees the airport planning process and had worked with staff on the airport master plan. The supervisor was not directly involved with the Airport Land Use Commission or the *Comprehensive Land Use Plan* updates. Edwin Chan, Gage's transportation aide, said Gage supported the expansion of South County Airport. A longer runway will decrease noise and safety impacts in the area and will help to attract high-quality, high-tech jobs to South County. Gage also believed that a strong *Airport Master Plan* will help prevent encroachment of incompatible development and supported the plan to buy land around the airport to keep development at bay. Although some light industrial uses may be allowed, the primary focus would be on keeping the area rural—preserving open space and preventing residential development.⁴⁵⁰

According to Carl Honaker, although members of the San Martin Neighborhood Alliance (SMNA) are opposed to expansion of South County Airport, opposition overall is minimal. Response has been positive from Morgan Hill and Gilroy and from the Chambers of Commerce and the business community. Honaker said the Environmental Impact Report (EIR) for the master plan would address the positive economic impacts of the airport and its role in the airport system (relieving San José International), as well as noise, surface transportation (traffic), and other environmental impacts.⁴⁵¹

The position of the SMNA was that the current airport is appropriate for the community. In an interview, SMNA president Sylvia Hamilton said there was no documentation in Chapters 3 and 4 of the draft Master Plan supporting the correlation between growth in Coyote Valley, Morgan Hill, and Gilroy and the need to expand South County Airport. She had asked for studies that support the projected demand and was told there are no studies and there is nothing to study. Hamilton was most upset by the land acquisition proposed in the Master Plan. She said it was unfair to affect people's lives to that extent without more information to support the expansion. Hamilton believed a regional approach to airport planning beyond Santa Clara County is needed. She said Hollister Airport was currently trying to attract aircraft and South County Airport expansion would just create competition. Hamilton also suggested that Moffett Field is a better location for a reliever airport because it is closer to the

demand.⁴⁵² Carl Honaker also said that Moffett Field had the potential to be a cargo and corporate reliever airport for the entire San Francisco Bay Region. According to Honaker, John Kasarda had said that Moffett Field would be the perfect place for an Aerotropolis, which Honaker called “airport smart growth.”⁴⁵³

Noise

The Airports Administration operates a noise complaint line, logs complaints, calls back on all complaints, and takes action to remedy systematic noise problems. In the future, South County Airport can be added to the county’s automated noise monitoring and tracking system, if need be. Currently, there are few noise complaints related to South County Airport. Highway 101 creates greater noise impacts for most residents than the airport. However, Sylvia Hamilton said that any increase in aviation noise is a concern because the topography of the narrow valley increases noise impacts. Morgan Hill Planning Manager Jim Rowe also expressed concern about possible noise impacts from business jets and how noise will be mitigated given conflicts with San José International flight paths.⁴⁵⁴

History of Land Use Issues in the Airport Vicinity

The land around the South County Airport is designated rural residential with some areas having industrial and commercial use permits along Monterey Highway and San Martin Avenue. Bill Shoe, Principal Planner for the County of Santa Clara, explained that these designations are a result of the uses in place when the 1980 general plan was developed and were not influenced by the location of the airport. The county Planning Department has current land use and zoning information in a geographical information system, and the 1995 general plan is available online. Only paper copies of the 1980 *Santa Clara County General Plan*, zoning ordinances, and related maps are available. The county does not maintain a database on actual land use.⁴⁵⁵

In 2003, Morgan Hill Mayor Dennis Kennedy remarked that “San Martin has been a dumping ground for a lot of county projects that no one else wants.”⁴⁵⁶ A land use debate triggered residents to mobilize in 2000 after the county approved a project for trailer rentals and sales near homes. The project was within the community’s light industrial zone, but neighbors saw it as an inappropriate use. Other projects that residents have hotly contested include the expansion of the South County Airport and the approval of a household hazardous waste facility near San Martin’s elementary school.⁴⁵⁷ The San Martin Neighborhood Alliance is a grassroots organization that claims more than 200 members. Their web site (www.smneighbor.org) features specific information on current and controversial development issues in San Martin, including a fish processing plant, expansion of the waste transfer station, and possible expansion of the South County Airport.⁴⁵⁸

Open Space

Protection of open space has been a contentious issue in south Santa Clara County, mostly because land designated for open space or agriculture has far less value than land that can be developed for other purposes. Although many open space protection policies are already in place, efforts to renew and strengthen these policies continue.

In 2004, Morgan Hill was leading an effort to establish an urban limit line and greenbelt policies in south county. The city brought together a task force and conducted a study, but the process slowed down. Morgan Hill City Manager Ed Tewes suggested that San Martin incorporation could help move the process along, if San Martin were willing to work with Morgan Hill on the issue.⁴⁵⁹

In a related effort, proposed boundaries for the Santa Clara County Agricultural Preserve were presented to the County Housing, Land Use, Environment, and Transportation Committee in August 2003, but no action was taken. In 2005, the county again reevaluated the boundaries and the criteria for Williamson Act contracts. A stakeholder committee, representing the Santa Clara County Farm Bureau, Santa Clara County Cattleman's Association, Mt. Hamilton Range Improvement Association, Santa Clara County Association of Realtors, The Nature Conservancy, and the Committee for Green Foothills, met during the months of July, August, and September 2005 to provide input into the changes.⁴⁶⁰ The proposal could lead to the gradual termination of 2,800 of the 3,145 Williamson Act contracts in unincorporated areas. These are parcels under 40 acres, many of which have been converted to residential use.⁴⁶¹ The Santa Clara County Board of Supervisors approved new guidelines for the county's Williamson Act Program in March 2006 and approved a revised County Agricultural Preserve Map on May 2, 2006. Rachael Gibson, a Policy Aide to Supervisor Don Gage on land use issues, noted that this effort, like other county open space protection policies, was not directly related to planning for airport land use compatibility.⁴⁶²

Airport Comprehensive Land Use Plan

The Santa Clara County Airport Land Use Commission (ALUC) began updating the 1992 *Land Use Plan for Areas Surrounding Santa Clara County Airports* in 2003. In recent years, this *Comprehensive Land Use Plan* (CLUP) has been amended on a regular basis. In November 2003, the ALUC approved modifications to the ALUC referral boundaries, or Airport Influence Areas (AIAs). The new AIA for South County Airport, shown in [Figure 40](#), remains in effect. The ALUC web site explains that the "boundary was moved out to the closest street beyond the area typically overflowed by aircraft operating at the airport and follows the ALUC policy of using geographic boundaries for the AIA."⁴⁶³ The boundaries include small parts of southern Morgan Hill and northern Gilroy.

The revised CLUP will comprise a separate plan for each airport in Santa Clara County. The South County Airport CLUP will follow the model of the Draft Reid-Hillview CLUP completed in March 2004.⁴⁶⁴ The ALUC web site describes the CLUP as follows:

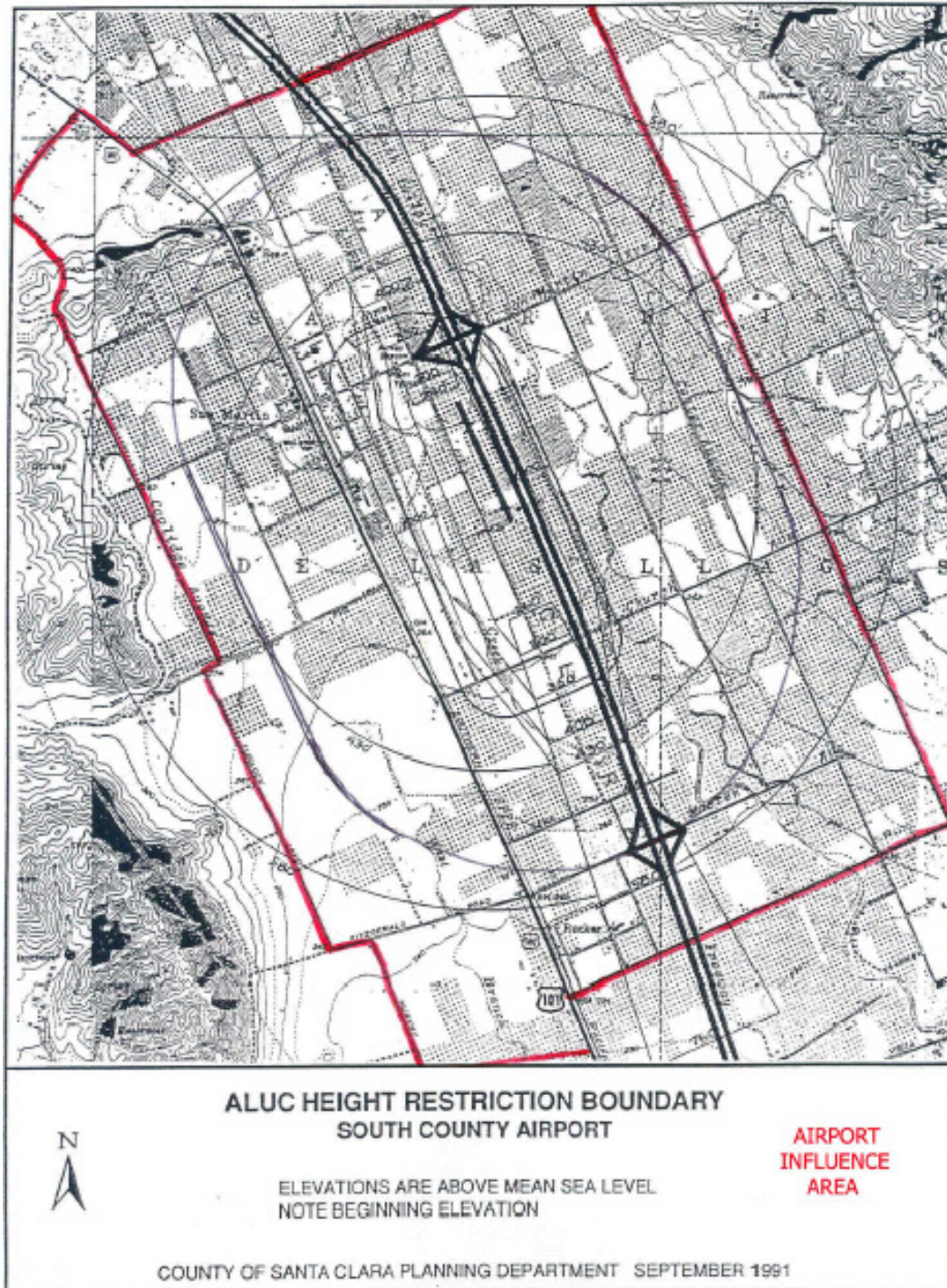


Figure 40 South County Airport Influence Area

Source: County of Santa Clara Planning Department, September 1991

www.sccgov.org/scc/assets/docs/632796pl_SouthCounty_AIA.pdf (accessed June 19, 2004).

Many of the ALUC guidelines and policies were carried over from the previous CLUP. Several policies were added/revised due to the recommendations in the 2002 [California Airport Land Use Planning] *Handbook*... The proposed noise policies are similar to those in the current CLUP, but include provisions for more detailed notice to potential residents... Land development guidelines were clarified, and the policies made more specific. The paragraphs relating to safety zone variance options were deleted due to their recognized impracticality with regard to structure height... The revised CLUP proposes that the AIA encompass the entire county. Proposed structures (including antennae) with a height of 200 feet or greater above ground level would be referred to the ALUC for review.⁴⁶⁵

ALUC member Walter Windus said an attempt was made to write from the viewpoint of planning departments.⁴⁶⁶ The in-fill policy was also tightened—in-fill projects in safety zones will only be accepted if the parcel is 1/4 acre or less. In addition, the Implementation chapter includes new sections on Airport Overlay Zones and Buyer Awareness Measures. The CLUP recommends the use of overlay zones to comply with *California Public Utilities Code* 21670, which requires that cities incorporate CLUP policies in their general plans and zoning ordinances. As of 2004, there were no overlay zones in place in Santa Clara County.

San José challenged the Reid-Hillview CLUP and the Reid-Hillview and San José International AIAs because no environmental review was performed. In May 2004, the ALUC rescinded the AIAs and agreed to do the review. Dana Peak, the staff coordinator for the ALUC, stated in December 2004 that approval of the documents would be delayed for one or two years because the ALUC did not have funds to conduct environmental studies. Fortunately, data from environmental studies for the *Reid-Hillview Master Plan* update can be used for an initial study for the CLUP and AIAs.⁴⁶⁷ The South County Airport CLUP does not face such constraints, but it must be based on the master plan, which was still undergoing changes in late 2004. Once the master plan was complete, preparation of the CLUP update was expected to begin.⁴⁶⁸

Since South County Airport is surrounded by rural, unincorporated land, only a few minor projects and subdivisions have been referred to the ALUC in recent years. ALUC members keep informed about the airport master plan process and attend public meetings related to projects within referral boundaries whenever possible. They also encourage cities to incorporate policies from both the CLUP and the *California Airport Land Use Planning Handbook* in their general plans and to adopt codes and ordinances that constrain land use in order to protect airports.⁴⁶⁹

The Santa Clara County ALUC uses several measures to control land use planning around airports. With the passage of Assembly Bill (AB) 2776, Real Estate Disclosure Statements are now required for all purchases within an AIA. Walter Windus believes this will make lawsuits against airports more difficult. The ALUC routinely requires the dedication of avigation easements as a condition for approval, especially for residential development in the vicinity of

an airport. These easements are primarily intended to serve as a stringent buyer awareness measure. With the passage of AB 332 in September 2003, Windus hopes that ALUC recommendations will have more impact. AB 332 requires jurisdictions to make findings when they override an ALUC recommendation. According to Windus, the ALUC may consider suing cities if findings are not complete. Windus also said that the ALUC does not concern itself with smart growth in particular; their focus is airport compatibility.

Although the county planning department has staff assigned to support the ALUC, they are not involved with the *South County Airport Master Plan* update. County Planner Bill Shoe stated that he did not see much benefit in working with the Airports Administration or the ALUC because policies do not overlap. He felt that it is more important for county planners to do their own job well.⁴⁷⁰

Role of Surrounding Jurisdictions

South County Airport is located within Santa Clara County's land use planning jurisdiction. Morgan Hill is about 2.5 miles to the northwest and Gilroy is about two miles to the south of the airport.

Santa Clara County

County Planner Bill Shoe said the county refers projects inside safety zones to the ALUC for approval. In recent years, county facilities have been located on county land near the airport. A transit maintenance facility was located in the outer safety zone, a use that most likely would not have been allowed had it been a private development. Due to such land use restrictions, some people may welcome the county's plan to buy land around the airport so they can be fairly compensated. The county is not encouraging economic development related to South County Airport.⁴⁷¹

Figure 41 shows the current land use designations in the area of South County Airport.

The 1994 *Santa Clara County General Plan* refers to airport planning and airport land use in the Transportation, Health and Safety, Governance, and Land Use chapters. Transportation policies related to aviation include:

C-TR 38 Ensure adequate air carrier, air cargo, and general aviation capacity so as to meet current and projected demand for these facilities, thereby supporting the county's economic development and social goals. Encourage airport growth that is compatible with nearby existing established neighborhoods.

C-TR 39 Protect all airports from encroachment by incompatible land uses that would interfere with their safe operation.⁴⁷²

The following implementation recommendations support these policies:

C-TR(i) 48 Develop a countywide airport master plan that would address the future aviation needs of the county ... and the future development of all airports within Santa

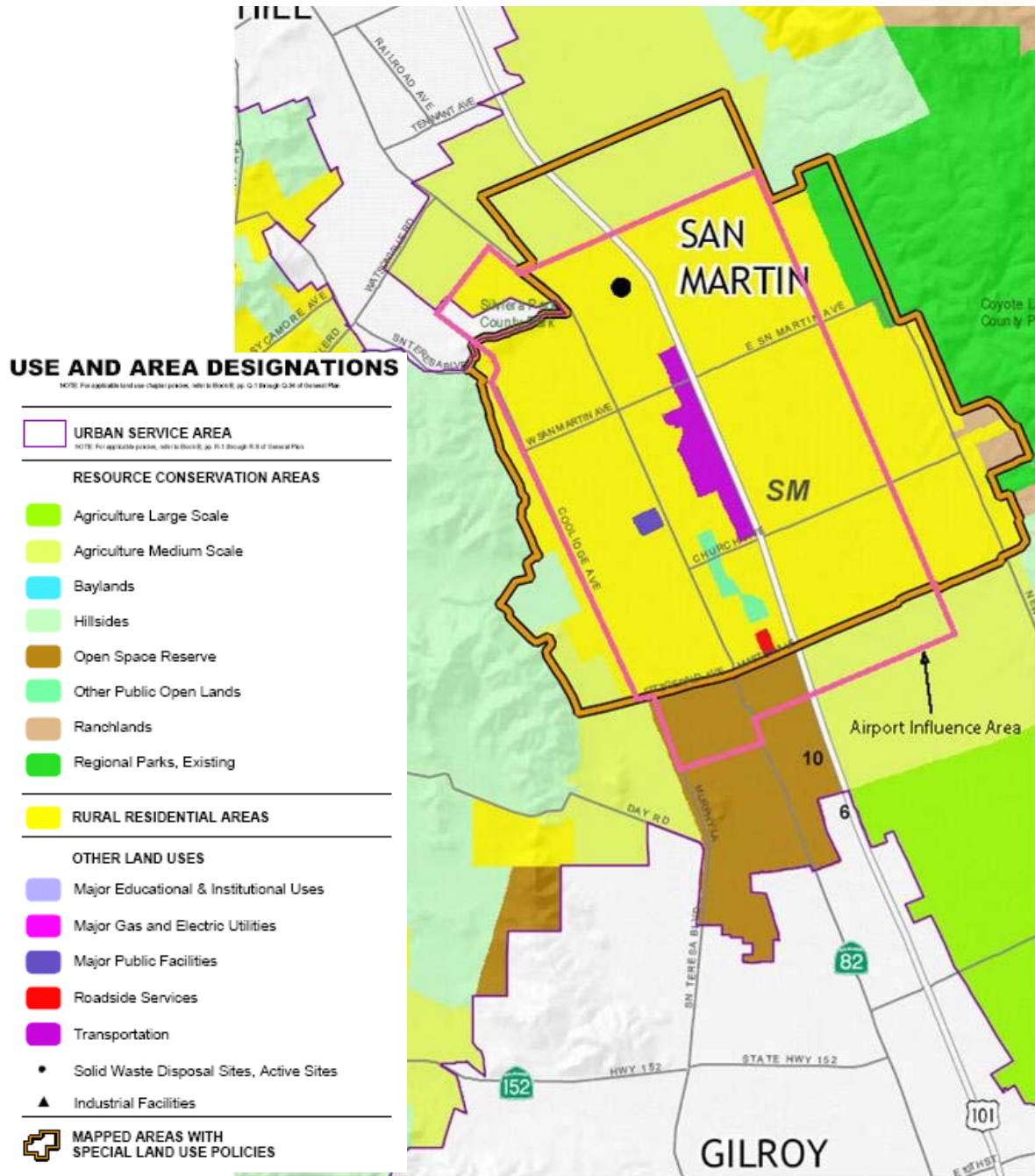


Figure 41 San Martin Area Land Use

Source: Base Map derived from County of Santa Clara Planning Office, *Santa Clara County General Plan, Land Use Plan*, June 2002. Airport Influence Area boundary added from information shown in County of Santa Clara Planning Office *Land Use Plan for Areas Surrounding Santa Clara County Airports*, September 1992.

Clara County. Support continuing studies of general aviation system requirements, particularly as they affect the future use of Moffett Field.

C-TR(i) 52 Support and legally enforce Airport Land Use Commission (ALUC) actions to prevent incompatible land use around airports.⁴⁷³

Rural transportation policies related to aviation include:

R-TR 15 If new or expanded airports are needed in the rural areas, they should be located where they are safe and compatible with surrounding land uses.

R-TR 16 Assure that necessary ancillary uses can be appropriately located to new or expanded airports.⁴⁷⁴

These policies are supported by the following implementation recommendations:

R-TR(i) 18 Studies of the potential expansion of existing airports or construction of new airports in rural unincorporated areas should include, but not be limited to, considerations of:

- a. long-term countywide aviation needs and facilities capacity
- b. potential alternative locations or expansion sites
- c. impacts on existing and planned adjacent land uses
- d. the potential for creating open space buffers around the airport facilities to protect public safety, and minimize noise impacts.

R-TR(i) 19 Plans developed for expansion of existing airports or location of new airports should include adequate land adjacent to the airport to safely locate necessary ancillary land uses.⁴⁷⁵

The Noise section of the Health and Safety chapter includes information about the *ALUC Land Use Plan* and land use regulations, including a description of Community Noise Equivalent Level (CNEL) measurement, noise contours, aviation hazards, and compatible land uses. Noise and safety policies in the general plan related to aviation include:

C-HS 27 Land uses approved by the County and the cities shall be consistent with the adopted policies of the *Santa Clara County Airport Land Use Commission Plan*.⁴⁷⁶

C-HS 36 General strategies for airport safety in Santa Clara County include the following:

- a. Limit population densities and land uses within designated safety zones.
- b. Regulate structures and objects which could be hazardous or distracting to air navigation.

C-HS 37 Land use plans and development proposals within the “influence boundaries” of affected jurisdictions should be consistent with ALUC land-use plans for airport safety.

C-HS 38 Local jurisdictions should comply with ALUC height restrictions and other regulations intended to ensure operational safety of aircraft and the safety of those occupying nearby buildings.

C-HS 39 Land uses, structures, and objects which could distract, confuse, or otherwise contribute to pilot error should not be allowed within the vicinity of airport operations.⁴⁷⁷

Governance policies in the general plan related to aviation include:

C-GV 2 The countywide multi-purpose planning organization could have the following functional areas:

- a. economic development planning;
- b. land use/growth management planning;
- c. allocating housing needs among local jurisdictions;
- d. planning for community services including child care;
- e. transportation/mobility and congestion management planning;
- f. hazardous and solid waste management planning;
- g. parks/open space planning; and
- h. airport planning.⁴⁷⁸

Land use policies in the general plan related to aviation include:

R-LU 135 Prior to changing any policies regarding the South County Airport, the proposed policies should be reviewed with residents and property owners of the San Martin Area.⁴⁷⁹

Subregional Cooperation

To increase coordination of land use planning in the area, Santa Clara County, Gilroy, and Morgan Hill worked together to create the *South County Joint Area Plan (SCJAP)*, which was adopted in 1989 and is contained in the general plans of all three jurisdictions. The SCJAP is a comprehensive set of policies focusing on issues common to the three jurisdictions in the South County area, including infrastructure, water supply and quality, flood control and drainage, agriculture preservation, and open space.⁴⁸⁰ The SCJAP is seen as a background document, while the general plan and zoning ordinances are used to make planning decisions.⁴⁸¹ The *South County Joint Area Plan* contains two policies related to airport land use.

SC 15.0 New development should avoid hazardous and sensitive areas and should occur only where it can be built without risking health and safety. New habitable structures should not be allowed in areas of highest hazard such as floodways, active landslides, active fault traces, and Airport safety zones.

SC 18.9 Development around the South County Airport should adhere to Airport Land Use Commission (ALUC) Policies.⁴⁸²

The South County Joint Planning Advisory Committee (JPAC), formed in 1984, continues to meet and discuss planning issues relevant to South County, particularly the preservation of open space. Planners from Santa Clara County, Morgan Hill, Gilroy, and Supervisor Don Gage's office are on the committee. Rachel Gibson said the JPAC reviews large-scale projects in the area. Gilroy Planning Division Manager William Faus said projects are reviewed in the context of SCJAP policies. The SCJAP also influences the committee's work agenda.⁴⁸³ Morgan Hill Planning Manager Jim Rowe said the committee allows all parties to give input

on items of regional concern. South County Airport expansion has been a big topic at JAPC meetings.

Morgan Hill City Manager Ed Tewes indicated that he saw the JPAC as the best way to cooperate for mutually beneficial land use around South County Airport.⁴⁸⁴ Jim Rowe and William Faus agreed that good lines of communication and open and frequent communication are important. Rachael Gibson, Supervisor Don Gage's Policy Aide, said airports are one of the most challenging issues for planners, especially when airports want to expand or plan for long-term expansion needs and take adjacent land uses into account. She thought that the best solution is to plan ahead as much as possible.⁴⁸⁵

San Martin

Many San Martin residents feel they have no local land use representation or control. Although the San Martin Planning Advisory Committee (SMPAC) meets almost monthly to discuss development projects and issues, their role is advisory and they are not given a seat at the table during the planning process. San Martin resident Sylvia Hamilton said that community leaders work hard to stay on top of all the issues and do their research, often writing position papers before making claims or protests. They would like to be involved in planning processes before documents are submitted for approval, but this has not happened. Hamilton said they have to organize quickly to attend public hearings, and often the Santa Clara County Board of Supervisors does not discuss community members' input before voting.

Hamilton said that residents were disappointed with the process for Chapters 3 and 4 of the *South County Airport Master Plan*—the draft chapters were released in September 2004 without input from the SMPAC. She expected a public outreach process to begin at that time, but instead the Board of Supervisors approved the plan for environmental study in November. She asked airport staff if Gilroy and Morgan Hill had been notified when the plan was released and was told they had not because it was not required until the environmental review stage. Although Carl Honaker attended all the SMPAC meetings since the court settlement over the hanger project, he only gave reports about the hanger project and never discussed the master plan.⁴⁸⁶

Supervisor Don Gage's Policy Aide on land issues, Rachael Gibson, said that San Martin residents want more control and therefore they will want to regulate land uses around the airport and will aim to restrict airport expansion if they incorporate.⁴⁸⁷ The San Martin Neighborhood Association funded an initial fiscal analysis report, completed in July 2003, and submitted an application for incorporation to the Santa Clara County Local Agency Formation Commission in February 2007. An environmental analysis and comprehensive fiscal analysis were initiated in 2007 and were scheduled to take about a year, with an incorporation election possibly on the ballot as early as November 2008. Gilroy Planning Division Manager William Faus thought that the incorporation process would heighten public awareness around land use issues and bring more people to the table.⁴⁸⁸

Gilroy

The 2002 *Gilroy General Plan* does not mention the airport or aviation aside from the *South County Joint Area Plan*, included as Appendix B. Gilroy Planning Division Manager William Faus said planners felt that was sufficient, given the lack of impacts from the airport. The planning department was not aware that the AIA overlaps with the city's 20-year planning boundary. Faus said that restrictions on Rucker Elementary School or other potential school sites in northern Gilroy have not been discussed. However, Faus believes that the school district will consider airport noise and safety, if and when it does master planning. [Figure 42](#) shows the current land use designations in northern Gilroy.

Morgan Hill

The 2001 *Morgan Hill General Plan* mentions South County Airport in the Health and Safety chapter and the Regional Coordination chapter. The general plan incorporates SCJAP Policies 15.0 and 18.9 directly from the *South County Joint Area Plan*.⁴⁸⁹ Director of Planning Jim Rowe and City Manager Ed Tewes were not aware that the South County AIA overlaps the city's sphere of influence. Jim Rowe said the airport's presence has not influenced land use decisions, and the general plan was not sent to the ALUC for review. [Figure 43](#) shows the current land use designations in southern Morgan Hill. A potential school site is shown on the AIA boundary. Jim Rowe said the AIA may have an impact on the selection of a school site. Ed Tewes said the city and school district will follow state laws in siting a school in the area.

POTENTIAL ROLE AND IMPACT OF SMART GROWTH

South County is the fastest-growing area in Santa Clara County. In response, the county and the communities of San Martin, Morgan Hill, and Gilroy are working together to use smart growth practices and prevent sprawl and loss of open space. In-fill in cities is part of the county's urban development model, which was adopted under the leadership of then County Supervisor Rod Diridon in the 1970s and is based on Oregon's urban growth model. This model is the fundamental driver of land use decisions in Santa Clara County.⁴⁹⁰ Today, these policies are the flipside of smart growth—the preservation of open space and agriculture.

The *Santa Clara County General Plan* does not mention smart growth specifically. However, the following growth and development strategies in the plan “reflect the principles of balanced growth and sustainable economic development,” and recognize “the need to accommodate growth ... without sacrificing overall quality of life.”⁴⁹¹

Strategy #1: Promote Compact Development Patterns

Sub-Strategies:

A) Manage urban expansion by:

- i. controlling Urban Service Area expansion;
- ii. establishing long-term urban growth boundaries;

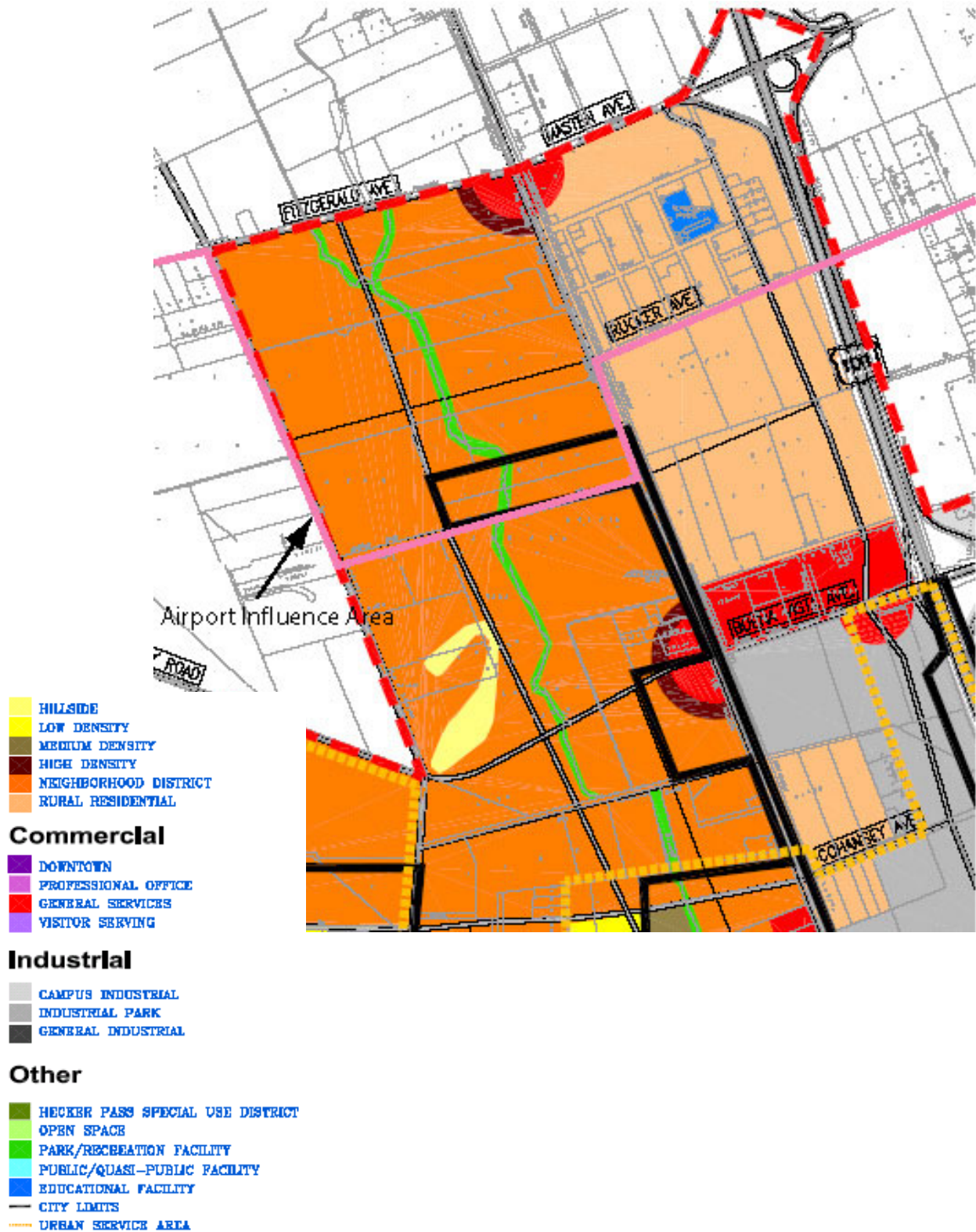


Figure 42 North Gilroy Land Use

Source: Base Map derived from City of Gilroy, *General Plan Land Use Map*, June 13, 2002, www.ci.gilroy.ca.us/planning/pdf/generalplan11_17.pdf (accessed October 31, 2004).
 Airport influence area boundary added, from information shown in County of Santa Clara Planning Office. *Land Use Plan for Areas Surrounding Santa Clara County Airports*, September 1992.

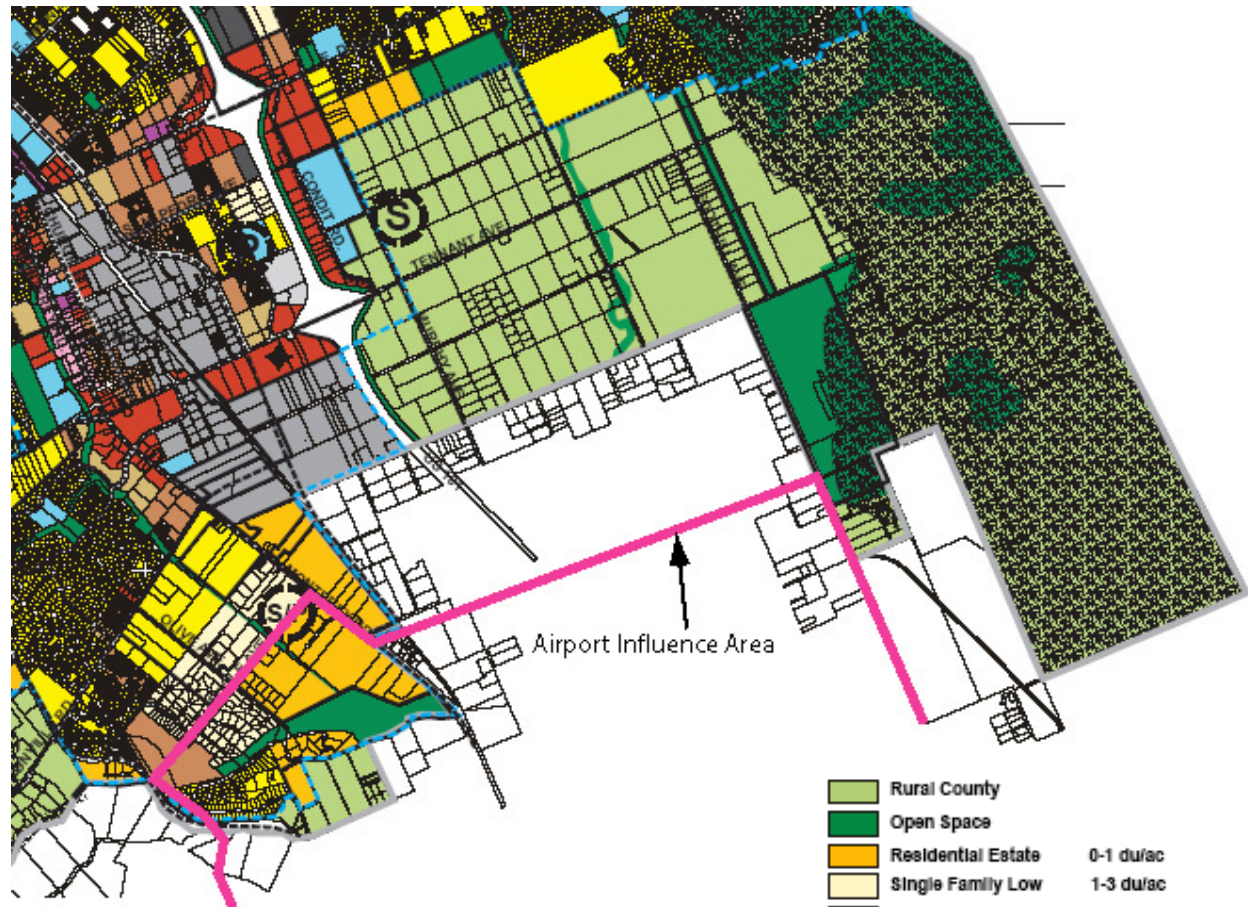


Figure 43 South Morgan Hill Land Use

Source: Base Map derived from City of Morgan Hill, *General Plan Land Use Diagram*, September 1, 2004, www.morgan-hill.ca.gov/Upload/Document/D240001003/General%20Plan%20Map%20Color%201_24000%20090104.pdf (accessed October 31, 2004).

Airport influence area boundary added, from information shown in County of Santa Clara Planning Office. *Land Use Plan for Areas Surrounding Santa Clara County Airports*. September 1992.

- Rural County
 - Open Space
 - Residential Estate 0-1 du/ac
 - Single Family Low 1-3 du/ac
 - Single Family Medium 3-5 du/ac
 - Multi-Family Low 5-14 du/ac
 - Multi-Family Medium 14-21 du/ac
 - Commercial
 - General Commercial* (See Action CD-8.3)
 - Non-Retail Commercial
 - Mixed Use
 - Industrial
 - Office Industrial
 - Campus Industrial
 - Public Facilities
 - Hillside Overlay
- P Park (general location where needed)
 - S School (general location where needed)
 - Sub-Regional Commercial Site (See Action CD-10.1)

* See the Land Use/Circulation Elements map as described in the Measure C ballot Measure.

Boundaries

- Parcels
- City Limit
- Sphere of Influence
- Urban Growth Boundary
- Downtown Design Plan
- Arterial
- Collector

iii. controlling the formation of special districts and new cities (incorporations).

B) Make more efficient use of existing urban areas by:

- i. promoting compact urban development patterns; and
- ii. mixed use developments.⁴⁹²

Strategy #2: Achieve More Balanced Urban Growth and Development⁴⁹³

Strategy #3: Improve Coordinated, Countywide Planning⁴⁹⁴

Gilroy is implementing smart growth practices such as higher-density mixed-use and transit oriented development. Much of the area in the northern portion of Gilroy's 20-year planning boundary, including some land within the AIA, is designated as a Neighborhood District in the general plan. Neighborhood District is a smart growth concept.⁴⁹⁵ It allows densities from six to 12.5 dwelling units per acre, and is described in the general plan as follows:

This is a new residential category to encourage a mix of housing types in new areas of development. The intent is to create new neighborhoods that reflect a similar mix of housing throughout the City, avoiding concentrations of specific housing types in some areas. These new neighborhoods will be predominantly single family in character, with duplexes, townhomes, condominiums, and apartments interspersed. Higher-density housing types will be sited and designed in accordance with the City's zoning and development regulations. Neighborhood-serving amenities such as schools, parks, open space, and neighborhood commercial (subject to strict siting, design, and use controls) will be integrated in the neighborhood design.⁴⁹⁶

Morgan Hill is implementing smart growth practices such as centralizing higher-density residential development and mixed-use (including vertical mixed-use) near downtown and near transit. In January 2005, the city council approved updates to the *Morgan Hill Downtown Plan* that implement these policies.

CHANGES IN LOCAL LAND USE

As a result of urban growth restrictions in the county, land use around South County Airport has changed little in the past 10 years. Rural residential uses and agriculture, along with some industrial uses and the airport, continue to predominate in the area. The San Martin incorporation effort is currently the most important issue in the area, aside from airport expansion.

In 2003, the San Martin Neighborhood Alliance (SMNA) funded a feasibility study as the first step toward formally incorporating as an independent city. The study found that San Martin could be financially solvent as a city.⁴⁹⁷ Although funding for cities changed in 2004, community leaders continue to move forward with the incorporation process. According to SMNA president Sylvia Hamilton, extensive outreach to the entire community has been, and

will continue to be, a big part of the incorporation process. Therefore, it is difficult to know what policies would be in the new jurisdiction's general plan. With respect to South County Airport, San Martin's goal will be to have the airport fit with the community, not to close the airport. Hamilton emphasized that the airport is not the main reason the community wants to incorporate. There are many other cases where residents feel they do not have control over projects and they want more influence. They are not pursuing incorporation to urbanize, but rather to preserve the current land uses and quality of life. Development will probably be limited to locally serving businesses.⁴⁹⁸

When San Martin residents requested that the Morgan Hill City Council officially endorse the incorporation, the council declined. Pilots came to the meeting and convinced the council to study the South County Airport and its impact in relation to incorporation before officially endorsing the concept.⁴⁹⁹ However, no report was presented to council in 2005. Interest in the issue waned because the *Airport Master Plan* was waiting on funds for environmental assessment and San Martin incorporation was not making progress.

Growth Control

In March 2004, Morgan Hill voters passed Measure C, the city's updated version of the residential growth-control ordinance Measure P (1990). It mandates that the city will not grow larger than 48,000 by 2020—about 250 residential housing units a year. The city population as of January 1, 2004, was 34,900.⁵⁰⁰ The amended numbers bring the ordinance in line with the city's general plan and will encourage rational growth. Measure C amendments also encourage downtown development and in-fill. Morgan Hill's first growth control measure, Measure E, went before the voters in 1977.⁵⁰¹

Caltrain

Caltrain service was extended to Gilroy in 1992.⁵⁰² The Caltrain station in San Martin is located less than a mile west of South County Airport. County Planner Bill Shoe does not anticipate transit-oriented development near the station because there is no infrastructure for residential development and there are currently incompatible, industrial uses in the area.

EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS

In Santa Clara County, airport planning and airport land use compatibility planning are focused at the county level. South County, Reid-Hillview, and Palo Alto airports are managed by the County Airports Administration. The Airport Land Use Commission is supported by county planning staff. The County Board of Supervisors approves both airport *Comprehensive Land Use Plans* and *Airport Master Plans*. This encourages cooperation between airport planners and land use planners with respect to airport area land use, especially in the case of South County Airport, which is also located within the county's land use planning jurisdiction.

On the other hand, local city governments in Santa Clara County sometimes ignore ALUC recommendations. Mostly this occurs in San José because the airports are already surrounded by urban land uses. It is likely that state pressures to build in-fill housing are aggravating this problem, as cities choose housing over land use compatibility in fulfilling their duty to promote the public welfare. However, in 1983 the ALUC recommended against a retirement home just 3,000 feet south of the South County Airport runway. The County Board of Supervisors overruled the commission and granted a 15-year permit to the owners of the South County Retirement Inn in San Martin.⁵⁰³

When asked how local jurisdictions could best work with the ALUC, Walter Windus said it would be useful to have positive as well as negative communication and input. In 2004, the commission worked with the city of Santa Clara on the shapes of safety zones for San José International Airport and achieved positive results. The ALUC would like to do more to coordinate land use, but cities must be willing.

Director of Airports Carl Honaker said ALUC recommendations represent smart growth for airports, and the ALUC is another voice for the importance of transportation nodes. It is important for people to hear about possible compatibility issues for recommended development around airports. Communication between agencies is also important. Land use decisions related to airport development and nearby development projects need to go through the proper channels, have a strong public outreach processes, and involve commissions and public officials early.

SUMMARY

Overall, all constituencies in Santa Clara County are informed about airport planning and land use compatibility issues. There is broad awareness of the regional issues related to airport planning and the laws and policies that apply. The County Airport Land Use Commission and the Airports Administration are trying to implement the latest land use compatibility techniques such as aviation easements and acquiring land for buffer zones.

County land use jurisdiction in the area allows for strong airport land use compatibility planning for South County Airport, but this may not be a real regional solution. Those who are most involved in the airport planning process, the airport operator and the residents of San Martin, both suggested that there is a need to look at the larger picture. Suggestions included the need for regional airport planning beyond Santa Clara County, and the potential of Moffett Field as a regional asset, if local opposition were not such an issue.

Since the 1970s, growth in Santa Clara County has been directed towards the cities. Sustainable development practices like smart growth and urban growth boundaries appear to have largely protected South County Airport from encroachment up to this time. Because it is located within county land use jurisdiction, the airport has benefited from these policies. Conversely, Santa Clara County airports located within city boundaries have not fared so well because of pressures to develop the surrounding land.

Gilroy is planning higher-density residential development within the South County Airport Influence Area. Although this could result in increasing complaints as the airport expands, it may also prevent residential encroachment even closer to the airport. Plans for higher density in downtown Morgan Hill could have similar results. Morgan Hill's strong desire to establish urban limit lines and greenbelt policies should also have a positive impact on airport land use compatibility.

Everyone interviewed for this case study said that communication is the key to effective land use compatibility planning around airports, but this communication does not always happen. For example, neither Morgan Hill nor Gilroy planning staff were aware that the Airport Influence Area for South County Airport included parts of their 20-year planning boundaries. Therefore, they have not submitted their general plans to the Airport Land Use Commission for review. The ALUC said they would like to work more with cities, but Santa Clara was the only example given where this has occurred. It appears that better coordination with planning activities in Morgan Hill and Gilroy would be beneficial.

Despite its efforts, the ALUC has limited impact in preventing incompatible development in the vicinity of county airports. Given the difficulties faced by the ALUC in controlling development around Santa Clara County airports and the history of incompatible encroachment in San José, the Santa Clara County Airports Administration is taking a more proactive approach in planning to purchase land around South County Airport to ensure land use compatibility. This may be the only solution that provides long-term land use compatibility. In addition, Director of Airports Carl Honaker said that it helps when land use decisions on all sides go through the proper channels, have a strong public outreach processes, and involve commissions and public officials early.

APPENDIX H

CASE STUDY—SAN LUIS OBISPO COUNTY REGIONAL AIRPORT

San Luis Obispo County Regional Airport (SBP), San Luis Obispo County

Airport location	San Luis Obispo County
Airport size	340 acres
Type of facility	Regularly scheduled commuter flights and general aviation
Level of airport activity	358,000 passengers and 93,000 aircraft operations in 2005
Curfew	Voluntary curfew between 11 p.m. and 7 a.m.
Most recent ALUCP	Adopted in 1973, amended in 2002, 2004, and 2005
Most recent <i>Airport Master Plan</i>	2005
Nearby cities (population 1/1/06)	San Luis Obispo: 44,500
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Agriculture, open space, and low-density residential uses to the south • Industrial and office uses in San Luis Obispo to the north • Encroaching residential development (medium- to high-density) in San Luis Obispo
Major issues	<ul style="list-style-type: none"> • Residential subdivisions planned within the Airport Influence Area (specific plans approved) • Conflict between ALUC and City of San Luis Obispo over acceptable levels of noise for residential development • <i>City General Plan</i> and <i>Airport Land Use Plan Amendment</i> conflict • Lack of public transportation and strong regional planning
Approaches to solving airport/community conflicts	High level of attention to airport noise issues in specific plans
Stakeholder groups	Noise working group (pilots, airport management representatives, and residents)
Integration with smart growth policies	<ul style="list-style-type: none"> • Smart growth policies leading to higher densities and developments encroaching on the airport • Improved cooperation on these issues
ALUC agency	San Luis Obispo County
ALUC staff contact name	Bill Robeson
ALUC staff contact phone	(805) 781-5607
ALUC staff contact e-mail	brobeson@co.slo.ca.us

INTRODUCTION

The San Luis Obispo County Airport dates to 1938; at that time, the airport was more than two miles south of the built-up area of the city of San Luis Obispo. In 1940, hard-surface runways and lights were installed by the War Department, which controlled the airport for the duration of World War II, then gave the improved airport back to the county in 1946. Southwest Airways provided the airport's first airline service, from 1946 until 1955. There was a long gap in air passenger service until Swift Aire Lines was started up in 1969.⁵⁰⁴

As of mid-2004, three commercial carriers—American Eagle, America West, and United Express (SkyWest)—provided daily service to Los Angeles, San Francisco, Phoenix, San José, and Las Vegas. 295,076 commercial passengers flew in or out of the airport in 2003, and there were 115,589 total airport operations (take-offs and landings).⁵⁰⁵ Boardings increased by 11.6 percent in 2004, according to FAA data.⁵⁰⁶ A fourth carrier, Delta Connection (also operated by SkyWest) began service to Salt Lake City in 2007.

A control tower was opened by the FAA in 1988, following a serious midair collision in 1984.⁵⁰⁷ The airport and its surroundings are shown in Figure 44.

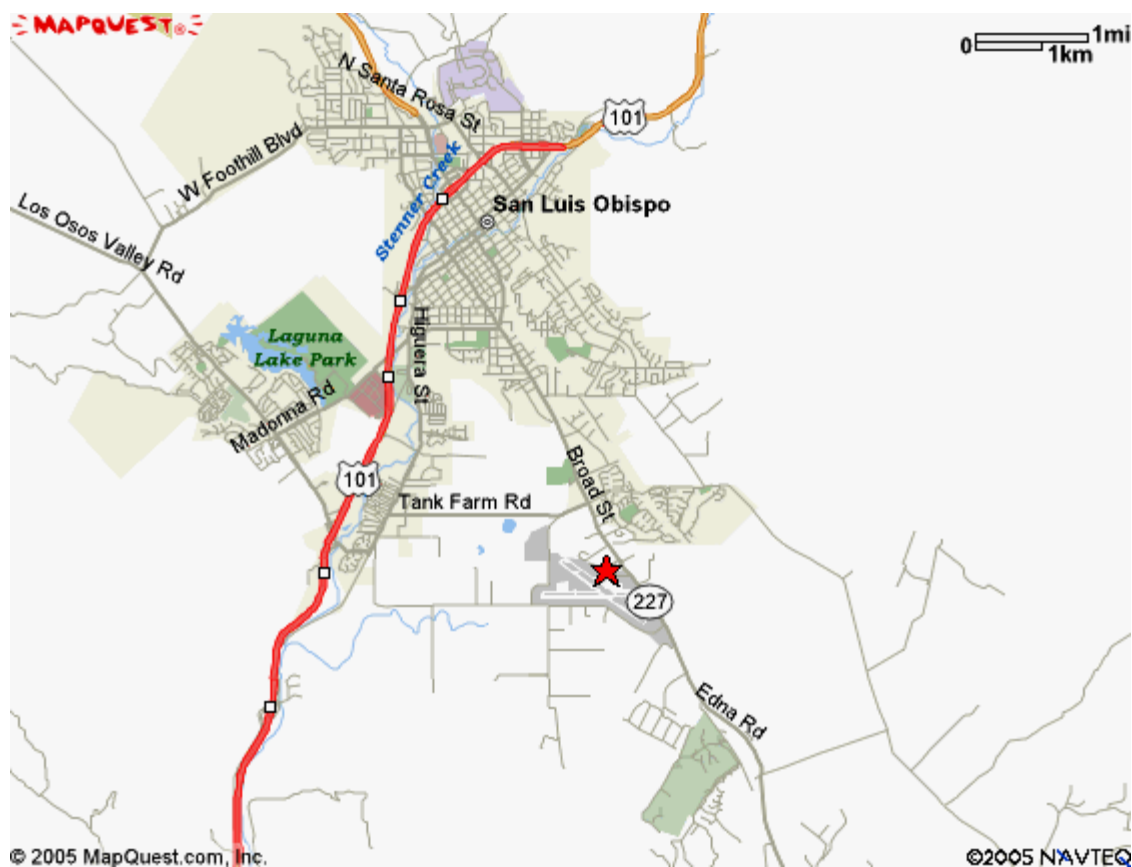


Figure 44 San Luis Obispo County Regional Airport Vicinity

Source: MapQuest.com, Inc., www.mapquest.com (accessed November 12, 2005).

In June 2004, the county's daily newspaper, the *Tribune*, reported a resurgence in general aviation at the airport. In 2003, private and charter landings and takeoffs rose to 93,149 and represented 24 percent of total airport operations. It was the first time since 2000 that general-aviation activity surpassed 92,000. Multiple reasons for general aviation's resurgence were cited, including travelers avoiding security procedures at larger airports and an increasing number of wealthy visitors using chartered flights or personal planes for weekend getaways. In 2004, all the airport's tie-down spaces were rented.⁵⁰⁸

As of mid-2004, firms contributing to and benefiting from the rise in general aviation and charter activity at the airport included the following:⁵⁰⁹

- Air San Luis—Cessna sales and service center offering charter flights, airplane rentals, maintenance, and flight training
- ACI (Aviation Consultants Inc.)—aircraft maintenance, management, and jet charter services
- Helipro Inc.—training private and commercial helicopter pilots
- Le Bas International—a charter brokerage firm; arranges planes, pilots, and other services
- Marc Air—charter service with three turboprop aircraft
- PCF Aviation—flight instruction, airplane rentals, and charter flights
- Victory Aviators—flight instruction and aircraft rental⁵¹⁰

AIRPORT LAND USE PLANNING

Airport Master Plan

There have been two major updates to the *Airport Master Plan* since the late 1990s, both focused on runway extension projects. The 1998 master plan update centered on a proposal to add 500 feet to Runway 11/29, for a total length of 5,300 feet on the airport's longer runway. The plan covered two phases. Projects designated for completion by 2002 included the runway expansion, a new taxiway, the extension of an existing taxiway, and a larger terminal. Longer-term projects included new taxiways, a new terminal, and a larger parking lot.⁵¹¹

The 2005 master plan update included the new terminal and parking facilities, but focused on a 1,000-foot runway extension to accommodate the landing and take-off needs of regional jets. San Luis Obispo's runway was thought to be the shortest runway in the nation at an airport with regional jet service. Airline representatives said at hearings in 2003 that they would continue to serve the airport only if they get a longer runway. San Luis Obispo (SLO) County acted quickly, since business leaders saw scheduled commercial flights as vital to the economic health of the region.⁵¹² With the prior expansion project in 2001 complete, the airport's main runway could now potentially extend to 6,300 feet. Total airport operations were expected to nearly double from 155,000 to 301,000 in 20 years.⁵¹³

The runway project incorporated a high-tech alternative—an Engineered Material Arresting System (EMAS), which makes the runway extension less land intensive. The EMAS allowed the airport to save several million dollars and avoid environmental problems, while providing safety by slowing or stopping an airplane that might overrun the runway. The EMAS eliminated the need to divert nearby Acacia Creek and simplified the realignment of Santa Fe Road.⁵¹⁴

In September 2003, the SLO County Regional Airport requested consideration for their runway project and was given priority ranking for federal funding. The *Airport Master Plan*

update was then fully underway, and various alternatives were examined. The project estimate was \$16 million to extend the runway, which would enable the accommodation of full service by regional jets, according to Airport Manager Klaasje Nairne.⁵¹⁵ Both American Airlines and United Airlines, which account for most of the passengers at the airport, are expected to complete the changeover to regional jets by 2008. Nearly 5,000 airports nationwide vied for federal airport improvement money, according to Nairne. Only 200 made it into the priority ranking list.⁵¹⁶ This ranking does not guarantee funding, but it brings the project noteworthy attention. All environmental documentation and approvals would be necessary before project funding could commence.

In 2004–2005, the airport completed its master plan update and budgeted property acquisitions for the runway extension project, including environmental and engineering support, architectural design for the new terminal building, and some small aircraft hangar development.⁵¹⁷ An 800-foot runway extension was completed in 2007, resulting in a 5,100-foot runway.⁵¹⁸

Noise Issues

In the late 1990s, Assistant Airports Manager Martin Pehl formed a Noise Working Group, comprising pilots, airport management representatives, and residents from areas affected by aircraft noise, including Country Club Estates, Laguna Lake, and South Higuera Street. By 2001, the group had developed a brochure for pilots listing voluntary steps they can take to mitigate noise impacts on the community. “It requests observance of voluntary curfew and not land or take off in Stage II jets between the hours of 11 p.m. and 7 a.m.” Pehl said. The airport also has suggested that pilots climb to 1,500 feet on a straight course off the runway and cross Highway 101 before turning. The routing traverses commercial buildings and open space.

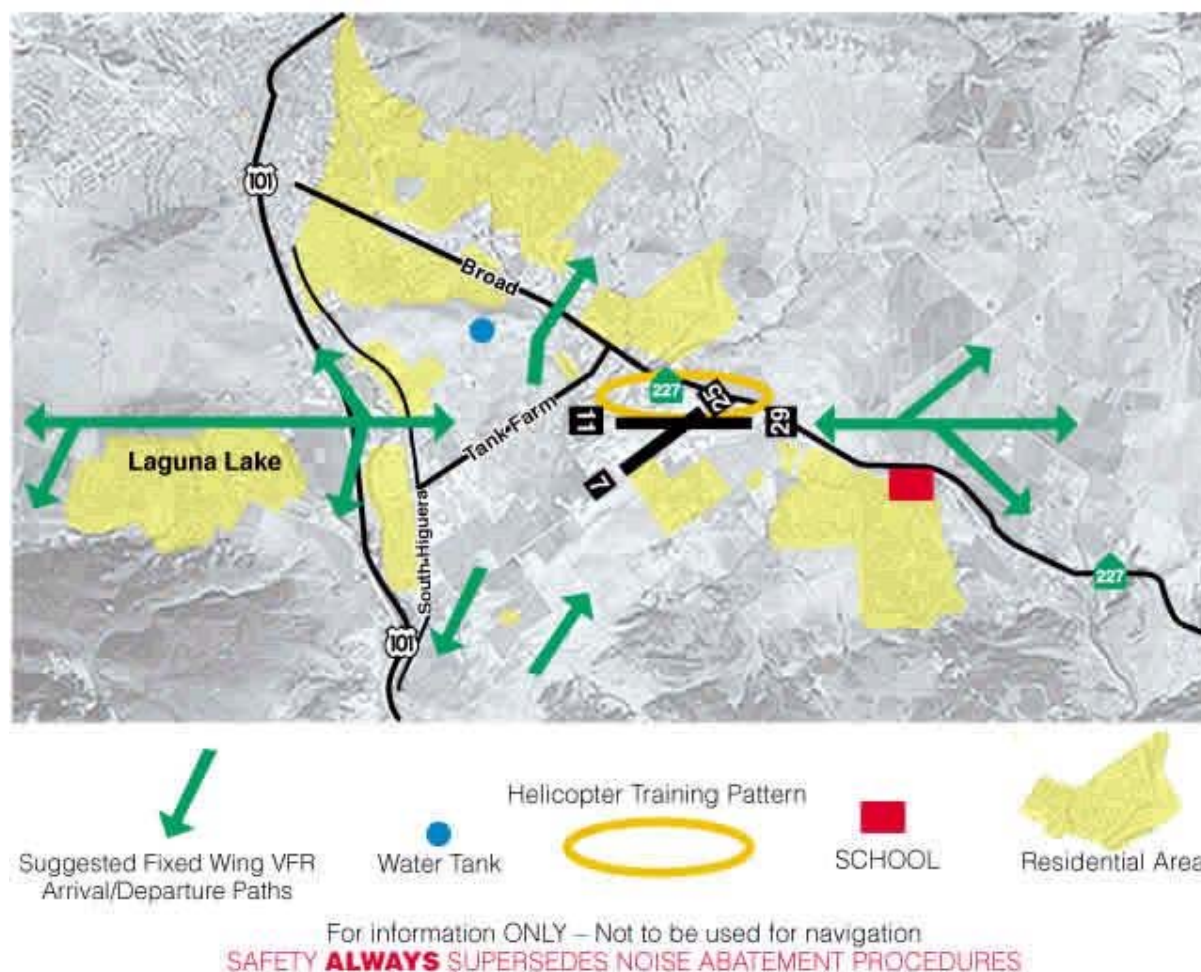
[Figure 45](#), taken from the brochure created by the Noise Working Group, shows how pilots are directed to fly away from residential areas. Several observers, including at least one planning commissioner, view voluntary flight guidelines and technological improvements as the most promising approaches to limiting the impacts of noise on sensitive land uses.⁵¹⁹

There were 325 noise complaints between June 1999 and July 2000, according to Pehl.⁵²⁰ Although precisely comparable statistics were not available, the clear perception of airport staff is that noise complaints have declined among long-term residents in the airport vicinity, for example, residents of Country Club Estates. Airport staff attribute the improvement to both the Noise Working Group’s activities, and the advent of regional jets—which are not only quieter, but also larger than the turboprop commuter aircraft they are supplanting, meaning fewer flights can carry an equivalent passenger load.⁵²¹

History of Land Use Issues in the Airport Vicinity

In 2000, *USA Today* identified San Luis Obispo County as the second most sprawling region in the United States, generating considerable discussion in planning circles. At the time, John Mandeville, San Luis Obispo’s Community Development Director, contested the assertion of

San Luis Obispo County Regional Airport – VFR Quiet Flight Procedures



May 2001

Figure 45 Fly Quiet Diagram

Source: San Luis Obispo County Regional Airport. "VFR Quiet Flight Procedures," May 2001.
www.sloairport.com/noise_map.html

sprawl in a newspaper interview, noting that "San Luis Obispo was one of the first cities in the state to define its urban growth boundary,"⁵²² Mandeville saw smart growth policies as central to the development of the last two major parcels of land within the city zoned for residential use, the Margarita and Orcutt areas. Combined, they will add approximately 2,000 housing units to the city. Both are considered infill, Mandeville said; both lie within city limits, and both are at least partially surrounded by other development. Furthermore, Mandeville asserted that each project would be linked closely to employment areas and services, so that fewer miles of new roads would be needed to serve the area. Both are also within the Airport Land Use Planning Area.

Two other large-scale developments on the edge of the built-up city also lie within the Airport Land Use Planning Area—the Dalidio property and Froom Ranch. Both are just west of U.S. 101. Both have threatened, at times, to build even if the city does not annex the land and allow the development (that is, they have sought to build under San Luis Obispo County

auspices). Even their proponents do not characterize these developments as smart growth. Although they are mixed-use, they are lower density and auto oriented, and have been strongly opposed by environmentalists.⁵²³

Housing supply and affordability have become serious and persistent issues in San Luis Obispo County. In 2001, only 18 percent of homes sold in the county—which includes the comparatively affordable cities of Atascadero and Paso Robles—were within reach of the SLO County’s median-income family. San Luis Obispo is under pressure from the state to provide more housing. In 1993, the California Department of Housing and Community Development told the city to plan for 5,000 new homes within seven years. City officials, who were then in the process of writing a new general plan, could not find a politically acceptable way of accomplishing this. They agreed only to build about half that many homes over a period of 20 years. Because of that decision, the state refused to recognize San Luis Obispo’s housing plan as valid, and the city lost state funds for certain housing programs as a result. The Housing Element is the only general plan element that the state has the authority to review for adequacy; the state can also penalize jurisdictions if they fail to comply with state mandates. San Luis Obispo is still struggling with this housing shortfall.

Airport Comprehensive Land Use Plan

The *County Airport Land Use Plan* for the San Luis Obispo County Regional Airport, adopted in 1973, was amended in June 2002, June 2004, and May 2005. The most recent update was in response to revised guidelines in the 2002 *California Airport Land Use Planning Handbook*. As of 2005, the Airport Land Use Commission (ALUC) comprises seven members, four of them pilots. A fifth, Roger Oxborrow, the ALUC chair in 2005, manages the Paso Robles airport. Because the northern portion of the city of San Luis Obispo, generally the areas around California Polytechnic State University and downtown, is built up, almost all significant new urban development proposals lie within the Airport Planning Area. This area was determined in 1977 and has not changed. It is an oval area 6 miles long and nearly 4 miles wide, extending from the Laguna Lake area to the community of Edna and as far north as South Street, recently the edge of the fully built-up city.

Several factors have helped raise the ALUC’s visibility in the late 1990s. Its members, by some accounts, became more assertive in protecting the airport. At the same time, the city’s plans for expansion—particularly housing expansion—within the Airport Land Use Planning Area had reached a level that commissioners felt they could not ignore.⁵²⁴

Community Development Director Mandeville does not dispute that the ALUC has a role in land use planning. In a newspaper interview in 2001 he stated, “I realize that in the last 20 years, airports are getting a lot of evidence that residential encroachment is a problem.” But unlike the city, he added, “they have the luxury of having kind of a narrow purview.”⁵²⁵

The City General Plan and Airport Land Use Plan Amendment Conflict

At the beginning of the decade, it was clear that a serious rift had developed between the city and the ALUC. In January 2001, reporter Ann Quinn wrote a long investigative report for the local weekly *New Times* after interviewing city staff, ALUC members and staff, pilots, business advocates, housing advocates, and airport neighbors. This section is based on Quinn's insightful piece and many interviews.

Quinn described the San Luis Obispo airport as on a “collision course” with the *City of San Luis Obispo's General Plan* and related efforts by San Luis Obispo to resolve its housing shortage. The then-newly proposed amendment to the *Airport Land Use Plan* (ALUP) would clearly restrict construction of housing and schools near the airport. Yet the city's general plan (completed in 1994) projected a substantial amount of development, including residential development, within the Airport Land Use Planning Area (also referred to as the Airport Planning Area in the ALUP).

The reason for the incongruity is in one sense readily explained. At the time the city was drafting its general plan in the early 1990s, SLO County drafted an ALUP revision that would have found the city's general plan consistent. However, the ALUC did not adopt the ALUP revision. According to ALUC commissioner Mac Gleim, the revision “was not comprehensive...and wouldn't have been consistent with county and state requirements.” The ALUC and other airport advocates feared that housing would be allowed to encroach on the airport, which could end up being perceived as a nuisance and a safety hazard.

The ALUC formed a technical committee, and together with a new county staff liaison, started the ALUP update process anew. The new amended plan clearly met state and county requirements, and the Airport Land Use Commission adopted it. However, the amended plan runs counter to the city's plans for future housing.

Both sides asserted that the other operated within a vacuum. Former Chamber of Commerce president Bill Thoma, who attended the meeting about the *Airport Land Use Plan* amendment, wondered how the breakdown in communication occurred, noting that there were more than 75 public meetings related to the general plan. “Where were the members of the {ALUC} during the general plan update?” Dave Darbyshire, president of the San Luis Obispo Pilots Association, stated he had gone to several general plan update meetings over the years, but recounted, “I never heard the airport even mentioned once. Never was there any consideration of safety issues or noise problems. The city acted as if the airport wasn't even there.”⁵²⁶

The impact of the new *Airport Land Use Plan* on the city's plans for housing greatly concerned long-time San Luis Obispo Housing Authority Director George Moylan, who stated “If the airport plan puts this [planned housing] in jeopardy, then from our perspective, there has to be more density in the parts [of town] that aren't affected by the airport. The city was trying to develop along its current lines of growth, and not take all the open space.” Moylan also noted that current residents' strong preference for single-family housing was a problem, since there

was limited land for housing; higher density was needed to meet housing needs in the future.⁵²⁷

Both Patricia Wilmore, a legislative analyst for the San Luis Obispo Chamber of Commerce, and Glen Matteson, long-range planner for the city of San Luis Obispo, challenged the Airport Land Use Commission's contention that housing and airports are completely incompatible. Wilmore complained there were no maps showing areas that needed overflight protection. While new maps may not have been available, the ALUP itself states that the dimensions of the Airport Land Use Planning Area were defined in 1977 and have never been altered.⁵²⁸ Matteson reported that the city's biggest problem with the ALUC was that the latter had not been specific enough as to where housing should not be located.

Wilmore also believed that the ALUC's choice to designate the San Luis Obispo County Regional Airport as rural rather than suburban was a problem. "A rural designation says that a level of 55 decibels is acceptable and suburban increases that level to 60 decibels. If the commission would designate our airport as suburban, then the city's proposed housing would be allowed," she was quoted as saying.⁵²⁹

The ALUC commissioners knew about the city's plans, but they did not approve of them. Matteson noted that copies of the general plan draft update had been given to the ALUC county staff liaison and to the technical committee that drafted the newest airport amendment. At the same time, Matteson confirmed, "the city acknowledged when we adopted the general plan that it was not entirely consistent with the 1970s *Airport Land Use Plan*," which was still the plan of record at the time of the general plan update.

In January 2001, both the *Airport Land Use Plan* amendment and the *Margarita Specific Plan* (which proposed up to 1,200 dwelling units) began undergoing environmental review. Airport Land Use Commissioner Robert Tefft claimed, properly, that the city violated state law by not sending the *Margarita Specific Plan* to the ALUC for approval before releasing it, and he sent a letter to San Luis Obispo (city) requesting that the city meet with the commission about the *Margarita Specific Plan* before holding public hearings.

Airport Land Use Commissioner Oxborrow implied that there were alternatives to housing: "San Luis Obispo has done an excellent job in the area east of Higuera Street, where there are commercial uses such as Food for Less and light industrial manufacturing plants, which generate their own noise. These uses are perfectly compatible with the airport."⁵³⁰

In addition to the Margarita plan, several other major developments came before the airport commission in the first years of the 21st century. The following section looks at these and how the new ALUP was applied and accommodated. From the ALUC perspective, the results were quite positive, and it is clear that relations and understanding between the city and ALUC improved markedly.

Role of Surrounding Jurisdictions

All the major projects in the Airport Planning Area are planned for eventual annexation by the City of San Luis Obispo. The map in [Figure 46](#), taken from San Luis Obispo's 1994 general plan, indicates the locations of the city's largest planning areas—the Margarita, Orcutt, and Airport areas; it also shows (in the upper left corner) U.S. 101, the eastern boundary of the Dalidio project.

Margarita Area Specific Plan

The Margarita Area is one of the largest remaining open areas for residential expansion in San Luis Obispo. Eventually, the area could accommodate a population of 2,500. The city planning commission was reviewing a plan for Margarita in early 2004. "It will be a little bit of everything," Mike Drazo, the city's Deputy Community Development Director, told the *Tribune*. "It will provide jobs, a southern east-west link the city has wanted and dreamed about for years [Prado Road], and real housing." The Margarita area is slated for 868 homes on about 418 acres, extending from the ridge of the South Street hills to the northern boundary of the Unocal property along Tank Farm Road. The neighborhood will feature single-family attached and detached homes, apartments, and a commercial center. The mix will include housing for all income levels, which will help the city meet its affordable housing goals.⁵³¹

The Margarita area has been targeted for residential development since the 1960s. In the city's 1994 general plan update, areas designated for housing and parks were specified and expanded and policies were developed to shape the area. Initially, the Margarita plan called for about 1,200 homes to be built. The city agreed in 2002 to reduce the number of homes in response to Airport Land Use Commission concerns about the development's proximity to the airport. The homes will now be built farther from where aircraft fly, to provide more safety and limit noise impacts to residents. "We do whatever we can to help the city achieve its objectives out in that area," said Roger Oxborrow, ALUC member. "I am pleased with the progress we've made in reaching common ground."⁵³²

The Margarita area will also offer affordable housing. George Moylan, director of the city's Housing Authority, was pleased that the developers were willing to donate 2.7 acres of land for affordable housing. "The fact that the city, the county, and the Airport Land Use Commission could sit down and come to a solution is encouraging, although it's not the magnitude of the development it was supposed to be a year ago," Moylan said.⁵³³

[Figure 47](#) and [Figure 48](#), both taken from the *Draft Margarita Area Specific Plan*, detail the attention paid to the airport in the planning process. Specific plans are used in San Luis Obispo and other California cities and counties to address issues on large developments that involve several property owners.

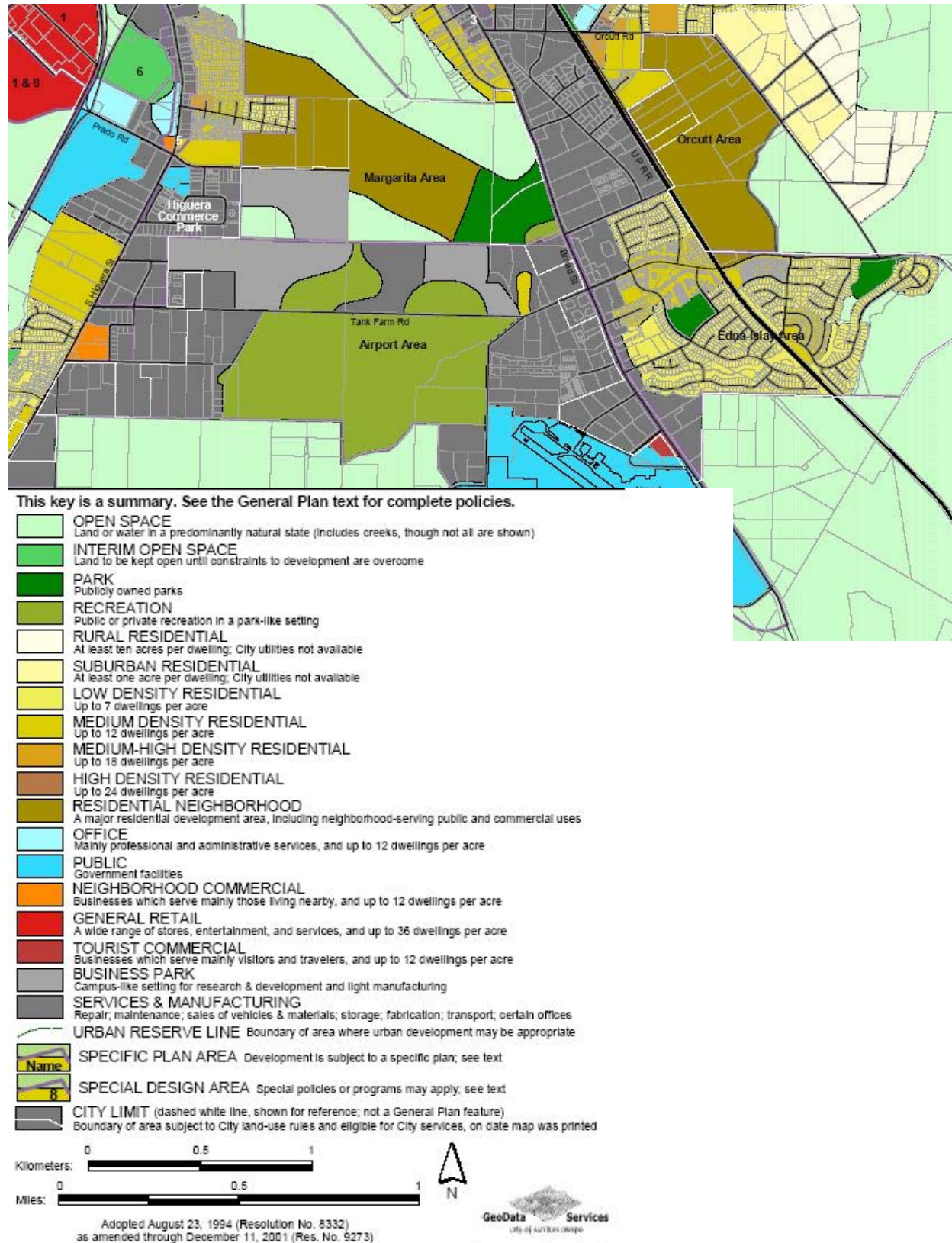


Figure 46 San Luis Obispo General Plan Land Use

Source: City of San Luis Obispo. "General Plan Land Use Map," December 11, 2001.
www.ci.san-luis-obispo.ca.us/communitydevelopment/download/lumap.pdf

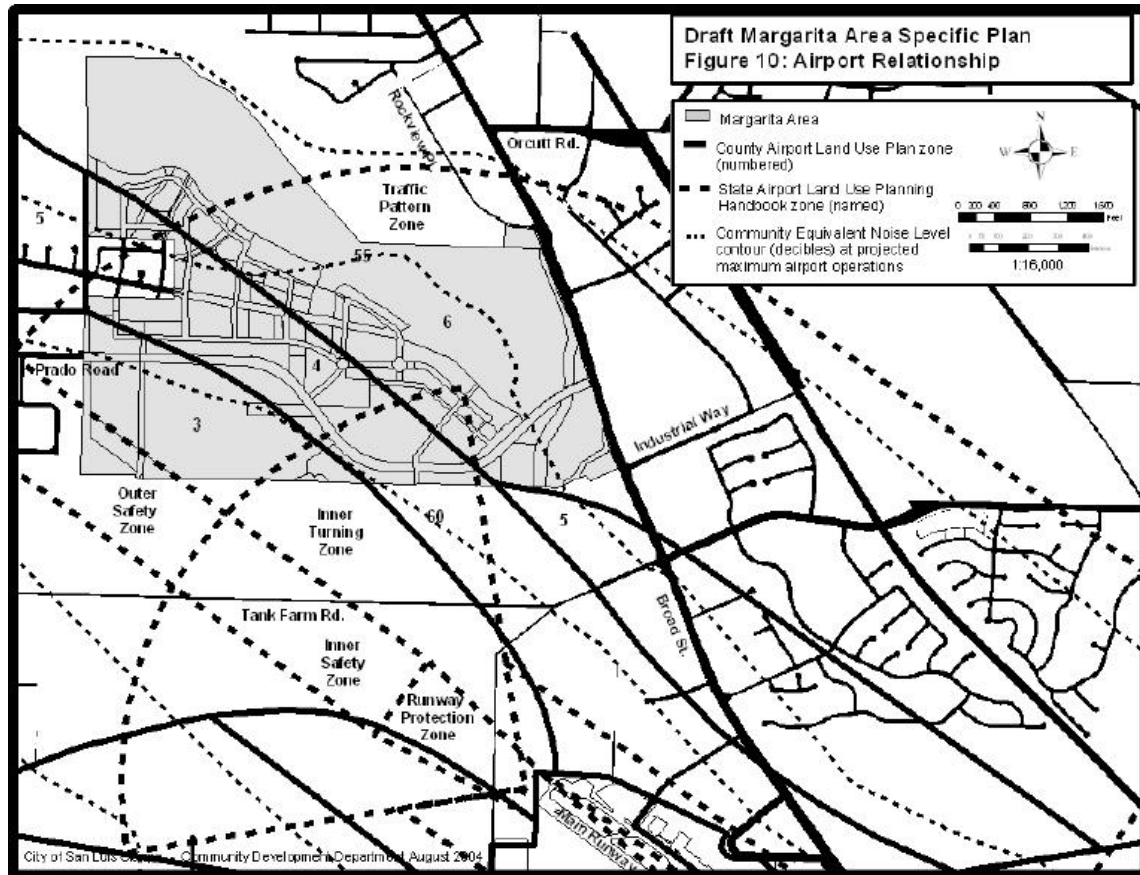


Figure 47 Margarita Area Airport Relationship

Source: City of San Luis Obispo. *Margarita Area Specific Plan*. October 2004.
<http://www.slocity.org/communitydevelopment/download/masp.pdf>.

Orcutt Area Development

The *Orcutt Area Specific Plan* details a new neighborhood with up to 960 homes. In October 2002, the San Luis Obispo City Council voted to go ahead with the Orcutt area plan. Building in the area, mostly undeveloped fields between Orcutt Road, Tank Farm Road, and the railroad tracks, has long been stalled as city hall and property owners negotiated and consolidated their various visions for the parcels. The vote authorized an environmental study on the project and endorsed the description that its 13 property owners agreed on, according to city planners. Two of the major open questions for the Orcutt area are the school district's desire for an elementary campus there, which would conflict with a plan that prevents such development anywhere near San Luis Obispo County Regional Airport; and the city's general plan guidelines for density, which call for a maximum of 700 homes on the property.

Final approval of the *Orcutt Area Specific Plan* was still pending in late 2005. The plan had not been formally presented to the ALUC, since the City of San Luis Obispo was still in the design phase of the plan, but county ALUC staff reported that communications have been open and productive.⁵³⁴ At its regular meeting in January 2006, the ALUC discussed a request from the

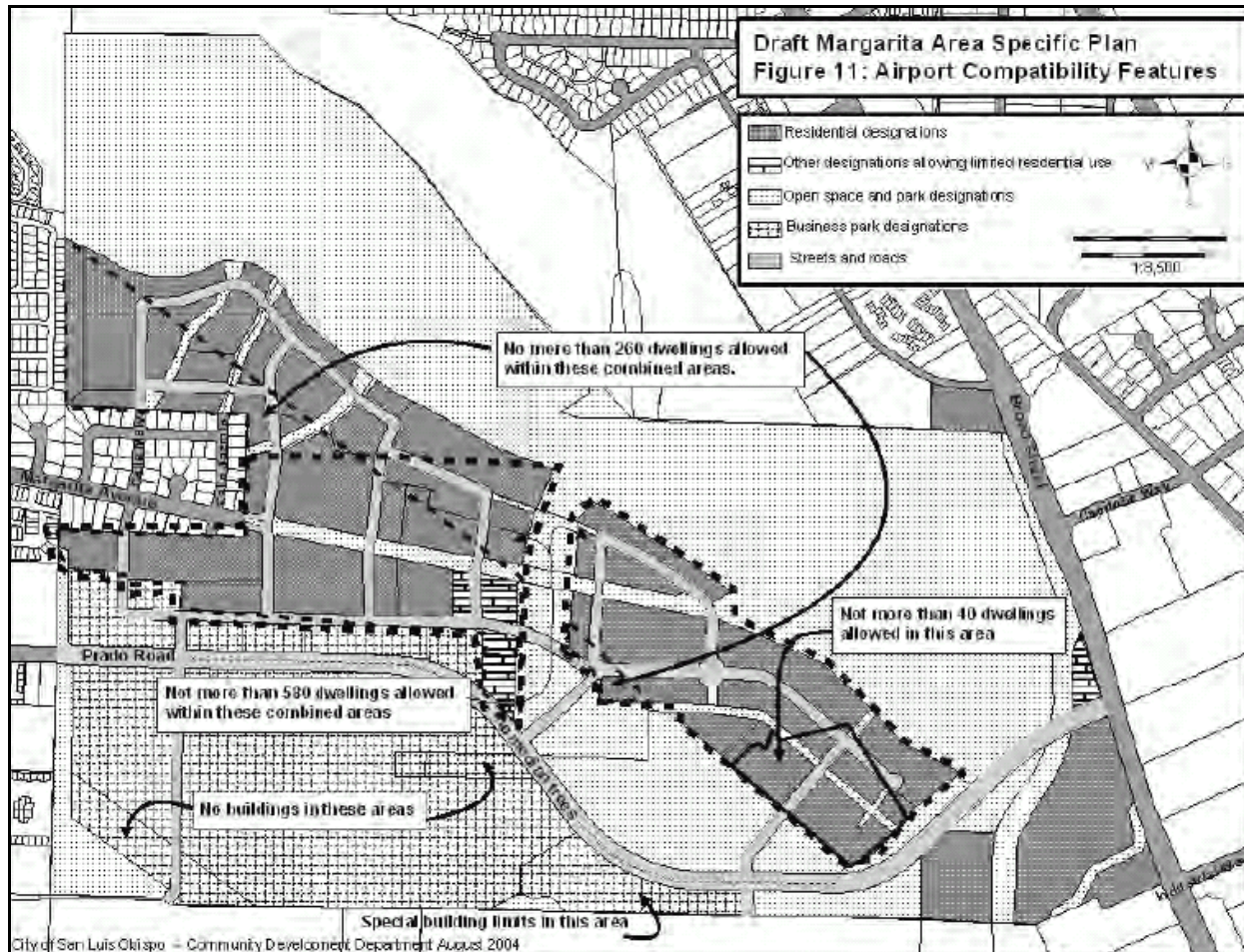


Figure 48 Margarita Area Airport Compatibility Features

Source: City of San Luis Obispo. *Margarita Area Specific Plan*. October 2004.

www.slocity.org/communitydevelopment/download/masp.pdf

City of San Luis Obispo to form an ALUC subcommittee to review the draft *Orcutt Area Specific Plan*, but no further action appears to have been taken on the plan by late 2007.

San Luis Obispo Marketplace Development (Dalidio Property)

For more than a decade, the proposed San Luis Obispo Marketplace has been controversial. To supporters, the 600,000-square-foot shopping center—set to include Target, Lowe’s, Macy’s, and a Larkspur Hotel—is an opportunity to provide more shopping, capture tax revenue, and build a key highway interchange (on U.S. 101 at Prado Road). Some critics, however, have long argued that the city should be more concerned with preserving the 131-acre Dalidio Farm, protecting downtown businesses, and providing low-cost housing. In early 2004, the *Tribune* compiled a brief summary of the development’s history:

- 1991: The Dalidio family offers about half of the property to the city for \$6 million. In the early 1990s, after several years of community debate over whether to develop the property or preserve agricultural land, the family offers to allow half of the property to be developed. The remaining half would be open space.

- 1994: The City Council agrees to the compromise and incorporates it into *San Luis Obispo's 1994 General Plan*.
- 1998: San Luis Obispo Marketplace Development Team submits an application for a development on the Dalidio family farm.
- 2001: City Council denies project application and fails to certify the environmental impact report. Developer takes a proposal to the county, which designates less land to open space.
- 2002: The developers and city and county officials discuss the consequences of such a project being built in the county. The parties meet and an agreement is reached to process the shopping center proposal in the city.⁵³⁵

In 2002, a new proposal for the Dalidio land called for more open space than earlier plans, while adding some acreage to commercial uses. The plan proposed a business park to replace senior housing proposed earlier, because the County Airport Land Use Commission opposed homes in the area. The Dalidio land lies beneath a flight path to and from the primary runway of San Luis Obispo County Regional Airport. In January 2004, the City Council approved the potential terms of a deal, leading some detractors to fear it is not a matter of if, but when, the shopping center is built. Among the terms of the tentative deal:

- The developer would pay nearly 70 percent of the estimated \$12 million to \$13 million in construction costs for the Prado Road interchange.
- The developer plans to designate 54.67 acres as open space and provide \$192,000, which the city would use to buy 24 acres of offsite open space at the southern boundary of the San Luis Obispo County Regional Airport. A 4-acre portion of the property would be dedicated for low-cost housing.
- The developer and city plan to share up to 50 percent of the net new sales and transient occupancy taxes generated by the shopping center.⁵³⁶

The Dalidio project was approved by the ALUC. However, voters in the city of San Luis Obispo put the project to a vote in 2004. The vote resulted in a denial for the project, and the applicant took it back to the county for processing. The original project was under county jurisdiction but was so close to the city limits and city utilities that the city, which always planned on annexing, had taken over processing with the applicant's agreement.

The county took over processing the Dalidio project again. The project was redesigned and renamed the Dalidio Ranch. A new countywide initiative on the November 2006 ballot proposes 530,000 square feet of retail, 60 residences, an organic farm and farmer's market, and other amenities.⁵³⁷ The initiative passed with nearly 65 percent of the vote. The project team wanted more housing but ultimately followed the guidance of the ALUC and the recently adopted *Airport Land Use Plan*, restricting the number of units and locating those units where safety and noise concerns are less prominent.⁵³⁸

Airport Area Specific Plan

The San Luis Obispo Chamber of Commerce has encouraged city annexation of the Airport area for decades. Historically, land uses in the airport area had been limited to agricultural, small-scale manufacturing, and rural accessory uses in support of the airport. A 1993 update of the county's *San Luis Obispo Airport Area Specific Plan* provided for allowable uses that are more consistent with city uses, specifically with regard to commercial, visitor-serving, and industrial uses. The Chamber recommended that the city take the initiative in the annexation process and take the lead on master planning and creating a strategic implementation plan for the airport area. They felt that master planning of the airport area would ensure that compatible businesses are grouped together in a logical manner. Annexation was a critical component in their smart growth concept of "compact urban form," which seeks to avoid deflecting development into the surrounding countryside and greenbelt areas.⁵³⁹

The Sierra Club remains concerned about the Airport Annexation Area. They are concerned about how it will be planned, who will pay for new services provided by the city, what areas will be preserved, and how it will integrate into the greenbelt area.⁵⁴⁰

The *Airport Area Specific Plan* was released, along with a draft environmental report, in February 2002. The planning area stretches from South Higuera Street in the west to Broad Street in the east, and includes 298 acres of tainted Unocal property that would remain in open space. Other proposed uses include 170 acres of land for business parks and 282 acres for services and manufacturing. Although the 240-acre airport is included in the plan, the city is not proposing to annex it.⁵⁴¹ The 1,006-acre airport area, south of the Margarita area and north of Buckley Road, allows for development of up to 693 acres, with a mixture of services, manufacturing, a business park, and airport-related facilities.⁵⁴² No residential uses are proposed. Although a mobile home park (designated as medium-density residential in the plan) will remain, it will not be allowed to be redeveloped for residential uses.⁵⁴³ Figure 49 shows the intended zoning for the Airport Area.

Community Development Director John Mandeville said the plan was "mostly a refinement" of what the city envisioned in 1994 when it approved its general plan, including a vision for the airport area. Although the ALUC has been critical of residential development in the Margarita area, the city's *Airport Area Plan* is not as great a concern, said Chairman Roger Oxborrow.⁵⁴⁴

In December 2003, the Prado Road extension, airport compatibility, and financing of infrastructure were some of the concerns on the table as San Luis Obispo proceeded with planning for the city's Margarita and Airport areas. That December, the city's planning commission held the first of several planned workshops to discuss the environmental report and draft *Margarita Area Specific Plan* and *Airport Area Specific Plan*.

The draft of the *Airport Area Specific Plan* was formally reviewed by both the Planning Commission and City Council in 2004.⁵⁴⁵ Several revisions were made to the text and details of the plan over the following year, including incorporation of changes recommended by the

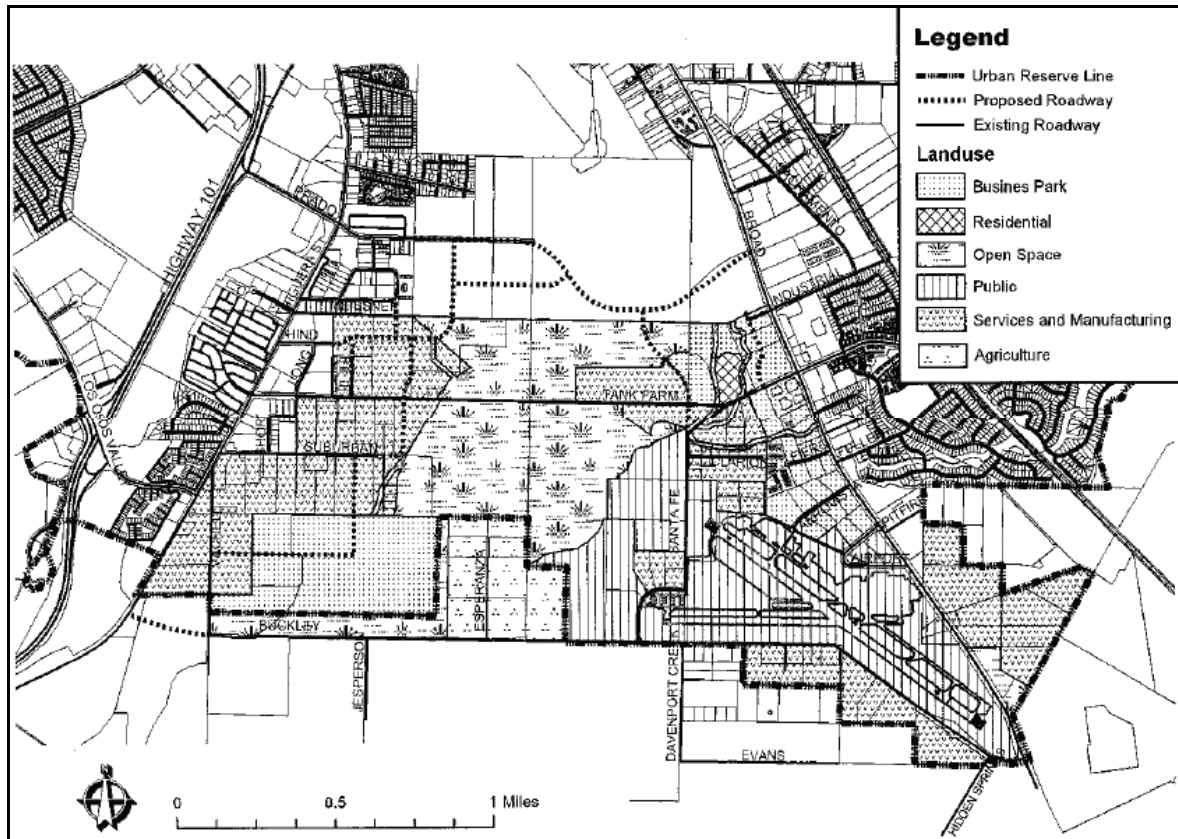


Figure 49 Airport Planning Area Zoning

Source: City of San Luis Obispo. "Airport Area Specific Plan" August 2005.
www.ci.san-luis-obispo.ca.us/communitydevelopment/download/aaspweb.pdf

ALUC. Of particular interest is the addition of Policy 4.3.3, which states that "Airport Area development must be consistent with the requirements of the *San Luis Obispo County Regional Airport Land Use Plan*." The *Airport Area Specific Plan Program Environmental Impact Report* was certified by the city council in October 2004.⁵⁴⁶ In August 2005, the *Draft Airport Area Specific Plan* was found consistent with the ALUP and was adopted by the city council.⁵⁴⁷

Changes in Airport Area Land Use

Recent commercial projects in the immediate airport environs are introducing elements of a small-scale version of John Kasarda's Aerotropolis. In 2002, despite economic doldrums in the region, the 10-acre Aerovista Business Park next to the San Luis Obispo County Regional Airport was successfully signing new tenants. A San Luis Obispo software company was leasing about three-quarters of one 44,000-square-foot building. The remaining space was being taken by San Luis Obispo engineering firm Lampman & Smith.⁵⁴⁸ The 10-acre property was expected to eventually consist of six buildings covering a total of 183,146 square feet. The offices incorporate state-of-the-art infrastructure systems required by high-technology firms.⁵⁴⁹ By 2007, the plan had been reduced to five buildings with the next two buildings, 12,000 square feet each, due to be built in 2008.⁵⁵⁰

In 2004, the city, county, and ALUC approved two substantial commercial projects adjacent to the airport:

- The Morabito-Burke project—Up to 500,000 square feet could be developed for light industrial and commercial use over 58 acres near the airport
- The Senn-Glick project—Adjacent to Morabito-Burke, its plan calls for an 180,000-square-foot commercial development in three two-story buildings and an industrial park over 10 acres, north of Farm House Lane.⁵⁵¹

Fully built and occupied, the projects would add nearly 700,000 square feet of commercial and office space near the airport. By comparison, the Marigold Center, the largest business center south of downtown, had 170,000 leasable square feet in 2003.

Extensive studies were done for each of the proposals, including a traffic analysis, an airport compatibility study, agriculture compatibility, neighborhood conflicts, and preservation of views, according to John McKenzie, county environmental specialist. The airport compatibility study looked at several safety issues, including the buildings' height, proximity of the runway, and location. Buildings in the Senn-Glick development project were situated out of flight paths and limited to less than 35 feet so they would not be a hazard to aircraft.⁵⁵² Ultimately the projects were found consistent with the *Airport Land Use Plan*.⁵⁵³

POTENTIAL ROLE AND IMPACT OF SMART GROWTH

All the major projects in the ALUP are under the jurisdiction of the City of San Luis Obispo. They are intended to implement smart growth and are often so described by city staff. But even the original proposal for the Margarita area proposed only 1,200 dwellings on 412 acres—a gross density of less than three units per acre. By comparison, the city of San Diego advocates an average density of 18 dwelling units per acre in transit-oriented villages.

Density and in-fill are lacking in San Luis Obispo because of the preference for a single-family, small-town atmosphere. Moreover, there is an aversion to rentals and higher-density housing, in part because many citizens associate college students with such housing types. As a result, densities are often lower than planned, and the city is using up its land at a faster pace than anticipated in the 1994 general plan.

There is no public transportation to San Luis Obispo County Regional Airport terminal. A trial service in 2001–2002 failed in part because of circuitous routing. Several businesses provide shuttle or limousine service to the airport.⁵⁵⁴ But without a transit spine, it may be difficult for proposals offering significantly higher density to succeed. Many smart growth advocates argue that a high-capacity transit line is needed to provide a focal point and incentive for smart growth implementation.

A strong regional planning process can enhance the realization of smart growth. Starting in early 2005, San Luis Obispo County's Council of Governments (COG) participated in a pilot program to explore regional development scenarios using interactive real-time models in a

workshop setting.⁵⁵⁵ The pilot study workshops were a success, although airport issues were not examined. The success of these workshops and of similar efforts in other regions helped lead to statewide funding for what has come to be termed the California Regional Blueprint Planning Program, launched in July 2005, to make support for interactive scenario analyses of growth impacts available to all regions of the state.⁵⁵⁶ San Luis Obispo COG received one of the first-year grants in early 2006 to continue its planning efforts through its regional Community 2050 program, with additional funding awarded later in 2006 to provide continued support through 2007.⁵⁵⁷

EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS

The recent history of the San Luis Obispo County Regional Airport shows that although airport land use conflicts can be intense, even at a small commercial airport, resolution may be easier when few local jurisdictions are involved. In the late 1990s, the San Luis Obispo County ALUC found itself in conflict with the city of San Luis Obispo's "smart growth" general plan, which had too much housing from the ALUC perspective. However, the general plan and a subordinate specific plan (the *Margarita Specific Plan*) were revised, and an amicable compromise reached. Both sides now proactively communicate on planning matters, and one positive result of the controversy is that the ALUC now generally meets monthly. The specific plan process seems to be working for a number of major developments in the vicinity of the airport.

Both the city and the airport now believe that their needs are understood by the other party, and for the most part each side's needs are reflected in both the ALUP and the city's general plan. The only loser in the process would appear to be housing production, particularly of affordable units. Cooperation between the city and county (which appoints the ALUC and is responsible for the ALUP) has made the prospect of compatible surroundings for the airport fairly likely. Few new homes will locate within the 55 dB CNEL noise contour. But housing challenges will escalate as new jobs and immigration continue to outpace production of homes in San Luis Obispo County.

Are solutions being overlooked? David Dubbink, a San Luis Obispo-based consultant on noise management issues and a professor of environmental planning at Cal Poly, San Luis Obispo, believes that much more is possible with available technology in terms of both the measurement and mitigation of aircraft noise. Although he was not a consultant to the recent master plan and ALUP updates, in his experience ALUP maps are only a rough indicator of locations where noise might be an issue. Better analysis, design, and mitigation might allow in-fill development closer to the airport, and might indicate areas outside the ALUP area where there could be significant impacts warranting special planning considerations and mitigation measures. Dubbink noted that in the realm of airport noise, California planners are limited by state and federal preemptions.⁵⁵⁸

The San Luis Obispo County Regional Airport Manager reports that the advent of regional jets (which prompted the need for a second major master plan update in under a decade) seems to be reducing airport noise complaints. Regional jets are quieter than the turboprop commuter aircraft they supplant, and fewer are needed to accommodate the same passenger demand. Development and widespread use by pilots of detailed voluntary Quiet Flight Procedures also contribute to the perceived reduction of noise complaints received by the airport.

SUMMARY

After more than six decades of relative isolation since the airport first opened, the San Luis Obispo County Regional Airport's immediate surroundings are facing urban development. At the same time, traffic at the airport is growing. Total airport operations are expected to nearly double from 155,000 to 301,000 in 20 years. The recent *Airport Master Plan* update proposed a 6,300-foot runway, enabling the airport to retain commercial service in the era of regional jets. The subsequent runway extension project that was completed in 2007 provided a 6,100-foot-long runway.

In the late 1990s, the San Luis Obispo County ALUC found itself in conflict with the city of San Luis Obispo's "smart growth" general plan, which had too much housing close to the airport from the ALUC perspective. The general plan and a subordinate specific plan for the Margarita area were revised, and an amicable compromise was reached. Planning for subsequent specific plans is occurring on a more cordial basis. Both the county and the city have adopted policies that respect the ALUP. The resolution of airport-area planning has been largely successful, but the city's and region's affordable housing problem remains.

One observer has suggested that better noise analysis, design, and mitigation might allow infill development closer to the airport. The advent of regional jets seems to be reducing airport noise complaints. Voluntary Quiet Flight Procedures are also a contributing factor in the perceived reduction of noise complaints received by the airport.

The San Luis Obispo County Regional Airport is attracting substantial compatible commercial development—a win-win situation in that commercial uses are more compatible with airport operations and provide greater net revenue for the city compared to residential uses. Successful planning for, and implementation of, such airport-oriented development represents a different concept from the residential models of smart growth that are generally discussed. But at heart, this approach to achieving land use compatibility involves some of the same smart growth principles of interrelated land uses contributing to infrastructure and travel efficiencies.

This case study highlights the importance of ongoing communication and good interjurisdictional cooperation to successful smart growth planning around airports. While San Luis Obispo has become, over time, a relative success story in this regard, it should be noted that the interjurisdictional cooperation challenge is simplified by the fact that only two jurisdictions—the county and the city—are involved.

APPENDIX I

CASE STUDY—LONG BEACH AIRPORT

Long Beach Airport (LGB), City of Long Beach

Airport location	City of Long Beach
Airport size	1,166 acres
Type of facility	Regularly scheduled passenger flights, cargo, and general aviation
Level of airport activity	3.0 million passengers, 49,000 metric tons of cargo and 353,000 aircraft operations (323,000 general aviation) in 2005
Restrictions	Noise Compatibility Ordinance limits number of daily passenger flights and restricts flights between 10 p.m. to 7 a.m.
Most recent ALUCP	1991, last revised in 2004
Most recent <i>Airport Master Plan</i>	1979; update commenced in 2002, evolved into Airport Terminal Improvements Project. EIR certified by City Council June 2006, expansion plan approved by City Council April 2007.
Nearby cities (population 1/1/06)	Long Beach: 489,100; Signal Hill: 11,100; Lakewood: 83,100
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Surrounded by built-up cities with commercial uses adjacent to airport and residential uses further away • Significant concerns over airport noise in surrounding residential areas • Flight restrictions conflict with regional aviation growth pressures
Major issues	<ul style="list-style-type: none"> • Master Plan update delayed by strong no-airport-growth advocacy • Neighbors continue to advocate for noise abatement measures • Conflict over redevelopment of land adjacent to airport following closure of Boeing aircraft manufacturing facilities
Approaches to solving airport/community conflicts	<ul style="list-style-type: none"> • Use of Airport Noise and Operations Monitoring System (ANOMS) since 1992 • Fines based on violation of Single Event Noise Exposure Level (SENEL) violations at specific noise-monitoring locations
Stakeholder groups	<ul style="list-style-type: none"> • Aviation Advisory Commission (largely pro-aviation) • Long Beach Homes Under Stress and Hazards (LBHUSH), a resident advocacy group
Integration with smart growth policies	Smart growth, mixed-use development planned adjacent to airport includes residential uses (1,300–2,500 units)
ALUC agency	Los Angeles County
ALUC staff contact name	Susana Franco-Rogan
ALUC staff contact phone	(213) 974-4885
ALUC staff contact e-mail	sfranco-rogan@planning.lacounty.gov

INTRODUCTION

The Long Beach Airport has existed on the current site since 1923, when the Long Beach City Council voted to set aside 150 acres for an airport named Daugherty Field. By 1928, the airport had grown to 380 acres, and three aircraft manufacturers were established there. Two paved runways were constructed in the mid-1930s, and in 1940 Douglas Aircraft began construction of its first aircraft manufacturing facility on land adjacent to the airport. This

facility was dedicated in October 1941, and over the following years Douglas Aircraft developed additional facilities adjacent to the airport to house its headquarters, design offices, and principal aircraft production facilities, until the company (by then McDonnell-Douglas Aircraft) was taken over by Boeing in 1997. Although reduced in scale, aircraft production continues at the facilities adjacent to the northeast boundary of the airport to the present day. The last airliner to be built at the Long Beach facility, a Boeing 717, was rolled out in May 2006. Production of the Boeing C-17, a military transport, continues, but Boeing has announced that it will close the production line in 2009 unless more orders are forthcoming.

Although Long Beach Airport (LGB) has been a major center of aircraft manufacture for the past 65 years and has supported a high volume of general aviation activity, airline service at the airport has been relatively limited and intermittent. Between September 1980 and April 1981, the airport had no scheduled air service at all. By 1990, 10 airlines were operating at the airport, with 41 daily flights handling over 1.4 million annual passengers. However, by 2000 there were only 11 daily scheduled flights and the annual passenger traffic had dropped to a little over 664,000 passengers. In spite of this, by 1998 the airport had grown to 1,166 acres and had five runways, the longest of which was about 10,000 feet. By the 1950s, suburban development had surrounded the airport and residents began complaining about the noise from jet aircraft. The airport acquired land to the east of airport between Lakewood Boulevard and Clark Avenue as a buffer area and developed it as Skylinks Golf Course. However, the primary runway is oriented northwest-southeast, with the arrival and departure flight paths directly above residential communities. The location of the airport relative to the surrounding communities is shown in [Figure 50](#), which also shows the orientation of the five runways. The Interstate 405 freeway runs adjacent to the southern boundary of the airport, with some commercial and light industrial development between the freeway and the airport boundary.

Under pressure from nearby residents to reduce aircraft noise, in 1981 the City of Long Beach attempted to pass an ordinance to limit aircraft noise. This was challenged by Alaska Airlines and other airlines, and after a series of lawsuits by the airlines and Long Beach residents, the City Noise Ordinance was invalidated by the District Court in 1988, although the city was permitted to implement an interim noise compatibility ordinance pending an appeal. Subsequent negotiation led to a settlement agreement in May 1995 that established the current Noise Compatibility Ordinance. This establishes a noise budget that limits the number of daily departures. The City Noise Compatibility Ordinance was grandfathered under the Federal *Airport Noise and Capacity Act of 1990* that effectively prohibits other cities establishing similar ordinances in the future. As a result, there is strong community support to preserve the Noise Compatibility Ordinance.

Although the level of airline activity at LGB has varied considerably over the years, by 2002 there was a surge of interest by several major airlines in serving the airport. JetBlue Airways began low-fare service between LGB and John F. Kennedy International Airport in New York in September 2001 and subsequently added service to Oakland and Washington DC. American Airlines responded by demanding some of the daily departure slots to enable it to

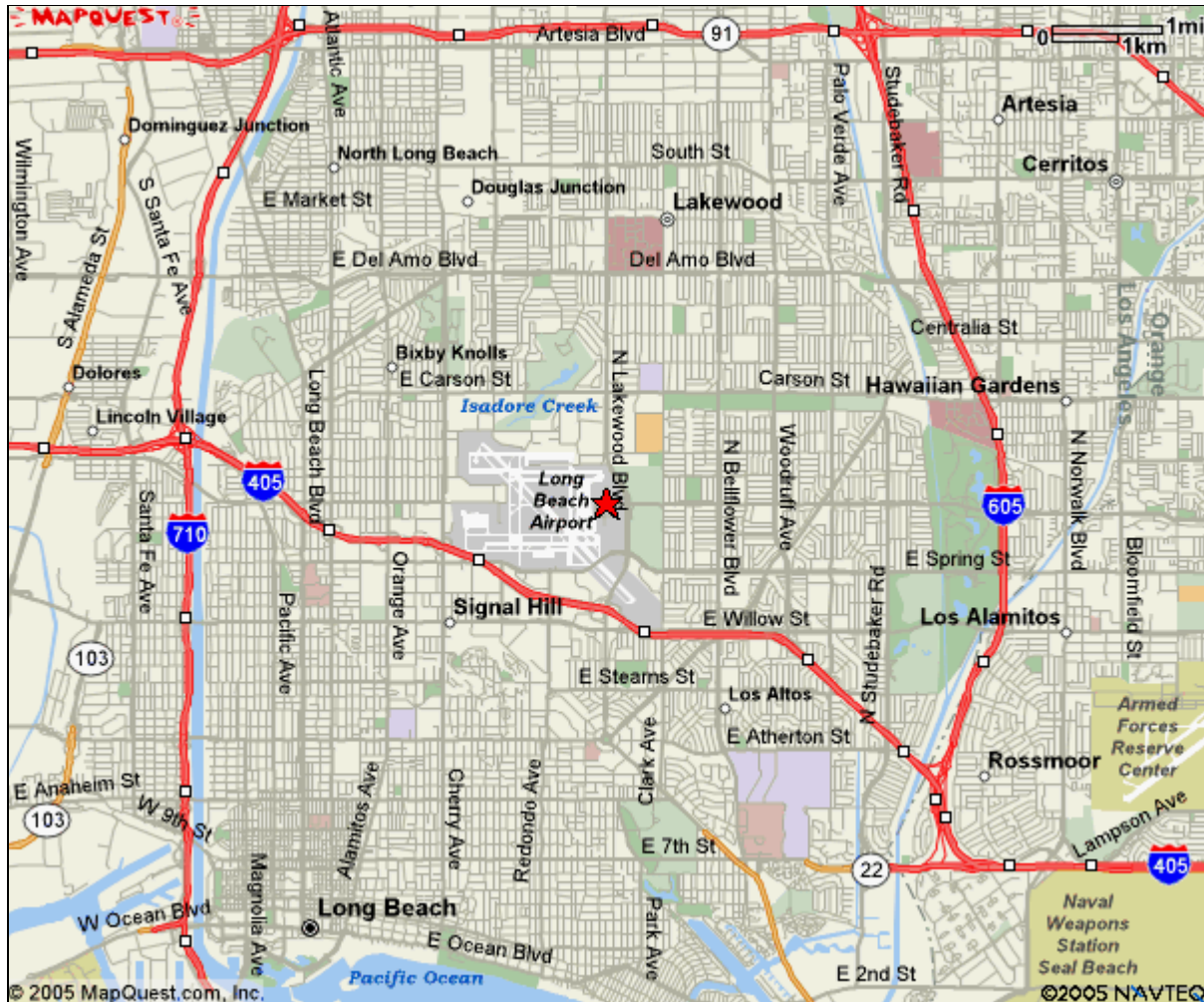


Figure 50 Long Beach Airport Vicinity

Source: www.mapquest.com (accessed December 3, 2005).

reenter the market that it had abandoned some years before. This service expansion used up all the available departure slots for large aircraft. The Noise Compatibility Ordinance provides for an additional 25 departure slots for commuter aircraft, although these went unused until February 2005, when America West Airlines petitioned the airport for three commuter flight slots in addition to its four commercial flight slots. The slots would be used for flights to Phoenix.⁵⁵⁹ In August 2005, a new company called Smooth Flight Holdings, Inc., submitted a request for the remaining 22 commuter flight slots at the airport.⁵⁶⁰ In early September, the city gave 19 slots to the company and three to Delta Airlines, which filed for the slots at the last minute after being notified of Smooth Flight's request.⁵⁶¹ However, Smooth Flight withdrew its application before the end of 2005, deciding to wait until the airport terminal facilities were improved. In January 2006, Delta, which had not flown out of Long Beach since 1991, announced that it would begin using its three commuter slots for service to Salt Lake City in March.⁵⁶² By the end of 2007, 16 of the 25 commuter flight slots were in use by four different airlines.⁵⁶³

The relatively rapid growth in traffic resulting from this expansion of service led to overcrowded terminal facilities and the use of temporary buildings to provide additional floor space. The number of airline passengers using the airport increased from 664,000 in 2000 to 3.03 million in 2005, and has been projected to reach nearly four million annually.⁵⁶⁴ The airport terminal, originally built in 1941 to handle 15 daily commercial flights and 1.5 million people, had not had a permanent upgrade since 1985.⁵⁶⁵ The airport built several temporary holdrooms to handle the crowds and announced that new permanent facilities would be needed to handle the growth.⁵⁶⁶ In January 2002, the city and airline officials agreed on details for an estimated \$7.2 million expansion plan for the airport terminal that would include new temporary passenger holding and baggage-claim buildings, a new permanent 12,000-square-foot passenger holding room, and expanded concessions areas.⁵⁶⁷ Efforts to update the airport master plan began, and in September 2003, the city released a “Notice of Preparation” for an Environmental Impact Report (EIR) that detailed the airport improvements and an initial analysis of possible environmental impacts. The draft EIR was scheduled for public review by late June 2004. According to the notice, “The proposed project would not be expected to have a significant impact on the noise environment because it does not propose changes in the number of flights, the type of aircraft used, or the operational procedures at the airport,” but the EIR would document the existing noise environment and the future noise environment with and without the project.⁵⁶⁸ Community response was immediate and vocal, with many opposed to the expansion. After a protracted public debate, involving an extension of the review period for the draft EIR, several City Council votes, the filing of two lawsuits against the city, and an unsuccessful attempt to negotiate a mutually satisfactory compromise, the City Council approved a 90,000-square-foot expansion of the terminal in April 2007. The lawsuits challenging the EIR were still unresolved at the end of 2007. The issues surrounding the master plan update are discussed in more detail below.

AIRPORT LAND USE PLANNING

The land use pattern in the area surrounding LGB had not experienced much change in recent years, with developments in the immediate vicinity of the airport generally conforming to the existing uses. This situation changed dramatically in 2001 with the decision by Boeing to redevelop a large area of the former McDonnell-Douglas aircraft manufacturing plant adjacent to the northeast boundary of the airport as a mixed-use development. The controversy that this generated and the current status of the redevelopment are discussed in more detail beginning on [page 279](#).

History of Land Use Issues in the Airport Vicinity

Conflicts over the level and type of activity at the airport have been a recurring issue for the past four decades. The debate generally has focused on the airport activity rather than the surrounding land uses, although of course the existence of established residential areas under the arrival and departure flight paths for the primary runway has been the principal source of

the conflict. The first major community division over commercial aircraft came when Douglas Aircraft Co. needed a longer runway at the airport to fly out its new DC-8 jets. It asked the city to finance the runway expansion with a \$5.2 million bond issue on the February 1956 ballot. The bond issue passed by a wide margin, and Douglas kept its promises to invest in new plants and add jobs. Later in 1956, airport backers proposed turning the airport into a major terminal for commercial and cargo jets, which set off another uproar. Almost every proposed expansion of commercial activity was met with vocal protest. In 1970, a move was started to recall the city council after it approved flights for Pacific Southwest Airlines.⁵⁶⁹

Community concerns over aircraft noise culminated in the formation of the neighborhood group Homes Under Stress and Hazards (HUSH) that pressed the city to establish controls on aircraft noise. This led to the passage of an Airport Noise Ordinance in 1981 that capped the number of daily commercial flights at 15. That decision did not sit well with airlines and aviation groups, who filed a lawsuit against the city. Following 13 years of litigation that wound up in federal court, both sides eventually settled in the mid-1990s. An agreement signed by the city and the airlines put in place several restrictions, including a daily limit of 41 commercial flight slots (a slot equals one takeoff and landing) and 25 daily commuter flight slots. By that time, the federal government had enacted the *Airport Noise and Capacity Act of 1990*. Because litigation was under way before the legislation was passed, the restrictions were grandfathered in by the legislation.⁵⁷⁰

In addition to the requirements of the noise ordinance, LGB is one of 10 airports in California that have been defined as Noise Problem Airports under the state Noise Standards established by the State Aeronautics Act (Division 9, Part 1 of the *California Public Utilities Code*) and set forth in Title 21, Division 2.5, Chapter 6, of the *California Code of Regulations*. This requires the airport to apply for and obtain a variance from the California Department of Transportation and provide periodic reports on progress to reduce the extent of the Noise Impact Area comprising incompatible land uses within the 65 dB Community Noise Equivalent Level (CNEL) noise contour, with the goal of eventually reducing this to zero.

Airport Noise Management

As a result of the requirements of the Airport Noise Ordinance and subsequent settlement agreements resulting from legal challenges to the ordinance, as well as the requirements of the California Noise Standards, the airport has developed a sophisticated process to control aircraft noise. A key component of this process is an Airport Noise and Operations Monitoring System (ANOMS) that the airport purchased in 1992 for \$3 million to monitor the level of noise emitted from planes during takeoffs and landings and identify the specific aircraft generating a noise level above specified limits.

The city's noise ordinance used data compiled for 1989/1990 to set the maximum number of daily commercial flights. Excess noise does not allow the city to reduce the 41 daily flights.⁵⁷¹ The ordinance, one of the strictest in the nation, restricts flights at the airport after 10 p.m. and before 7 a.m., but can withhold penalties against an airline if it can demonstrate that late

flights between 10 and 11 p.m. were weather-related or due to circumstances out of its control. All flights after 11 p.m. carry penalties, no matter what the reason.⁵⁷² No other airport of Long Beach's size has such a low limit on flights. Orange County is the only other airport with grandfathered limits, and it has more than three times as many flights as Long Beach, as well as a later noise curfew.⁵⁷³ In addition to the operational curfew, the noise ordinance defines maximum allowable noise levels for takeoffs and approaches at specific noise monitoring locations, measured as a Single Event Noise Exposure Level (SENEL).

In mid-May 2002, the City Council reaffirmed its support for existing flight limits at Long Beach Airport but acknowledged the city was preparing a legal strategy for a potential battle over that cap. Council members expressed unanimous support for that limit, adopting resolutions both reaffirming the limit and endorsing a lobbying effort in Washington DC, on the city's behalf. Council members also set in motion a possible environmental report to study the impacts of jet emissions and other possible health hazards that the 41 slots have on residents. Council members said that an independent analysis of health and safety hazards could boost the city's defense of keeping the limit in place.⁵⁷⁴ "We wanted the FAA people to know that the council is united on the airport issue," said Councilman Frank Colonna, referring to the panel's unanimous reaffirmation of the 1995 Airport Noise Compatibility Ordinance. "Current FAA officials may not have a lot of institutional memory about our airport issues."⁵⁷⁵

A key component of the noise ordinance is the ability to levy fines on airlines that violate either the curfew or the defined single-event noise limits. In December 2002, the Long Beach city prosecutor filed misdemeanor charges against three airlines for continued noise violations. These complaints, the first charges filed under the Long Beach Airport Noise Compatibility Ordinance, alleged that the airlines continued flying aircraft after 10 p.m. despite repeated past administrative fines. Convictions could net a \$500 fine or up to six months in jail or both. Flights after 11 p.m. are automatic violations and carry an initial \$100 fine and \$300 fine for subsequent violations. Residents have long complained that the punishments for violating the ordinance are too weak. The city has argued that it wanted to impose stiffer fines, but a federal judge who reviewed the noise ordinance said higher fines were too "onerous."⁵⁷⁶

In February 2003, the City of Long Beach reached a settlement agreement with American Airlines, JetBlue Airways, and Alaska Airlines to resolve a legal challenge to the noise ordinance. The agreement provided a mechanism to allow additional flights above the 41 daily departures as long as the additional flights would not cause the air carriers to exceed the maximum CNEL budget permitted for air carrier operations.⁵⁷⁷

In early May 2003, federal regulators said that the 1995 court settlement capping the number of commercial takeoffs was legal. Airport operators had feared the FAA might put an end to noise limits. "This is very significant. We've never seen confirmation" of the noise ordinance in writing by the FAA, said Michael Mais, a Long Beach deputy city attorney. "This allows the city to avoid costly, time-consuming litigation" and to continue to limit air traffic. The announcement resulted from a settlement between the city and several airlines that put an end

to a dispute over valuable flight slots at the airport. The terms of the deal required airport officials to conduct a noise study once the airport reached its limit of 41 daily flights, which happened in June 2003.⁵⁷⁸

In October 2004, a noise study was submitted to the city council showing that airlines at Long Beach Airport were not quiet enough to warrant more daily commercial flights, for the second consecutive year. The annual noise study is conducted to determine if there is enough room in an ordinance-controlled “noise budget” to add additional flights. Noise made by planes arriving at the airport was trending upward during the year.⁵⁷⁹

Airport Master Plan Update

The update of the *Airport Master Plan* to provide additional terminal facilities that began in 2002 and the associated environmental documentation has continued to prove controversial. In August 2002, residents who live around Long Beach Airport revived the neighborhood group that fought for noise controls in the 1980s, under the name LBHUSH2. The goal of the group is to keep the 41-flight slot cap for commercial jets at Long Beach Airport. Residents just want to protect their property investment, their health, and the environment, said organizer Rae Gabelich.⁵⁸⁰

In June 2004, the city proposed that permanent improvements and additions at Long Beach Airport be done in two phases. Officials unveiled the plan for phased airport improvements at a meeting of the city’s Airport Advisory Commission, which was charged with determining what new permanent facilities are needed and what an environmental study of the proposals should include. Under the proposed plan, the airport would be expanded from its current size of 58,320 square feet of enclosed facilities to 122,007 square feet during a first phase of construction. The terminal expansion would provide new lounges and create 11 passenger gates, up from eight. A new enclosed garage was also proposed. At that time, 25 daily commuter flight slots remain unused, but if they were to be used, a second phase of expansion would be triggered, adding more space to bring the airport’s total size to 133,243 square feet. Airport Manager Chris Kunze said the project “reasonably accommodates” forecasts for passenger growth and supports the city’s *2010 Strategic Plan* that the airport’s business opportunities be expanded and developed for maximum economic opportunity, within existing noise ordinances that limit daily flights.⁵⁸¹

The inclusion of a project-specific health risk study of proposed airport improvements in the project EIR was unanimously recommended in September 2004 by the Airport Advisory Commission. The study would look at what future health problems might be caused by the potential addition of up to 25 new regional commuter flights and up to 11 new daily commercial passenger jet flights, as well as any problems that are directly tied to the city’s improvement project. The vote allowed the EIR study to begin on the planned improvements. A new Notice of Preparation, to replace one from more than a year earlier, would be prepared for the project.⁵⁸²

A major hurdle to the long-awaited expansion of the terminal facilities was cleared in early October 2004, when a divided Airport Advisory Commission approved the proposed developments after nearly 11 months of hearings.⁵⁸³ The commission forwarded a plan crafted by airport staff and the city's consultant, HNTB Corporation, that would add 98,673 square feet of passenger and baggage security space, ticketing facilities, passenger holdrooms, offices, and concessions.⁵⁸⁴ In early 2005, the City Council established the guiding principles and the options to be studied for the *Long Beach Airport Terminal Area Improvement Program EIR* that were approved by the council on February 1, 2005.

On February 8, 2005, the City Council chose the preferred project for the EIR. The Airport Advisory Commission and airport staff recommended the terminal be expanded to 133,243 square feet, but the council unanimously chose the smallest recommended alternative (102,980 square feet) plus two smaller options for study. The council split 5–4 in favor of studying 12 to 14 airplane parking positions. A motion by council member Tonia Reyes Uranga to study only 12 positions failed to pass. The existing terminal is 58,320 square feet and has 10 parking positions.⁵⁸⁵

The council action against the recommendations of the Advisory Commission prompted supporters of airport improvements to jump into action. By late February 2005, there was news of a possible citywide initiative on the airport improvement project.⁵⁸⁶ A new group called the Long Beach Alliance was announced on April 2, 2005, with Chamber of Commerce Board Chairwoman Lou Anne Bynum and former councilman Mike Donelon as its leaders. Initially, the alliance was focused on the initiative and on countering misinformation from opponents of the airport improvement project.⁵⁸⁷ The alliance soon hired public relations firm Glover Park Group and attorney Fadem & Associates. The formation of the alliance and talk of an initiative spurred city leaders to search for ways to speed up the EIR process.⁵⁸⁸

The council managed to shorten the EIR schedule by about five months, from August 2006 to March 2006. At the same time, City Manager Jerry Miller also said that a health risk assessment was critical to the completion of the EIR, suggesting that the city was attempting to address the issues raised by both sides—the alliance pushing for improvements to begin as soon as possible, and the residents' group, LBHUSH2, arguing against improvements because they would bring more flights.⁵⁸⁹ EIR scoping sessions took place on April 28 and May 7, 2005. The crowds at these meetings were smaller than expected, with about 70 attending on April 28.⁵⁹⁰

The *Draft Airport Terminal Area Improvement Program EIR* was released for comment on November 7. The EIR found that the largest alternative was actually the environmentally superior alternative. In addition, the build alternatives would result in fewer emissions than the no-build alternative because there would be reduced automobile and airplane traffic on the ground around the airport. Analysis of each alternative was based on the maximum number of flights allowed under the noise ordinance (including 11 additional commercial flights that might be allowed if airplanes become quieter). The EIR also found that when the maximum number of flights is reached, there will be significant unavoidable impacts on air quality. The

only other significant impact documented in the report—the impact of construction on air quality—could be mitigated.⁵⁹¹

Under the preferred alternative, the terminal would increase from 56,320 square feet to 102,850 square feet, with the capacity to handle up to five million passengers per year. Other features of the project include construction of passenger hold rooms, concessions, security screening areas, baggage claim, offices, ticketing facilities, airline gates, and parking positions, a parking garage, and circulation improvements. Two other alternatives would increase the terminal size to 97,545 or 79,725 square feet.⁵⁹² All alternatives included 11 gates (up from eight) and 12 to 14 airplane parking spaces (up from 10).⁵⁹³

Three public meetings were scheduled to receive comments and questions about the EIR. The required 45-day review period, scheduled to end December 22, was extended to January 30, 2006, to make sure people had time to fully review the report.⁵⁹⁴ The final EIR was released on April 24, 2006, with few changes from the original draft. The city planning commission unanimously certified the EIR on May 11, 2006, despite an overwhelming majority of comments opposed to the project. The commissioners emphasized that the certification was not approval of the project—the size of the terminal and the number of parking spaces was a City Council decision. Approval of the *Conceptual Site Plan* was separated from the EIR certification and was approved later in the evening, with the condition that the plan is returned to the commission for review before development begins.⁵⁹⁵

By the deadline on May 22, 12 valid appeals had been filed against the EIR certification. The school district appealed based on the noise impact analysis, and LBHUSH2 appealed based on the possibility that the larger terminal would invite a challenge to the noise ordinance. Ten individuals filed appeals.⁵⁹⁶

In late May 2006, the city council received a report with preliminary cost estimates and a funding plan for the airport improvements: \$50.4 million for the parking garage, and \$108.5 million for the terminal improvements. The money would be raised through Insured Airport Revenue Bonds. Airline leases would have to be extended considerably, from month-to-month leases to five-year leases, in order to sell the bonds. Airline participation was not part of the financing plan in the report, although it said some upfront contributions could be considered.⁵⁹⁷

The Long Beach City Council held a hearing on the EIR on June 13, 2006, which was continued to June 20 when the council voted 5–2 to certify the EIR and 4–3 to approve a conceptual site plan for a 98,000-square foot development. At a subsequent council meeting on July 11, Councilmember Tonia Reyes Uranga introduced a motion to rescind the vote certifying the EIR, which failed on a 4–5 vote.⁵⁹⁸ A subsequent motion to extend the statute of limitations within which appellants could file suit to challenge the EIR until October 24, 2006, passed on a 7–2 vote. The motion also directed staff to hold discussions with a representative group of appellants regarding the size of the terminal project and mitigation measures and report back to council by September 19.⁵⁹⁹ On July 21, the Long Beach Unified

School District filed a legal action challenging the EIR, while continuing to participate in the discussions with the city. School district representatives stated that they did so to preserve their options in case the courts held that the extension of the statute of limitations was invalid.⁶⁰⁰ On September 19 the City Council voted to extend the statute of limitations for an additional 60 days to January 5, 2007, to provide additional time to resolve a number of issues in the discussion with appellants.⁶⁰¹

However, the discussions were ultimately unable to reach an acceptable agreement to all the parties and in March 2007 the Long Beach Council of Parents and Teachers (PTA) filed a lawsuit against the city challenging the EIR approved by the City Council the previous June.⁶⁰² On April 23, 2007 the City Council voted 5–3 to proceed with an expansion of the airport terminal facilities to 89,995 square feet, although the two lawsuits by the School District and the PTA were unresolved.⁶⁰³ The lawsuits had still not been resolved at the end of 2007.

Airport Comprehensive Land Use Plan

Long Beach Airport lies in Los Angeles County and is included in the *Comprehensive Land Use Plan* (CLUP) prepared by the Los Angeles (LA) County Airport Land Use Commission (ALUC). The most recent version of the LA County CLUP was adopted in December 1991 and last revised in December 2004. This is a single document covering all airports in the county except for General William J. Fox Airfield in Lancaster, for which a separate *Land Use Compatibility Plan* was adopted in December 2004. The CLUP contains a brief description of each airport in the county, together with maps of the Airport Influence Area (AIA) for each airport that were prepared in May 2003. The airport descriptions have not been revised since the plan was adopted in 1991. Other than the description and AIA map, the plan contains no airport-specific discussion. There is a section on policies and programs that apply to all airports in the county except Fox Airfield, and a section that discusses requirements for consistency of city general and specific plans and airport master plans with the CLUP. In December 2004, the ALUC adopted a separate Review Procedures document that provides additional guidance to the ALUC and applicants for a consistency determination. The plan also contains a glossary, a brief bibliography, and appendices that present relevant sections of the *California Public Utilities Code* and FAA regulations and guidance related to control of objects that may affect navigable airspace.

The CLUP policies related to land use compatibility with respect to aircraft noise are based on the Community Noise Exposure Level (CNEL). For residential use, any development in an area exposed to less than 60 dB CNEL is considered satisfactory, while a development in an area between 60 dB and 70 dB CNEL requires review to determine noise insulation needs. Policy N-2 requires sound insulation to ensure a maximum interior noise level of 45 dB CNEL in new residential, educational, or health-related uses in areas subject to an exterior noise level of 65 dB CNEL or greater.

The AIA for LGB is shown in [Figure 51](#), which also shows the boundaries of the adjacent cities as well as the extent of the airport property, the runway protection zones for each runway end, and the 65 dB CNEL noise contour used for the purposes of the CLUP. It can be seen that the 65 dB CNEL contour extends off the airport property for only a short distance to the southeast, but a somewhat greater distance to the northwest. This area to the northwest within the 65 dB CNEL contour but off the airport property is mostly commercial and industrial uses, although the contour extends a short distance into a residential area to the west of Cherry Avenue.

Although the ALUC policies indicate that new residential use in areas between the 60 dB and 65 dB CNEL should be subject to review for noise insulation requirements, the AIA map does not show the 60 dB CNEL noise contour, which would clearly extend further into the residential areas to the northwest and southeast of the airport. [Figure 51](#) also shows that the airport has acquired a fairly large area of land to the west of Lakewood Boulevard, which provides a buffer between the airport and the residential area further east. However, with the primary runway in the northwest-southeast direction, this area is not exposed to the greatest aircraft noise levels. As can be seen from [Figure 51](#), the area immediately off the northwest end of the primary runway is in the city of Lakewood, although the residential areas further to the northwest are in the city of Long Beach.

ROLE OF SURROUNDING JURISDICTIONS

As shown in [Figure 51](#), the immediate surroundings of the airport include three cities: Long Beach, Lakewood, and Signal Hill. The city of Lakewood includes areas immediately adjacent to the airport on either side of the northwest end of the primary runway, and extends to the north away from the arrival and departure flight paths for the primary runway, although those areas will be overflowed by departures to the north from the north-south general aviation runways or arrivals from the north to those runways. The city of Signal Hill lies to the southwest of the airport beyond the Interstate 405 freeway, well away from the arrival and departure flight paths to and from the primary runway. The eastern part of the city is overflowed by departures to the south from the westernmost north-south general aviation runway or arrivals from the south to that runway. Because the city lies on a low hill (as its name implies), the northern parts of the city are subject to aircraft noise from airport operations in general.

The airport is owned and operated by the City of Long Beach, and the majority of the surrounding area is also in the city; therefore, the cities of Lakewood and Signal Hill have little input into decisions regarding the airport.

The Land Use Element of the *City of Long Beach General Plan* was originally prepared in July 1989 and last revised in April 1997.⁶⁰⁴ The general plan defines a series of Land Use Districts (LUDs) shown on an LUD Mapbook that divides the area of the city into 29 panels and shows the boundaries of each LUD area on each panel. An illustrative panel for the area to

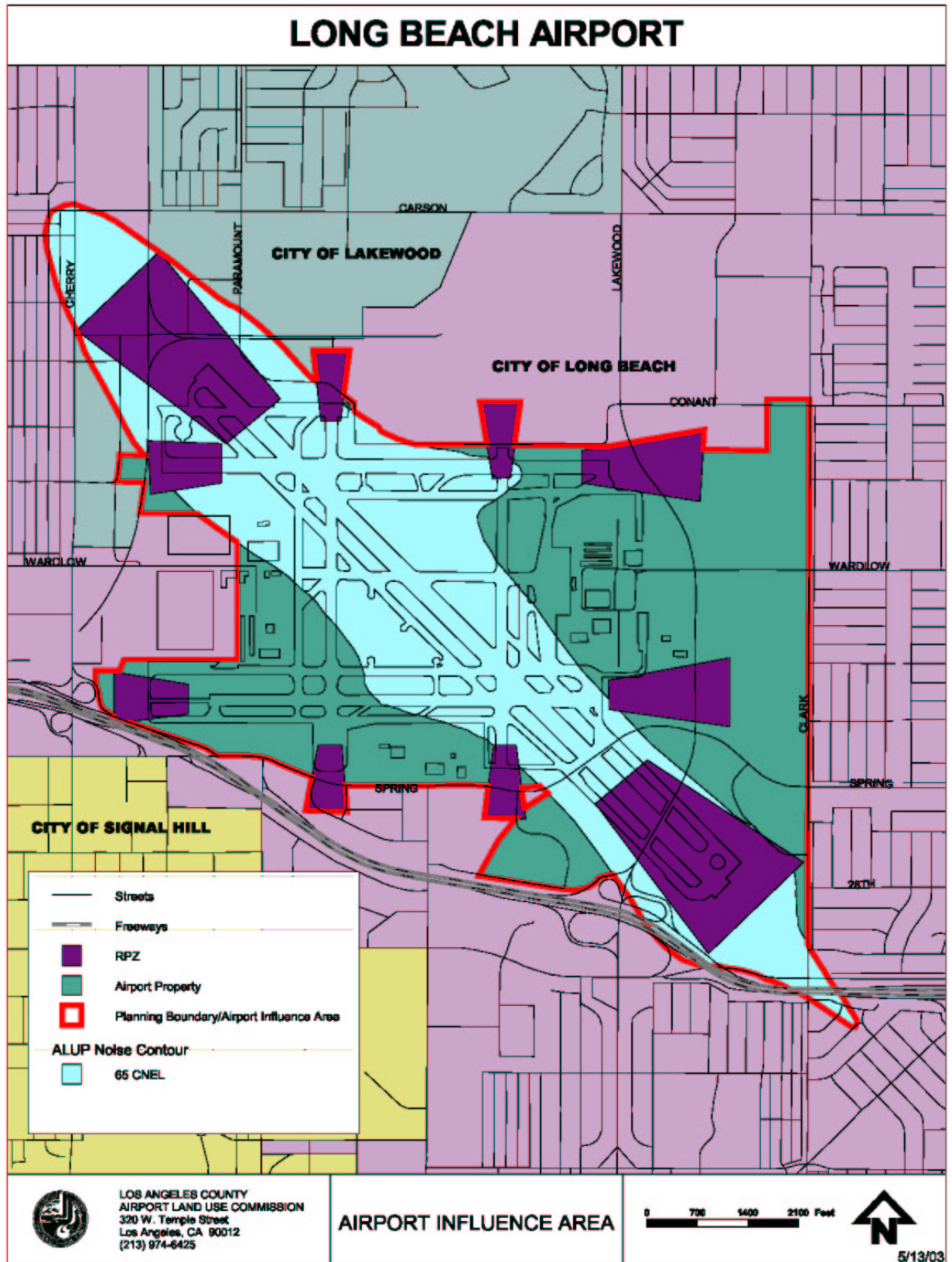


Figure 51 Long Beach Airport Influence Area

Source: Los Angeles County Airport Land Use Commission, *Comprehensive Land Use Plan*, revised December 1, 2004.

the southeast of the airport is shown in [Figure 52](#), together with a key to the LUD codes. The

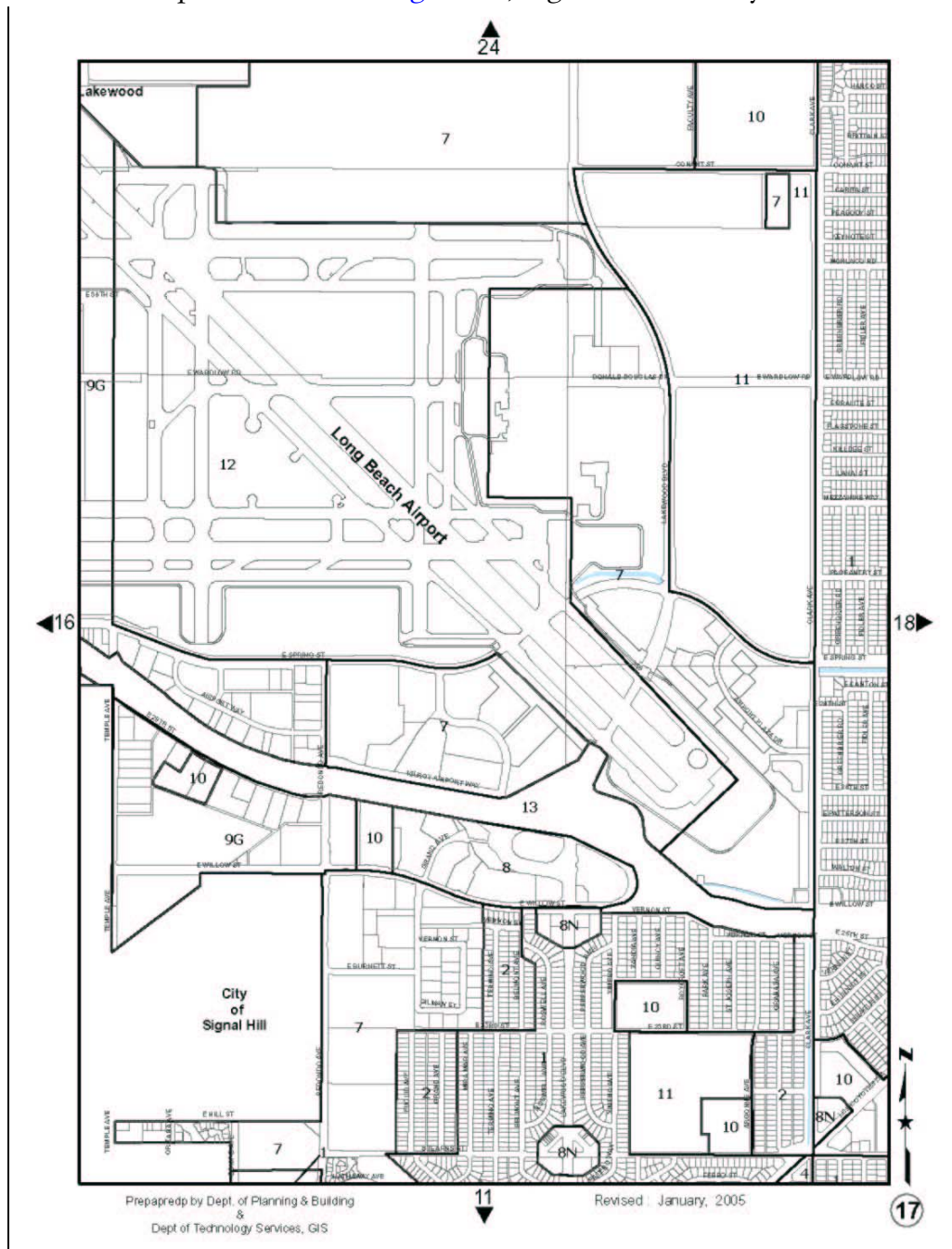


Figure 52 Representative Long Beach Land Use Districts

Source: City of Long Beach, Department of Planning and Building, *Land Use District Mapbook*, www.ci.long-beach.ca.us/plan/default.asp. (accessed October 14, 2006).

general plan discusses general land use policies for each of the defined LUDs. The City Zoning Ordinance provides more detailed policies for a system of 47 different types of zoning districts to implement the general plan. The boundaries of these zoning districts are different from the LUDs, although they reflect the general uses for each LUD, and are shown on a zoning map

that is divided into the same 29 panels as the LUD mapbook. The corresponding zoning map for the same area shown in Figure 52 is shown in Figure 53.

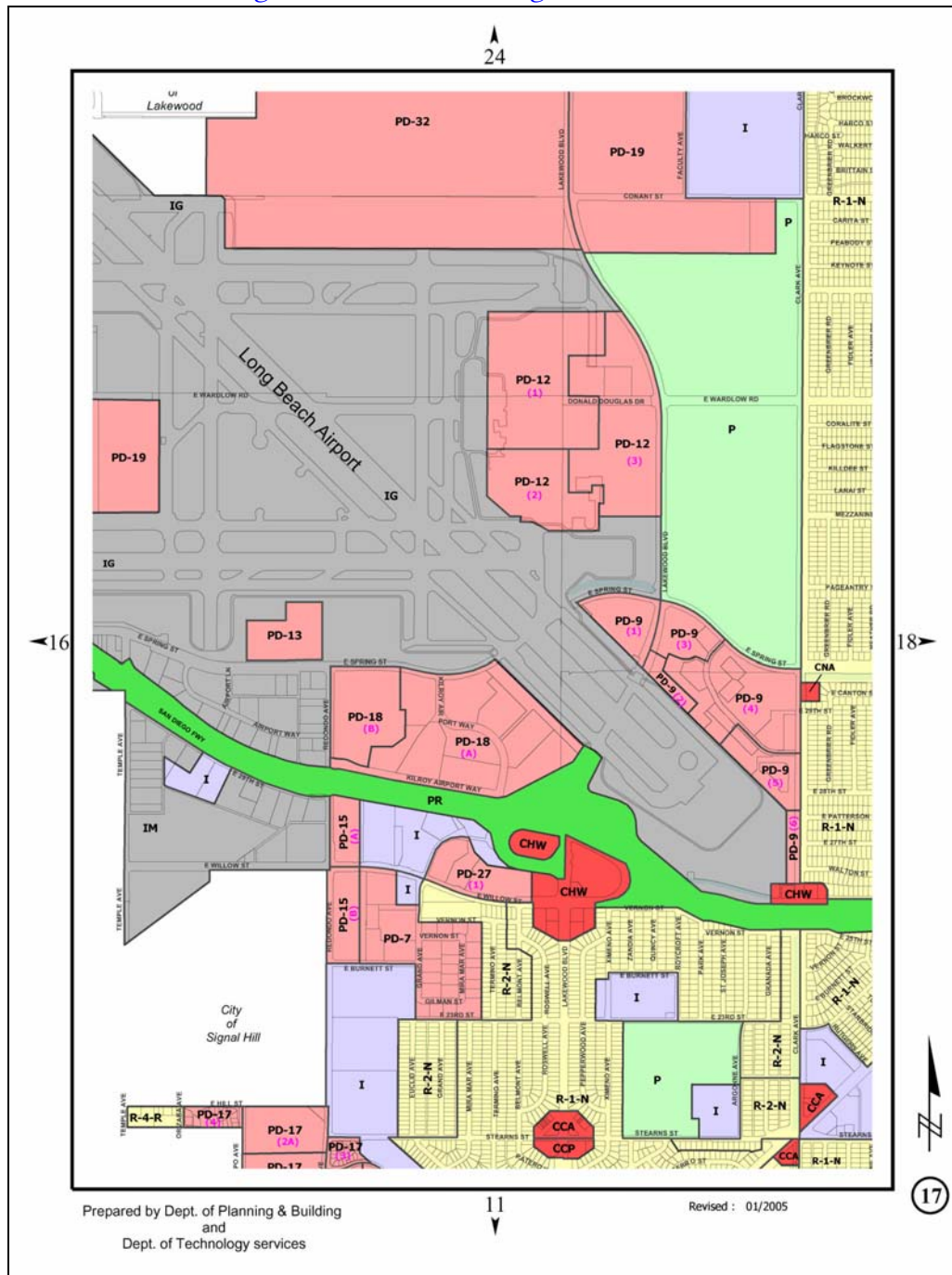


Figure 53 Representative Long Beach Zoning Districts

Source: City of Long Beach, Department of Planning and Building, *2006 Zoning Mapbook*, revised July 2006, www.ci.long-beach.ca.us/plan/default.asp, (accessed October 14, 2006).

The land in the immediate vicinity of the airport is zoned in various commercial and industrial categories, but the land to the east of Clark Avenue and south of Interstate 405 off the southeast end of the primary runway is predominantly zoned residential (codes R-1-N and

R-2-N), as shown in [Figure 53](#). Similarly (although not shown on [Figure 53](#)), the land to the west of Cherry Avenue off the northwest end of the primary runway is also predominantly zoned residential.

POTENTIAL ROLE AND IMPACT OF SMART GROWTH

A significant complex of industrial and commercial activities are located at and around LGB, including a major aircraft manufacturing plant, and the Blue Line of the Los Angeles Metro is just over a mile to the west of the airport. Nevertheless, there appears to have been no consideration of transit oriented development or other smart growth strategies in the vicinity of the airport until Boeing proposed to redevelop the site of its closed plant on the northeast boundary of the airport as a mixed-use development, which it has named Douglas Park. The location of the site is shown in [Figure 54](#). One may question whether it is appropriate to use the term “smart growth” in the context of a proposal to locate a large number of residential units so close to a commercial airport, but since mixed use and density are key components of smart growth, it is relevant to consider whether the proposed development could be termed smart growth and what effect the proximity to the airport could have on the project or the development could have on the airport.

A third key element of smart growth is access to transit. Thus far this aspect appears to have been largely ignored by the planners developing Douglas Park or the city of Long Beach in approving the development, apart from mention of working with Long Beach Transit to provide a bus route to serve the development. This is one aspect of smart growth where there could be real synergies between the planned development and the airport. A frequent bus service linking the Blue Line with Douglas Park and the airport, and then via Spring Street on the south of the airport and Orange Avenue to downtown Long Beach, would both improve access to the airport and provide residents of Douglas Park with good transit access to the Blue Line and downtown Long Beach. The route also would improve transit access to the remaining Boeing aircraft manufacturing facilities on the east side of Lakewood Boulevard, as well as Long Beach City College and Veterans Memorial Stadium, both of which are located just to the east of the Boeing plant.

Proposals to redevelop the site were first revealed in February 2000, when Boeing announced that it planned to turn a large part of its aircraft manufacturing facilities in Long Beach into one of the region’s largest private commercial developments. Boeing said it expected to demolish most, if not all, of the surplus facilities on the plant’s west side and replace them with a mixed-use business park that would strive to attract mostly technology companies. Both Boeing and Long Beach officials said the move to develop the surplus plant space would benefit the company and the city. The 260 acres represents “one of the largest potential development opportunities” in or near central Los Angeles, said Craig Peters, a senior vice president with commercial real estate brokerage CB Richard Ellis. Long Beach City Manager Henry Taboada said the city was eager to expedite those approvals. He added that the Boeing

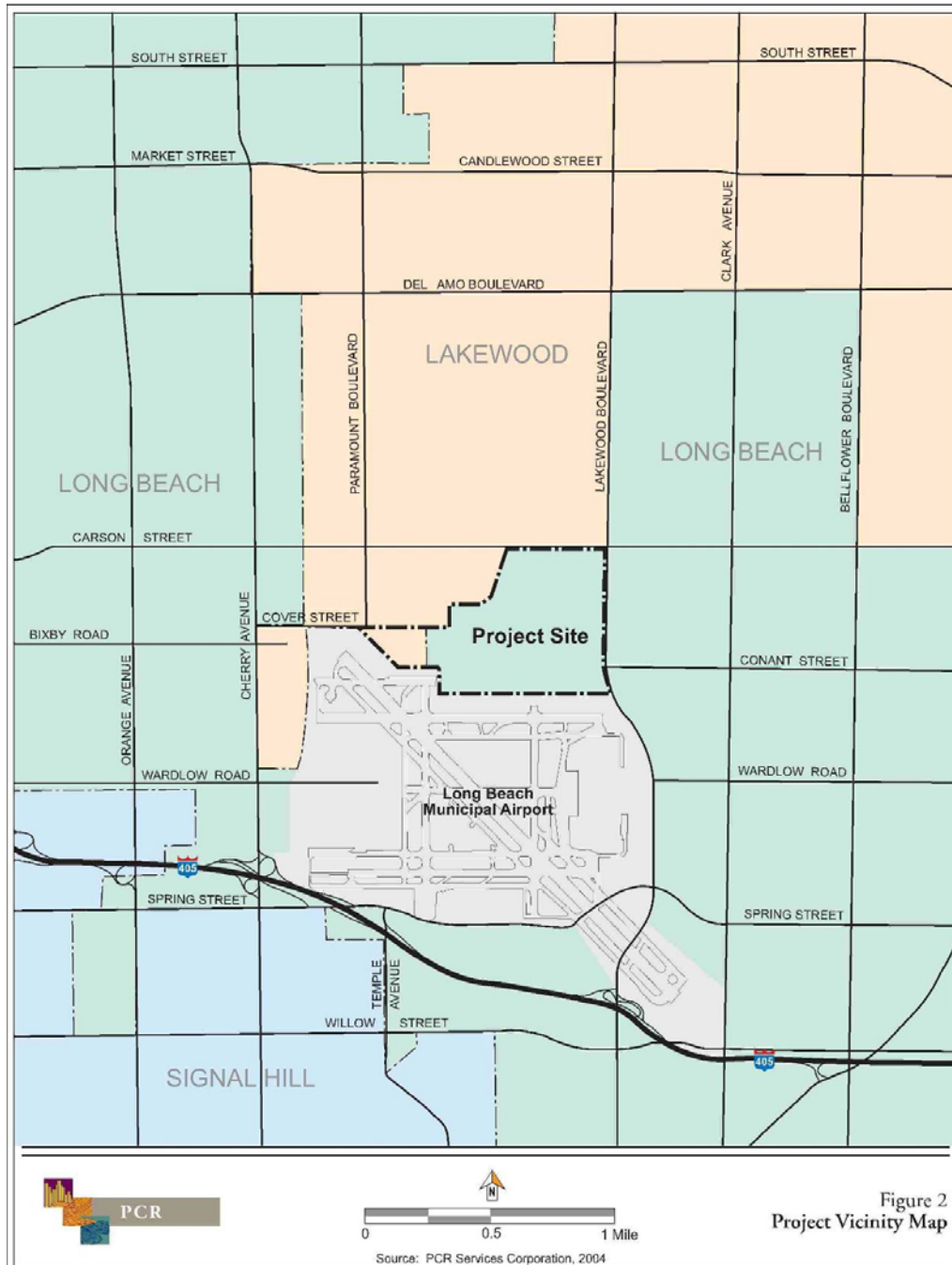


Figure 54 Project Location of PacifiCenter/Douglas Park

Source: City of Long Beach, *Draft Environmental Impact Report, PacificCenter @ Long Beach*, February 200,. www.longbeach.gov/apps/cd/projects/boeingir/.

property is a prime site, close to freeways and the Long Beach Airport, and that the city hopes the land will attract high-paying, high-technology jobs.⁶⁰⁵

In October 2001, it was reported that CTG Energetics, an Irvine environmental consulting company, was working with Boeing Realty to earn the project a “green” designation. Boeing’s expectation was that PacifiCenter, as the development was called at the time, would become

the nation's first master-planned development to meet the green certification standards of the U.S. Green Building Council. PacifiCenter was being designed to become a community within itself. The 2001 plans called for 2,513 residential units, two hotels, five million square feet of office space, and 150,000 square feet of retail space.

It was suggested that the project could also reduce emissions from vehicle use, since with so many employees living in a kind of college atmosphere, commuting would be cut drastically. Boeing planned to improve on this advantage by working with Long Beach Transit to bring a bus line onto the streets of the projects, as well as encouraging car pools and installing secure bicycle racks. PacifiCenter was also being designed to include storm-water management systems, on-site power generation, drought-resistant landscaping, and other green features.⁶⁰⁶

In February 2004, the *Draft Environmental Impact Report* for PacifiCenter was released for public comments. It included the latest two proposals for how the project could look. Three alternatives were included in the EIR: Boeing Realty's preferred plan, a "reduced-intensity alternative," and an "all-commercial alternative." Under the first two proposals, commercial space would include office, research and development, light industrial, retail, hotel, and aviation-related uses. Under the all-commercial plan, four million square feet of commercial and 1.1 million square feet of retail would predominate, with no residential units, hotels, nor parks. Boeing Realty officials said that the third option was the least-desired plan, and could create severe logistical transportation problems because of a proposed warehousing center. However, it was included as a response to those who were looking for a plan different than the others.⁶⁰⁷ The conceptual land use plan for the reduced intensity alternative is shown in [Figure 55](#).

In March 2004, Boeing Realty installed a new leadership team. Four neighborhood task forces were formed, with members chosen by neighborhood associations and meetings scheduled over several months to provide input about the project. Boeing Realty also met with representatives from Long Beach, Lakewood, and area school officials.⁶⁰⁸ In May 2004, reacting to community concerns about residential density, Boeing Realty significantly reduced the number of homes in the proposed development to 1,400 and renamed the development Douglas Park. When first conceived, the project called for more than 3,800 residences. The EIR listed two possible preferences—one with 2,500 homes and another with 1,400. The project had attracted considerable criticism from north Long Beach and Lakewood residents because of concerns about traffic, strains on area schools, and proximity to the busy airport.⁶⁰⁹ An aerial rendering of the completed project showing the proximity of the residential areas to the airport is shown in [Figure 56](#).

In August 2004, citing problems with locating new residences so close to Long Beach Airport, the city's Airport Advisory Commission voted 4–3 to support the proposed Douglas Park project as long as it did not have homes or apartments. Executives with Boeing Realty said that while they were disappointed with the vote, the commission's action was expected and was nothing more than an advisory opinion. Boeing Realty's focus was on future Planning

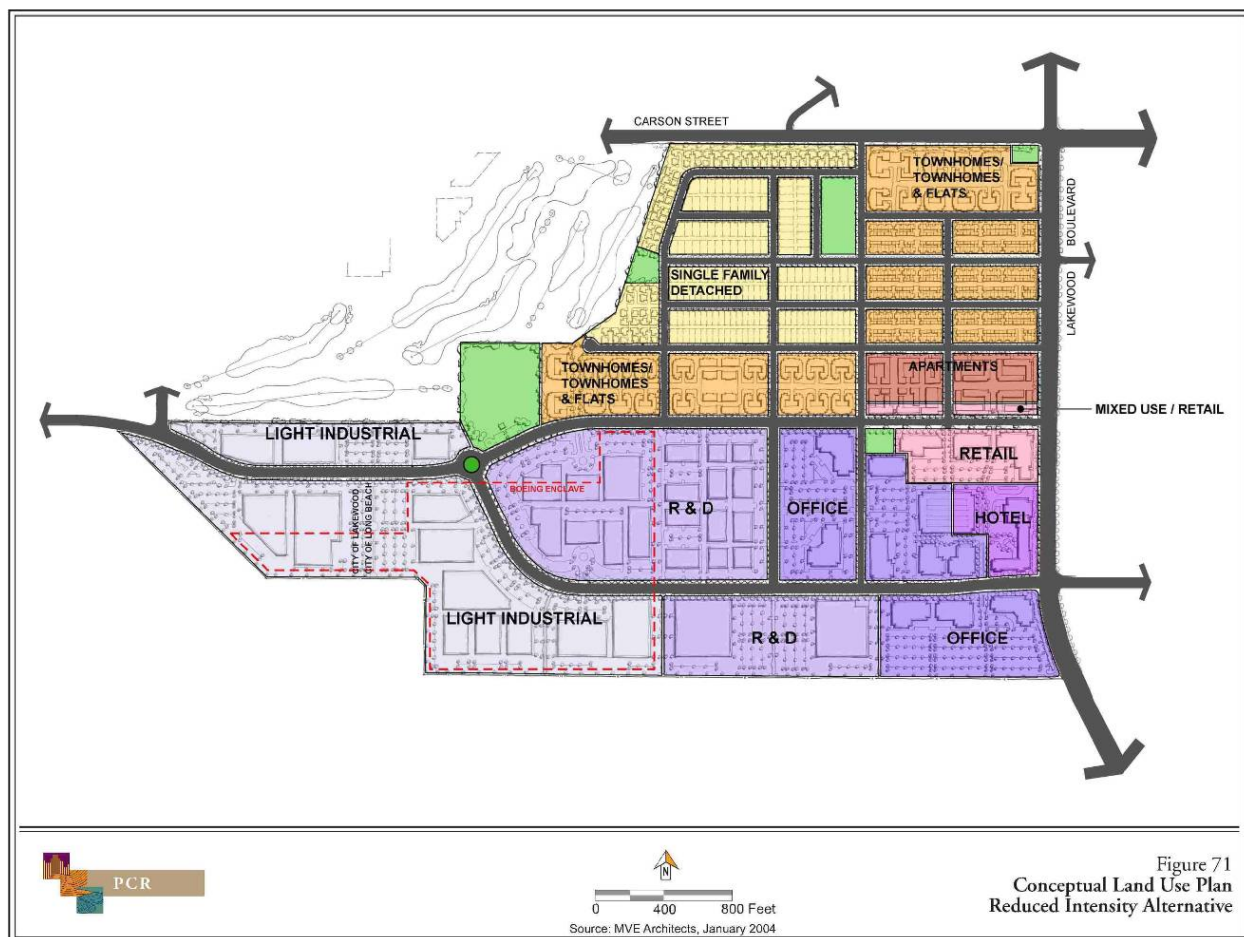


Figure 55 Conceptual Land Use Plan—Reduced-Intensity Alternative

Source: City of Long Beach, *Draft Environmental Impact Report, PacificCenter @ Long Beach*, February 2004, www.longbeach.gov/apps/cd/projects/boeingir/.

Commission and City Council votes, they said.⁶¹⁰ The development was unanimously approved by the city Planning Commission in early October 2004.⁶¹¹

Questions about safety and noise concerns affecting any new homes brought what appeared to be a strongly worded protest by the FAA, which stated in a September 22 letter that putting new residences adjacent to or near an airport was unacceptable. “We don’t consider homes built immediately next to or adjacent to airports to be a compatible land use,” said FAA spokesman Donn Walker. “That should be no surprise to anyone. Residential developments and airports do not make good neighbors.”⁶¹²

In October 2004, Boeing Realty obtained approval from the Los Angeles County Airport Land Use Commission, the California Department of Transportation, and the Department of Health that the project met compatibility plans, runway approach zone regulations, and federal and state noise standards arising from the project’s proximity to the airport. Boeing Realty project manager DeDe Soto said the closest planned home to a runway is 3,500 feet from the airport’s main runway, and 2,250 feet from a secondary runway. She indicated that Boeing Realty planned to institute an aviation agreement that would protect the city from any claims



Figure 56 Aerial Rendering of Douglas Park

Source: www.douglaspark.org/images.html, (accessed September 9, 2006).

against airport operations and require owners and tenants at Douglas Park to sign a covenant “stating they are aware of their proximity to the airport.”⁶¹³

In December 2004, as the city council prepared to debate Douglas Park, the FAA released an opinion that the proposed project was technically compatible with normal airport operations. The FAA was still concerned, however, that the project would introduce homes so close to the airport’s boundary. “Purchasers of these residences should not expect the City to take any action to mitigate aircraft noise at that site at the expense of the airport,” states the letter, written by David L. Bennett, FAA director of airport safety and standards. “The City should understand that the FAA will not support future restrictions on airport operations for the purpose of mitigating the impact of aircraft noise on these new residences,” Bennett wrote. Because Douglas Park fell outside of an existing noise contour, the project technically was in compliance.⁶¹⁴ In mid-December 2004, the city council approved the controversial project in an 8-1 vote. Backers said it could create up to 11,000 new high-paying jobs and a cluster of new homes and condos for a housing-starved market, although more than 60 residents and airport-area business representatives who attended the meeting opposed the project as long as it had housing.⁶¹⁵

In January 2005, Boeing announced plans to close its Long Beach manufacturing facility for the Boeing 717 in early 2006, immediately fueling speculation about the future use of the site.

The 90-acre facility is located east of Douglas Park, across Lakewood Boulevard. At the time, local real estate broker Robert Alperin said that it would likely become a mixed-use project like Douglas Park, with residential, retail, office, light industrial, parks, and schools.⁶¹⁶ The last Boeing 717 was completed in April 2006.⁶¹⁷

Demolition was completed at the Douglas Park site in 2005, and infrastructure work and grading began. Boeing Realty Corporation was planning to have the infrastructure design and grading completed in 2006 and to begin commercial development in spring 2007. Model homes might open in 2008.⁶¹⁸ In June 2005, it was reported that a group of Lakewood residents would be allowed to take a suit to trial alleging that the Douglas Park EIR ignored input, especially from the east side of Lakewood Village, where residents strongly opposed the 1,400 single-family homes and condos and 250 apartments units planned for the project. The city claimed that the group missed the 30-day period for challenging the EIR because the suit was filed on January 31, three days after the January 28 deadline. The project approved by the city council in December 2004 also included 3.3 million square feet of office, research, and light industrial uses, 200,000 square feet of retail, a hotel, and 12 acres of parks and open space.⁶¹⁹

In mid-May 2006, Boeing announced that it would no longer build the 200 single-family homes planned for Douglas Park near the Lakewood County Club. Boeing will work with Long Beach and Lakewood to redevelop that area, perhaps building condominiums and townhomes instead. Boeing claimed that the decision had nothing to do with the Boeing 717 facility closing across the street—the decision about what to do with that property had not been made.⁶²⁰ Boeing said the change was made because the standards for soil contaminants are stricter for single-family homes than for townhomes and condominiums. A Boeing official said that the change would not affect the project approval, but some council members expressed concern because residential development had been the most controversial component of the plan, with residents pushing for lower-density housing and airport advocates questioning the wisdom of homes so close to the airport.⁶²¹ The revised conceptual land use plan for Douglas Park is shown in [Figure 57](#).

In February 2007 the City Council approved the establishment of a Melo-Roos District covering the 82-acre commercial area of the project that would allow Boeing Realty to issue bonds to pay for part of the infrastructure improvements that would be eventually paid off through taxes on the property.⁶²² By the end of 2007 the first two parcels of land in the commercial and light industrial area had been sold.⁶²³

CHANGES IN LOCAL LAND USE

Apart from the redevelopment of the Boeing property adjacent to the airport, there has been relatively little recent change in land use around the airport. The residential areas that surround the airport have all been established for several decades, although homes continue to

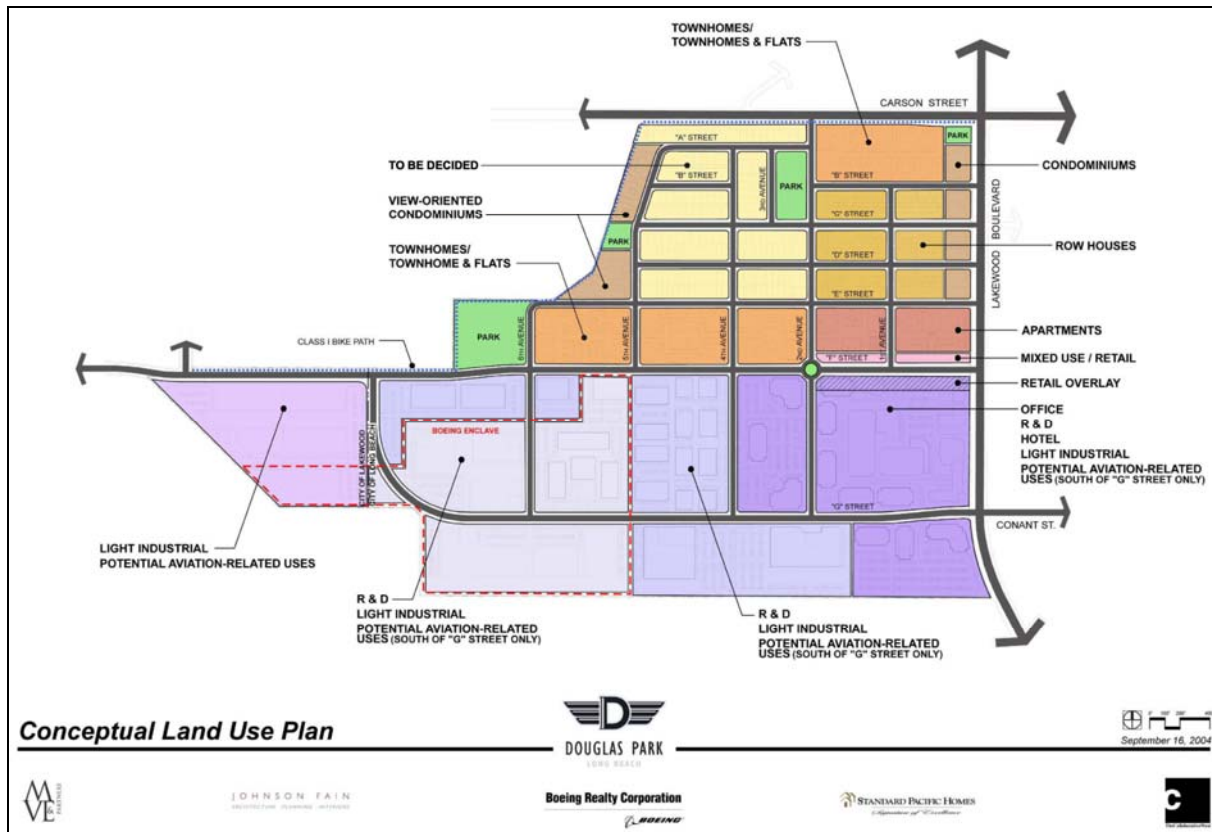


Figure 57 Revised Conceptual Land Use Plan of Douglas Park

Source: www.douglaspark.org/images.html (accessed September 9, 2006).

turn over to new owners, exposing new people to aircraft noise. Most of the changes have been in the commercial and industrial areas adjacent to the west and south boundary of the airport.

In the 1980s, Long Beach was embroiled in a bitter lawsuit against airlines and aviation groups over noise levels and the frequency of flights at Long Beach Airport. Left out of the debate were airport businesses, which found little support from the city. Even the pro-business Chamber of Commerce failed to acknowledge the vital effect of a healthy Long Beach Airport on the 200 or so companies that depend on it. In response, those businesses formed their own informal group in the early 1990s. Today that group of airport businesses is called the Airport Area Business Council (AABC), and it is a committee of the Long Beach Area Chamber of Commerce. The AABC's goal is to promote Long Beach Airport and the mutual interests of the businesses that thrive off it.⁶²⁴

In January 2000, with a strong economy, the end of noise litigation, and the expansion of Gulfstream Aerospace's completion and service operation, more than half a dozen construction projects around the airport had been completed recently, were in progress, or were planned. UPS completed its 8.2-acre Long Beach Gateway in late 1999. Kilroy Airport Center was constructing another building in its office park. The Long Beach Marriott was planning a 105-room expansion. AirFlite, a fixed-based operator, was considering building more covered hangar space. At an area of the airport known as Parcel J, Westland Construction, Inc., had

begun construction on seven 60,000-square-foot executive hangars. Derek Fretheim, executive director at Long Beach Area Transportation Resource Association, said, “There is a shortage in this region for corporate and general aviation hangar and tiedown space.”⁶²⁵

Construction on the second phase of the proposed Daugherty Sky Harbor development at Long Beach Airport began in September 2002. The project was expected to add five new buildings to the southwestern corner of the airport, including three main hangars for housing small general aviation aircraft. Tenants at the development were expected to include charter companies, a firm dealing in fractional jet ownership, a 5,000-square-foot restaurant, an aviation museum, and a general aircraft terminal facility. A 215,000-square-foot lot will be home to three buildings, including two hangars.⁶²⁶

The Long Beach office market continued to outperform the rest of the South Bay in the first quarter of 2003, according to a report by CB Richard Ellis. Suburban deals included a lease by Advanced Medical Management, Inc., at the Long Beach Airport Business Park, and Polar Tankers Inc., which signed a deal at the Kilroy Airport Center.⁶²⁷ In May 2003, the City of Long Beach released the *Airport Area Land Use/Development Update*, a comprehensive list of airport-area developments, from those under construction to projects in the proposal stage.⁶²⁸

Projects in the development update included two hotels, at least three new office buildings, and parking structures. Kilroy Airport Center has entitlements for a new five-story office building, five-level parking structure, and two additional office buildings with five and six stories, a surface parking lot, and a seven-story hotel. The Airport Business Park also has entitlements for 288,000 square feet of new office space. However, some business people believed that until Long Beach saw higher occupancy rates for commercial properties that would make these potential new developments attractive for potential tenants, even the plans that already had the legal entitlement to start building might take some time to become reality.⁶²⁹

EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS

The airport land use planning process around Long Beach Airport can best be described as completely ineffectual, in spite of the considerable success of the City of Long Beach at managing aircraft noise through severe restrictions on the growth of airline traffic at the airport. In the early 1950s, the airport acquired a considerable area of land as a buffer to the east that is now used as the Skylinks Golf Course, while an area to the north of the airport and northwest of the former Boeing plant in the city of Lakewood along the Isadore Creek is occupied by the Lakewood County Club. However, neither area is under the arrival and departure flight paths for the primary runway, and there are no equivalent buffer areas where they are really needed. The addition of a significant number of residential units in the immediate vicinity of the airport as part of the Douglas Park redevelopment will increase the community pressures to limit the level of activity at the airport. It is an ironic commentary on the state of the airport land use planning process in Los Angeles County that the ALUC, while

recommending that residential uses be excluded from the Douglas Park development, nonetheless had to agree that these uses were consistent with the CLUP.

In fact, although the CLUP was most recently updated in December 2004, this revision was limited to minor changes to reflect the development of a separate *Land Use Compatibility Plan* for Fox Airfield. The Airport Influence Area maps were added in May 2003 to comply with changes in state law, but apart from this, the Los Angeles County CLUP has been unchanged since it was first adopted in December 1991. Although the county includes the largest commercial airport in the state (Los Angeles International [LAX]), two secondary commercial airports with significant land use compatibility problems (Long Beach Airport and the Bob Hope Burbank Airport), and several major general aviation airports surrounded by dense urban development, the level of detail of the treatment of each airport in the CLUP is so minimal as to be almost useless, and the little information that is provided is completely out of date. It may be no coincidence that the LA County Regional Planning Commission serves as the ALUC. The commission obviously has many responsibilities, of which airport land use planning is only one, and apparently a fairly minor one at that. Unfortunately, the number and size of the airports in Los Angeles County and the complexity of the land use planning issues that need to be addressed could easily require the full-time attention of a dedicated ALUC. With recent decisions by the City of Los Angeles to limit the growth of traffic at LAX to 78 million annual passengers, so as to shift the future growth in air travel in the region to secondary airports, airport land use planning issues and controversies at those airports will become even more complex and sensitive. Without devoting far more time and resources to airport land use planning in the county, it seems unlikely that the ALUC will be able to contribute much to the resolution of these challenges.

SUMMARY

Long Beach Airport presents an interesting example of airport land use compatibility planning from several considerations. The redevelopment of the Boeing property adjacent to the airport to a mixed-use development called Douglas Park raises important questions about the appropriateness of current land use compatibility criteria as they relate to residential development in proximity to airports. Although the planned residential units have been located outside the Airport Influence Area and the 60 dB CNEL contour, and in fact the majority of the residential units are outside the 55 dB CNEL contour, the residential area lies directly under the flight path of one of the general aviation runways and between about a half-mile and a mile from the main air carrier runway. As a result of the proximity to the airport, the Los Angeles County ALUC recommended removing residential uses from the project, although they found that the planned uses were consistent with the CLUP.

A second consideration is the potential impact of expanded airline service at smaller secondary airports. Over the years, the City of Long Beach has implemented a number of measures to limit aircraft noise at the airport, including a limit on the number of scheduled commercial aircraft operations and a night curfew. Federal law now precludes other cities from imposing

similar restrictions, but the Long Beach restrictions were grandfathered in. Recent expansion of airline service at the airport has now used up all the available slots, and regional efforts to redistribute growth in air traffic from LAX to the secondary airports in the Southern California region appear likely to increase pressure on the city of Long Beach to find ways to allow more flights, although community groups are strongly opposed to this.

As a result of these concerns, there has been considerable opposition to the proposed expansion and modernization of the airport passenger terminal, with community groups expressing concern that providing the amount of space and number of gates proposed by the airport would allow the airlines to increase the number of flights above the current limit. In fact, they could only do this if the current ordinance was overturned or modified, and they could work to achieve this even if the passenger terminal was not expanded, since they have been operating out of the existing inadequate facilities for some time already. This brings up the question of the extent to which it is possible to limit the growth in air service at an airport by limiting the number of gates or size of the terminal facilities. Although this is not directly related to airport land use planning, it raises important questions about the ability of the CNEL metric to adequately reflect the community perceptions of the effect of increased aircraft operations on the level of aircraft noise. Community groups appear to be much more concerned about the number of operations than the extent of the noise contours, since it would be possible to both increase the number of aircraft operations and reduce the extent of the noise contours by using quieter aircraft. Furthermore, most of the opposition to additional flights comes from communities well outside the 65 dB CNEL contour.

APPENDIX J

CASE STUDY—JACQUELINE COCHRAN REGIONAL AIRPORT

Jacqueline Cochran Regional Airport (TRM), Riverside County

Airport location	Riverside County
Airport size	1,752 acres
Type of facility	General aviation
Level of airport activity	76,000 aircraft operations in 2005
Curfew	None, 24-hour operation
Most recent ALUCP	2004
Most recent <i>Airport Master Plan</i>	2004
Nearby cities (population 1/1/06)	Coachella: 35,300; Indio: 71,900; La Quinta: 38,500
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Presently surrounded by agriculture and open space • Rapid population growth in the Coachella Valley and attempts to expand nearby cities via large annexations in the direction of the airport
Major issues	Encroaching residential development, particularly development of Kohl Ranch to the south of the airport
Approaches to solving airport/community conflicts	Establishment of the Coachella Valley Enterprise Zone in a large area that includes the airport to encourage business development, which could help establish compatible land uses in the immediate vicinity of the airport
Stakeholder groups	Vista Santa Rosa Association (representing a nearby rural, horse-oriented community)
Integration with smart growth policies	None: due to the rural nature of the area there has been little consideration given to smart growth policies
ALUC agency	Riverside County
ALUC staff contact name	John Guerin
ALUC staff contact phone	(951) 955-5132
ALUC staff contact e-mail	jguerin@rctlma.org

INTRODUCTION

Jacqueline Cochran Regional Airport is located in the Coachella Valley in eastern Riverside County, south of the City of Coachella and just west of the unincorporated community of Thermal, as shown in [Figure 58](#). It is owned and operated by Riverside County and managed by the county Economic Development Agency. Formerly known as the Desert Resorts Regional Airport, it was renamed in March 2004 to honor a local woman aviator who was the first woman to break the sound barrier and who set many flying records. The airport currently has no commercial air service and primarily serves general aviation aircraft visiting the nearby Desert Resorts region.



Figure 58 Jacqueline Cochran Regional Airport Vicinity

Source: MapQuest.com, Inc., www.mapquest.com (accessed December 2005).

The region includes the communities of Palm Springs, Palm Desert, Indian Wells, La Quinta, Rancho Mirage, Cathedral City, Coachella, Indio, and Thermal, as well as a large number of spas and resorts offering golf and tennis activities and hosting many well-known professional tournaments. There are several private country club communities within a short drive of the airport. Many of the communities between Palm Springs at the west end of the valley and La Quinta a few miles northwest of Jacqueline Cochran Regional Airport (JCRA) have been growing rapidly with retirees and second homes. In consequence, the airport serves a large number of private, corporate, and charter aircraft.

JCRA is located in an unincorporated area of Riverside County. There are a number of Indian reservations in the surrounding area, including an Augustine Indian reservation just beyond the northwest corner of the airport. The southern boundary of Coachella lies a short distance to

the north of the airport and the eastern boundary of La Quinta lies a few miles to the west. The area between the airport and La Quinta is known as Vista Santa Rosa, as shown on [Figure 59](#).

Airport land use compatibility planning for all airports in Riverside County is the responsibility of the Riverside County Airport Land Use Commission (ALUC), which until May 2006 was staffed by the county Economic Development Agency and has since then been staffed by the county planning department.

AIRPORT LAND USE PLANNING

At present the area around JCRA is largely agricultural and low-density rural residential. The flight paths for aircraft departing to the north and arriving from the north generally pass to the east of most residential areas in Coachella, and the land to the south of the airport is currently undeveloped. However, development is starting to spread east from La Quinta and south from Coachella, and a major planned development has been proposed for an area immediately to the south of the airport called the Kohl Ranch. Although protection from residential encroachment has not been an issue in the past, this situation is changing.

History of Land Use Issues in the Airport Vicinity

The former Desert Resorts Regional Airport has long been the subject of grand plans that did not come to pass. Golf course proposals came and went, not once but twice. The talk then turned to a residential airpark for wealthy corporate executives who could park their private jets amid the fields of the lower Coachella Valley. In September 1999, Riverside County officials believed they had found the right recipe, a 610-acre industrial park geared to manufacturing. An existing state Enterprise Zone and federal Empowerment Zone meant that there were plenty of tax breaks already available to employers who set up shop in the area. Officials wanted to top that off with a Foreign Trade Zone, which they believed would be an extra incentive for companies that are attracted to the area but hesitant about the idea of doing business in the desert. Board members of the Desert Resorts Regional Airport Authority agreed that a trade zone would help attract new business and instructed county staff to pursue the possibility.⁶³⁰ However, to date no Foreign Trade Zone has been established.

At 56 square miles and covering 35,000 acres, the Coachella Valley Enterprise Zone was one of the biggest of its kind in California. By March 2003, it was credited with creating about 3,500 new jobs at 250 businesses ranging in size from mom-and-pop grocery stores to the immense I-10 Auto Mall, and in late 2002, a major guitar manufacturer. Yet for much of its brief life, the Coachella Valley Enterprise Zone existed in relative obscurity. Created by the state legislature in late 1991, the zone had relatively few takers in its first six years. Things have been on the upswing since the late 1990s, with eligible employee vouchers going from 56 in 1997 to 1,210 in 2002. The zone includes all of Coachella and Indio, plus the Thermal airport area and a long stretch of unincorporated Riverside County land along Interstate 10.⁶³¹

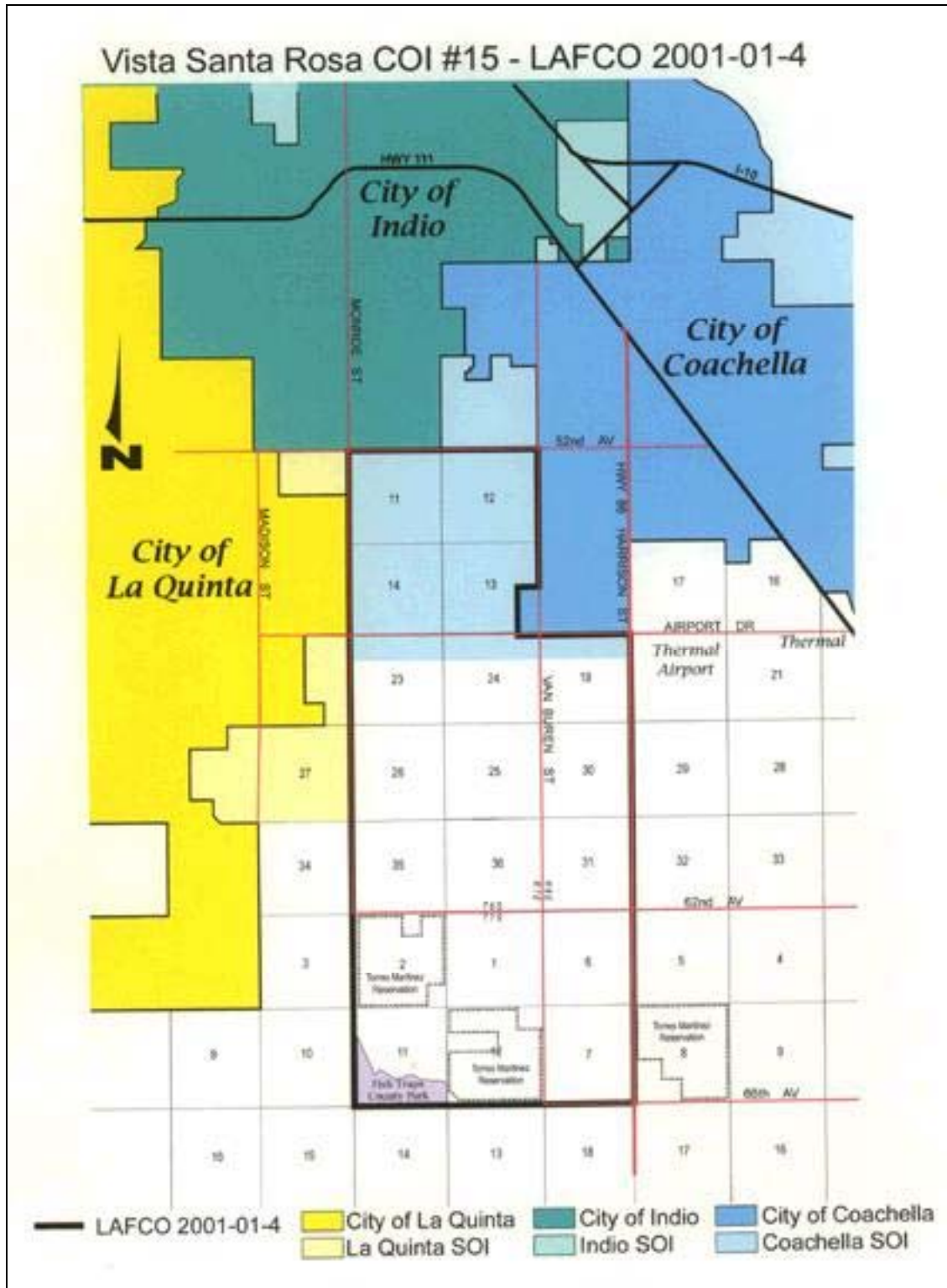


Figure 59 Surrounding Cities and Communities

Source: Vista Santa Rosa, "Where We are Located," www.vistasantarosa.com/where.html.

Companies locating in the zone can get a hiring credit against state income taxes for the first five years of each new employee's tenure. There are also credits on sales and use taxes on equipment, as well as other business-related expenses. State law mandates that enterprise zones created after 1990 only have a 15-year life, meaning zones like the Coachella Valley zone were scheduled to expire in 2006. By 2003, state legislators had several measures on the table that would either extend existing zones or create additional ones around the state.⁶³² In April 2003, the Senate Housing and Community Development Committee approved a bill to add five years to the life of the Coachella Valley Enterprise Zone. The measure, Senate Bill 172, then went to the Senate Appropriations Committee.⁶³³ This bill never passed. However, on November 3, 2007, Governor Schwarzenegger approved a 15-year renewal of the Enterprise Zone.⁶³⁴

The post-World War II building boom helped the middle class grow, and air conditioning brought year-round residents to the desert, which turned into a major resort area. It also helped create communities where the best lands and homes with a view are often owned by part-time residents and where working-class people are confined to certain neighborhoods or walled out of others. Developers, who find it cheaper to build new communities on the fringe, rather than reinvest in faltering downtowns, perpetuate the pattern. The year-round population of the Coachella Valley doubled from about 138,000 in 1980 to about 275,000 in 1999, and is expected to increase by 200,000 people, reaching 475,000 by 2020. By 2003, developers and some government officials saw the buildout of La Quinta, the fastest growing city in the state, as a foregone conclusion.⁶³⁵

Cathedral City was an unincorporated community of 4,130 residents in 1980. By 1990, there were subdivisions with 30,085 newcomers and strip malls. Officials expect some 49,000 residents by 2020. It is a similar story in La Quinta, which in 1980 was an unincorporated area of 3,328 residents. A decade later, it had blossomed into a resort city with 11,382 residents. Demographers in 1997 predicted that the city would have some 20,400 residents by the year 2000. But La Quinta had already surpassed that in 1999, with the count at 21,763. The once-tiny community is expected to have 30,530 residents in 2020 and probably will annex lands to the south and east. Meanwhile, businesses in nearby downtown Indio languish near extinction.⁶³⁶ In late 1999, the La Quinta City Council studied possible annexation of 13,277 acres of unincorporated Riverside County land, including Vista Santa Rosa and the then Desert Resorts Regional Airport. However, the airport would have remained under Riverside County control.⁶³⁷

Surrounded on three sides by the fast-growing cities of Coachella, Indio, and La Quinta, the residents of the 22-square-mile community of Vista Santa Rosa have found themselves divided about which direction to take. In 2001, Vista Santa Rosa residents applied to the Riverside County Local Agency Formation Commission (LAFCO) for a Community of Interest designation. According to the Vista Santa Rosa web site, their goal was to “preserve the land and lifestyle in our portion of the valley.”⁶³⁸ Figure 59 shows the proposed boundary of the approximately 18-1/2-square-mile Community of Interest outlined in black.⁶³⁹ However,

after a public hearing on August 30, 2001, LAFCO voted to deny the application and suggested that the various jurisdictions meet and discuss the boundaries and land use issues and work out a plan for the future.

In 2003, Coachella was reported as taking formal steps that could have led to annexation of an undetermined portion of Vista Santa Rosa. Mayor Juan DeLara said Coachella was interested in incorporating land belonging to only those who favored aligning themselves with the city. Indio, too, had been in discussions with some Vista Santa Rosa residents about how the city would manage the land, if annexed. “The city does not have an interest in trying to kingdom-build and expand its boundaries,” Indio Mayor Michael Wilson said. If Vista Santa Rosa landowners choose to become part of Indio, Wilson said the city would preserve the area’s equestrian identity. Wilson said he also believed some on the La Quinta City Council had an interest in expanding southeastward to envelop the Desert Resorts Regional Airport, which at the time was within Coachella’s sphere of influence, although La Quinta Mayor Don Adolph said the city had no designs on the county-owned airport.⁶⁴⁰

In 2003, new county policies, designed to limit residential growth in Vista Santa Rosa and to cluster future commercial development, drove some property owners to pursue annexation by the surrounding cities. At least 80 Vista Santa Rosa landowners sent letters to the La Quinta City Council, asking the resort community to annex them before Coachella, which was working to shed its image as a bedroom community for the valley’s working poor. Many longtime residents said they would rather avoid any annexations and remain in the county. Yet, with their land stretching before developers who were steadily moving southward around the Santa Rosa Mountains toward the communities of Thermal and Oasis, that prospect was looking dimmer by the day.⁶⁴¹

At the beginning of 2006, the LAFCO considered a proposal to expand the Sphere of Influence (SOI) boundaries for La Quinta to the west of Thermal, and Indio and Coachella to the north of Thermal. The proposal would have added 16 square miles to the 33,000-person city of La Quinta and 25.5 square miles to the 29,200-person City of Coachella (including all of Thermal and the airport). Riverside County LAFCO reviewed a revised *Initial Study and Negative Declaration* for the Coachella and La Quinta SOI changes in April 2006. LAFCO rejected Coachella’s request to include Thermal, and the SOI under study was limited by Avenue 62, still an increase of 23,374 acres to the south toward Jacqueline Cochran Airport.⁶⁴² Avenue 60 is the airport boundary and the Airport Influence Area extends beyond Avenue 62. Most of Vista Santa Rosa was added to La Quinta’s SOI, and Indio’s SOI was expanded to the north (in the opposite direction from the airport).⁶⁴³

Airport Comprehensive Land Use Plan

The Riverside County ALUC adopted an updated version of the *Riverside County Airport Land Use Compatibility Plan* (ALUCP) in October 2004. This consists of a Policy Document (Volume 1) and two other volumes that contain background data for the various airports. Volume 2 covers the west county airports; Volume 3 covers the east county airports, including

JCRA. Volume 1 contains an introductory chapter, a chapter on countywide policies, and a chapter with individual airport policies and compatibility maps for each airport. It also contains appendices that include legislative and regulatory requirements, land use compatibility guidelines, project referral forms, checklists, and sample implementation documents.

The ALUCP designates the Airport Influence Area (AIA) boundary as the outer boundary of the Federal Aviation Regulations (FAR) Part 77 conical surface with an extension to the south to allow for a future precision instrument approach path, as shown in [Figure 60](#). The ALUCP also defines a set of noise compatibility contours based on an ultimate traffic level of 220,000 annual aircraft operations, as shown in [Figure 61](#).

The land use compatibility criteria for noise are defined with respect to the noise compatibility contours shown in [Figure 61](#) as part of countywide policies. These generally are not tailored to the local circumstances of individual airports, although the criteria are adjusted downward by 5 dB for two low-activity outlying airports, Chiriaco Summit and Desert Center. Single-family residential uses are considered marginally acceptable in areas between 55 and 60 dB CNEL and normally unacceptable in areas between 60 and 65 dB CNEL. Multifamily residential uses are considered normally acceptable in areas between 55 and 60 dB CNEL and marginally acceptable in areas between 60 and 65 dB CNEL. Marginally acceptable uses are allowable under conditions where outdoor activities are minimal and construction features provide sufficient noise attenuation, such as installation of air conditioning so that windows can be kept closed. While new homes in the Coachella Valley are almost certain to have air conditioning, the climate is such that outdoor activities are quite likely.

Furthermore, for much of the year residents may want to have windows open. This suggests that single-family residential use should be restricted to areas outside the 55 dB CNEL contour, with multifamily residential use restricted to areas outside the 60 dB contour. Based on the noise compatibility contours shown in [Figure 61](#), restrictions on single-family residential use could extend as far south as Avenue 64, with restrictions on multifamily residential use as far south as Avenue 63 under the flight path to Runway 17/35.

Airport Master Plan

An *Airport Master Plan* update was completed in December 2004.⁶⁴⁴ The plan proposes a 1,500-foot extension to Runway 17/35 to the south, with associated property acquisition and taxiway extensions. There would also be additional property acquisition and release on the north and southwest boundaries of the airport. The master plan incorporates the FAR Part 77 obstruction surfaces and aircraft noise contours developed for the update of the ALUCP, ensuring that the *Airport Master Plan* is consistent with the ALUCP.

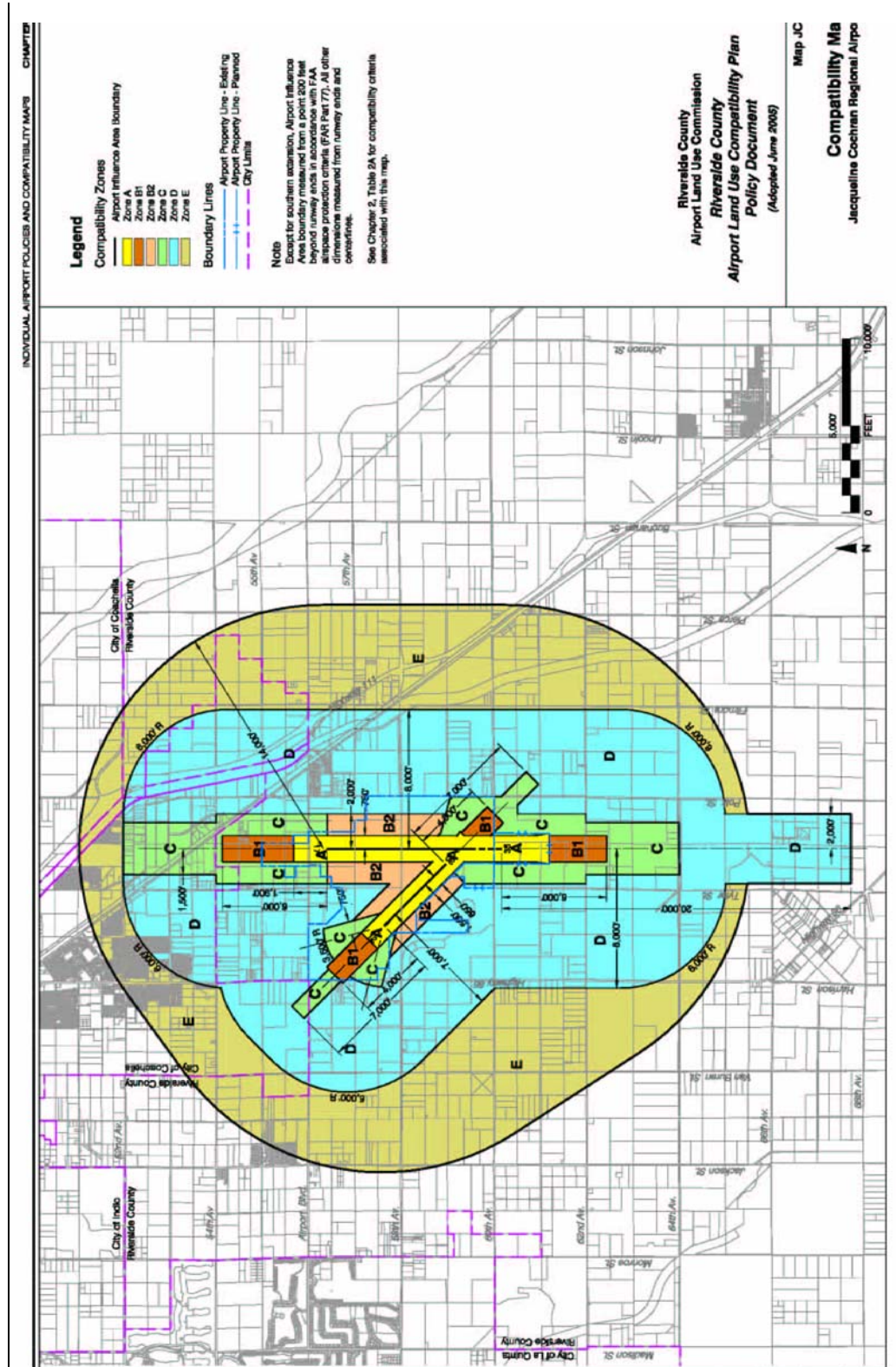


Figure 60 Airport Land Use Compatibility Map

Source: *Riverside County Airport Land Use Compatibility Plan*, October 2004, www.rcalc.org/plan_new.asp (accessed October 16, 2006).

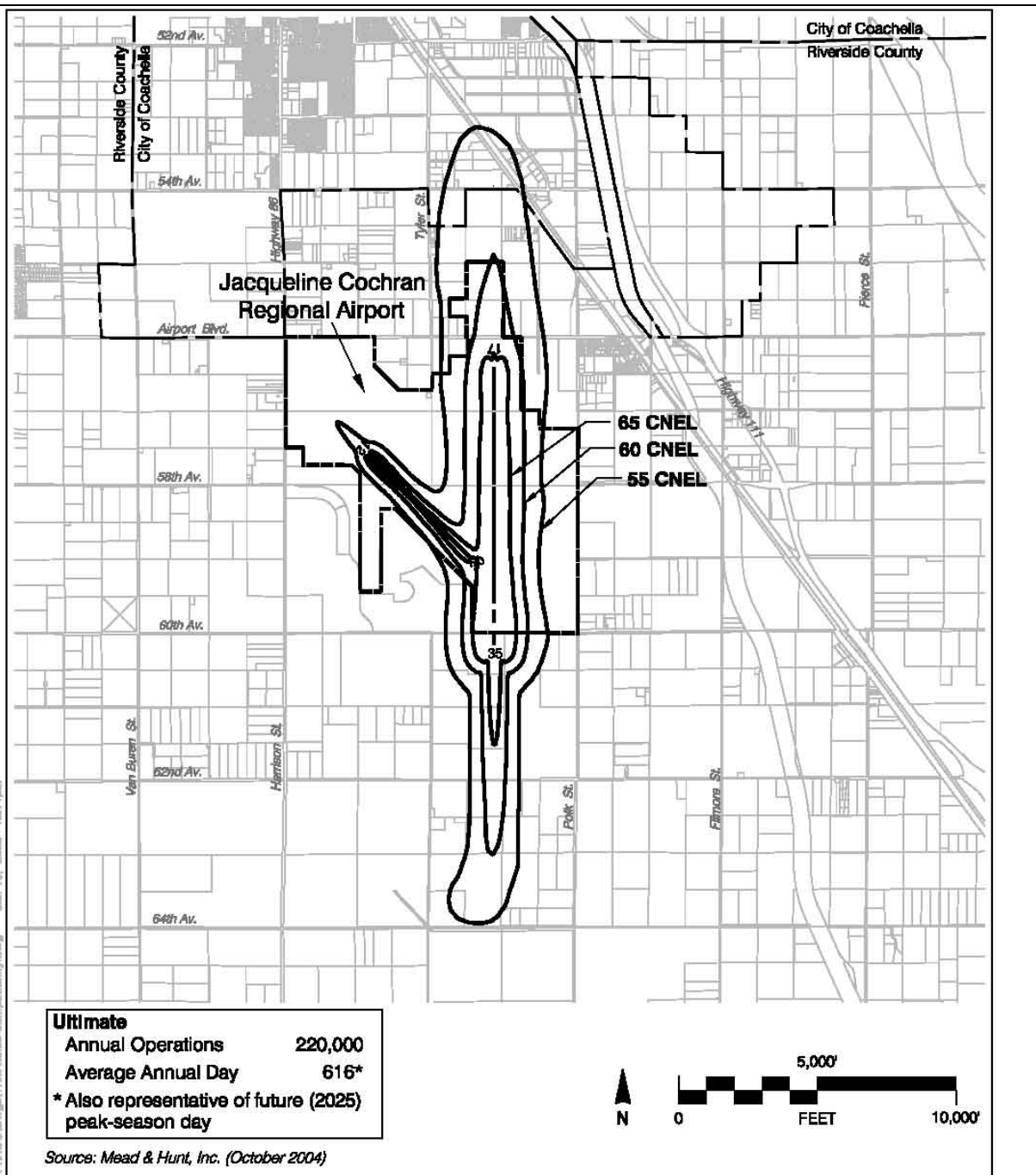


Figure 61 Noise Compatibility Contours

Source: Riverside County Airport Land Use Compatibility Plan, October 2004, http://rcaluc.org/plan_new.asp (accessed October 16, 2006).

Role of Surrounding Jurisdictions

Although land use planning for the area surrounding JCRA has been under the jurisdiction of Riverside County until the present, with the recent changes in the SOIs of the cities of Coachella and La Quinta described above, this situation is changing. The SOI for Coachella,

which had extended to just south of the northern boundary of the airport west of Harrison Street (which forms the western boundary of the airport) but had not extended south of the city boundary to the east of Harrison Street, now extends to Avenue 62, a mile south of the airport, east of Harrison Street. The SOI for La Quinta now extends east to Harrison Street south of the city boundary of Coachella. Thus, the land use planning decisions of the cities of Coachella and La Quinta will significantly affect the immediate area surrounding the airport.

POTENTIAL ROLE AND IMPACT OF SMART GROWTH

Given the rural nature of the area, little consideration has been given to smart growth policies. The city of Coachella is fairly poor and is anxious to attract economic development to provide employment. Further west, the resort communities are primarily residential and recreational. The overall development style is very low density on a traditional suburban model and completely automobile oriented. The entire development pattern in the Coachella Valley is the complete antithesis of smart growth concepts, and presumably this environment is exactly what those moving to the area are seeking.

The development of Kohl Ranch to the south of the airport offers an opportunity for a more integrated community, but it remains to be seen to what extent this opportunity is realized. In any event, given the large amount of undeveloped land surrounding the airport, the project is in the worst possible location imaginable, from the perspective of both airport land use compatibility and smart growth, directly under the flight path to the south of the primary runway and separated from the city of Coachella by JCRA, which occupies a site approximately two miles square.

CHANGES IN LOCAL LAND USE

The development of Kohl Ranch will be the first significant change in land use in the area around the airport. A specific plan for the area has been approved by Riverside County.⁶⁴⁵ The location of the development is shown in [Figure 62](#), and the approved specific plan is shown in [Figure 63](#). The proposed land use includes an area of open space directly under the flight path for Runway 17/35 south of the current airport boundary along Avenue 60, extending south to the realigned Avenue 60. Beyond the realigned Avenue 60, the plan envisages a mixture of office and commercial uses, with some high-density residential uses to the west of the flight path. South of Avenue 62, less than a mile from the end of the planned runway extension, is an area of low-density residential development with some medium-density residential use on either side of the extended runway centerline. The low-density residential use between Avenue 62 and Avenue 64 under the flight path for Runway 17/35 appears to be incompatible with the criteria in the latest update of the ALUCP.

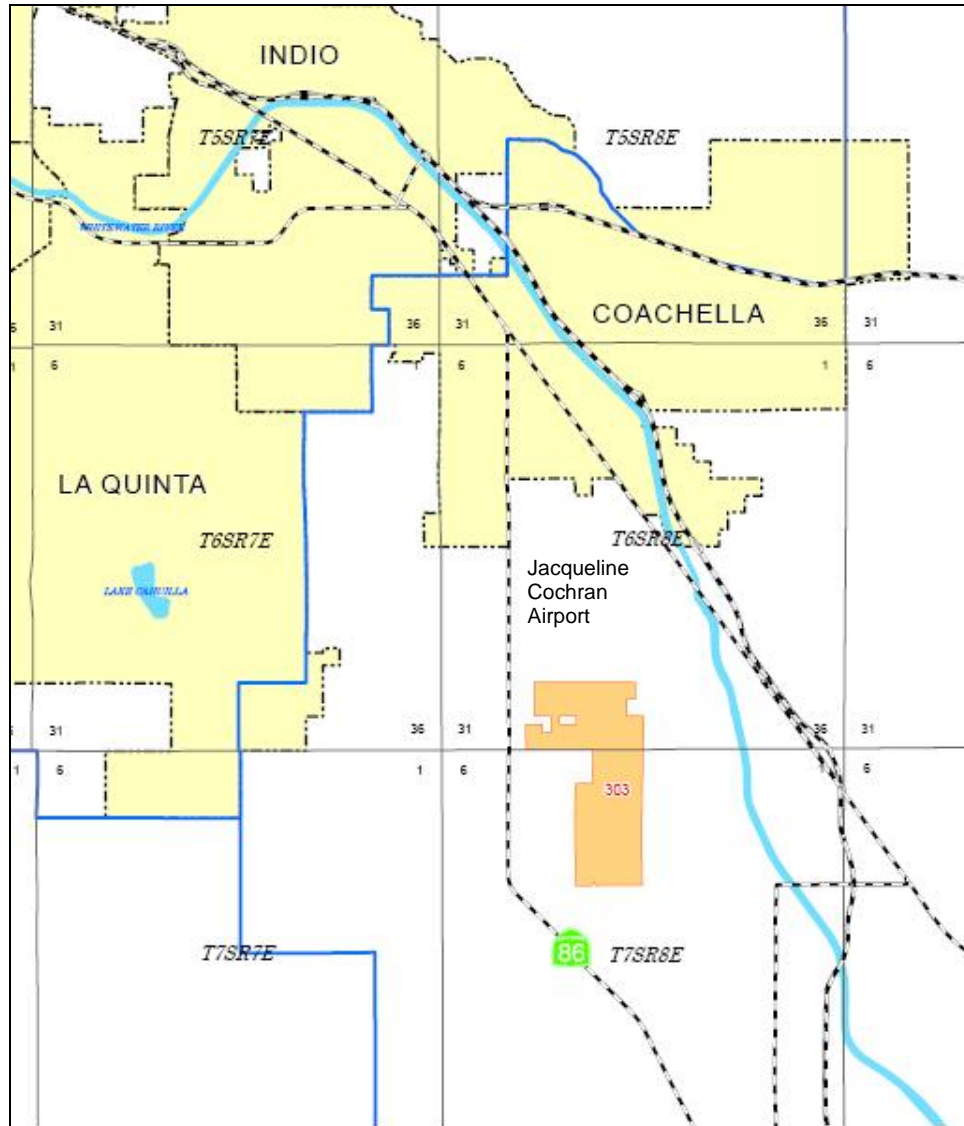


Figure 62 Location of Kohl Ranch Specific Plan

Source: Riverside County Planning Department, *Countywide Approved Specific Plan Map*, May 2005, www.tlma.co.riverside.ca.us/planning/content/splans/sp_database.html (accessed October 16, 2006).

EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS

At this time, it is difficult to assess the effectiveness of the airport land use planning process at JCRA because development pressures are not yet occurring in the vicinity of the airport, with the exception of the Kohl Ranch project. In many ways, the airport is well placed to prevent encroachment of incompatible development. The airport is owned and operated by the County of Riverside, which until recently also had land use planning jurisdiction over the surrounding area, and until May 2006 the same county agency that managed the airport and also staffed the county ALUC. After May 2006 the ALCUC has been staffed by the county planning

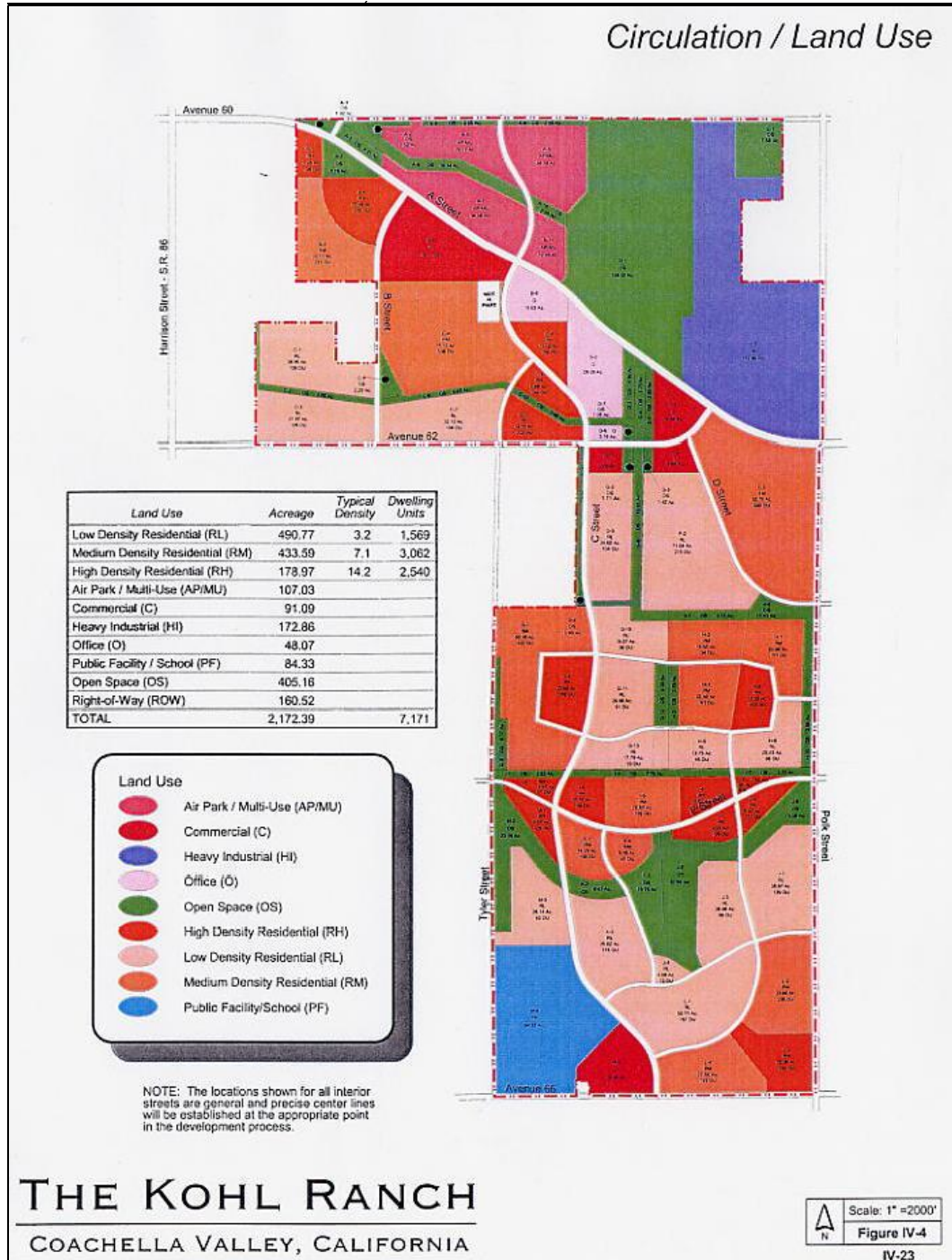


Figure 63 Kohl Ranch Specific Plan

Source: Riverside County Planning Department, *Kohl Ranch Specific Plan Map*, May 2005, www.tlma.co.riverside.ca.us/planning/content/splans/sp_database.html (accessed October 16, 2006).

department. The ALUCP for the airport and the airport master plan have been updated recently. All the elements are in place to ensure that development in the surrounding area is appropriately controlled.

However, the changes in the SOI of the adjacent cities have made it critically important that their land use planning is consistent with the ALUCP. This is likely to become increasingly important with the development of Kohl Ranch, since the availability of utilities, the provision of schools and commercial and retail activities, and improvement to the roads in the area are likely to attract other development. The approval of detailed development plans for Kohl Ranch will also need to address the potential incompatibility between some of the planned residential areas and the ALUCP.

Jacqueline Cochran Regional Airport is a good example of a general aviation airport in a predominantly rural area that is starting to experience residential development in the surrounding area. At present it is largely surrounded by agricultural land and very low-density rural residential uses, with the small unincorporated community of Thermal on its northeast boundary. However, a large mixed-use development—Kohl Ranch—has been planned immediately to the south of the airport, and the nearby cities of Coachella and La Quinta have extended their designated planning spheres of influence to the area surrounding the airport. Cities to the northwest of the airport in the so-called Desert Resorts Region have recently experienced the rapid growth of resorts, second homes, and retirement communities, and this development is starting to spread eastward toward the airport. Largely as a result of these development patterns, the airport has been experiencing a growth in high-end general aviation activity from private jets and business and corporate aircraft visiting the region. Effective land use compatibility planning will be required to prevent new residential communities from encroaching on the airport and resulting in pressures to limit aircraft activity.

SUMMARY

The airport is owned and operated by Riverside County and managed by the county Economic Development Agency, which until recently also staffed the county Airport Land Use Commission. Also until recently, the county has also been responsible for land use planning for the area around the airport. Consequently, the county has been in an excellent position to ensure that development in the vicinity of the airport is planned appropriately, and within the last two years has updated both the *Airport Master Plan* and the *Airport Land Use Compatibility Plan* for all the county airports. This will become increasingly important as the cities of Coachella and La Quinta begin to play a larger role in land use decisions near the airport. Despite the strong position of the county to manage development around the airport appropriately, the specific plan for the Kohl Ranch development, which was approved by the county, appears likely to result in incompatible residential development under the airport flight path unless significant changes are made.

APPENDIX K

CASE STUDY—FRENCH VALLEY AIRPORT

French Valley Airport (F70), Riverside County

Airport location	Riverside County
Airport size	261 acres
Type of facility	General aviation
Level of airport activity	98,000 aircraft operations (year ending 3/31/2006)
Curfew	None, 24-hour operation
Most recent ALUCP	2007
Most recent <i>Airport Master Plan</i>	1995; airport layout plan updated November 2003
Nearby cities (population 1/1/06)	Murrieta: 93,300; Murrieta Hot Springs (unincorporated): 2,948 (2000 census); Temecula: 94,300
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Located in rapidly developing suburban area • Traffic pattern originally on side of airport away from residential development, but recent development plans approved for area completely surrounding airport
Major issues	Encroaching residential development
Approaches to solving airport/community conflicts	<ul style="list-style-type: none"> • Specific plans for development in the area surrounding the airport have designated the areas immediately adjacent to the airport for industrial and commercial uses • Residential development kept outside the 55 dB CNEL contour • Requirement for avigation easements and purchaser notification for homes near airport
Stakeholder groups	None identified, although planned communities around airport still developing
Integration with smart growth policies	None: surrounding development is primarily residential to meet housing needs of employment centers elsewhere in the region
ALUC agency	Riverside County
ALUC staff contact name	John Guerin
ALUC staff contact phone	(951) 955-5132
ALUC staff contact e-mail	jguerin@rctlma.org

INTRODUCTION

French Valley Airport is a general aviation airport located in southwestern Riverside County adjacent to the cities of Murrieta and Temecula, as shown in [Figure 64](#). The airport is located on State Highway 79 (Winchester Road) and lies in an unincorporated area of Riverside County that has been largely undeveloped but is now experiencing rapid suburban development. The airport is owned and operated by Riverside County and managed by the county Economic Development Agency. Recently, it has been the busiest general aviation airport in the county. It serves the nearby Interstate Highway 15/215 corridor, which has a large number of high-tech and manufacturing businesses.⁶⁴⁶

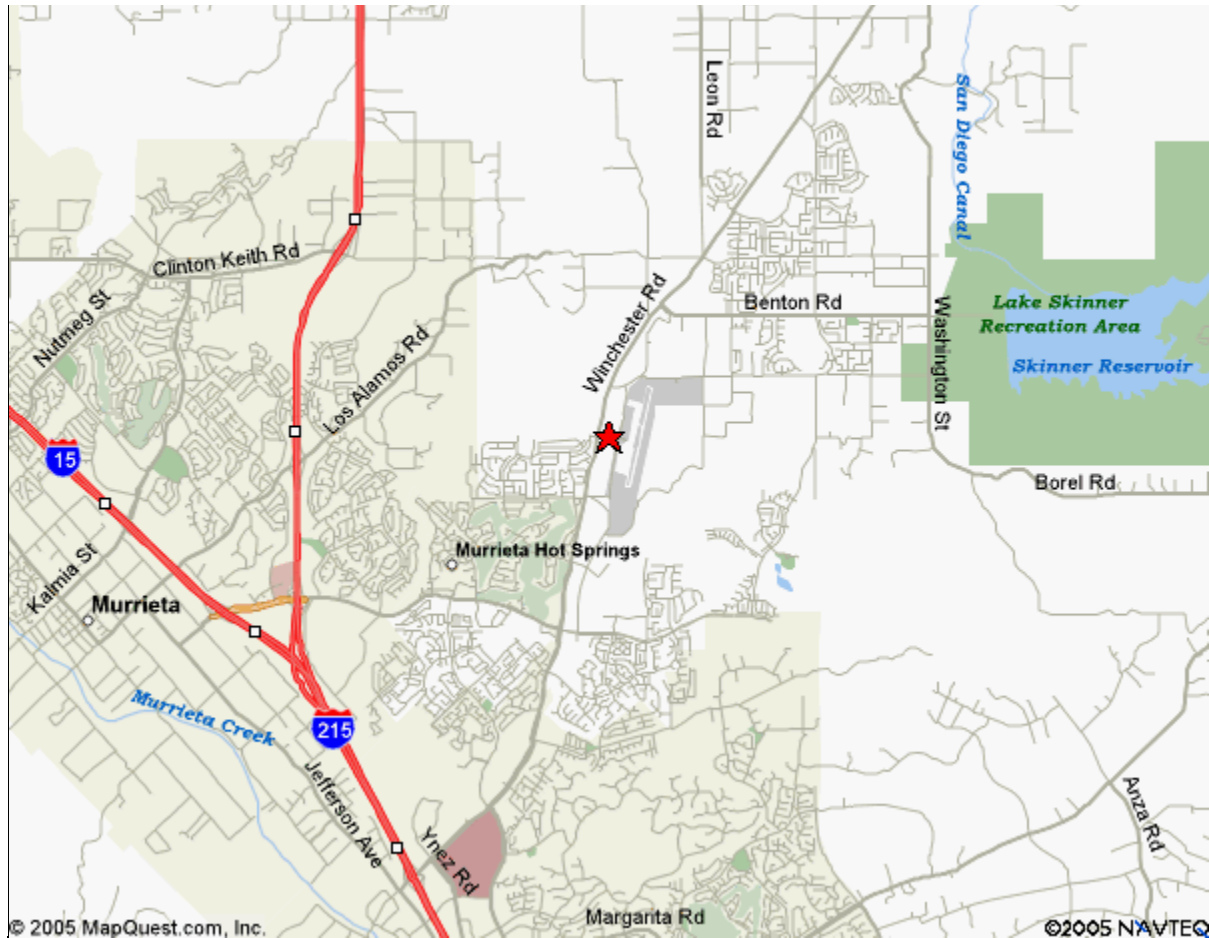


Figure 64 French Valley Airport Vicinity

Source: MapQuest.com, Inc., www.mapquest.com (accessed December 3, 2005).

The Riverside County Airport Land Use Commission (ALUC), which until May 2006 was staffed by the county Economic Development Agency and has subsequently been staffed by the county planning department, is responsible for airport land use compatibility planning for all airports in Riverside County.

AIRPORT LAND USE PLANNING

As the area around the airport continues to develop, maintaining land use compatibility with the surrounding residential communities has become a major challenge. With the runway alignment parallel to Winchester Road, the arrival and departure flight paths do not overfly the established community of Murrieta Hot Springs to the west of the highway, and it was possible to keep much of the airport pattern traffic to the east of the airport and away from residential areas. However, as the unincorporated area to the immediate north, east, and south of the airport has begun to develop, this situation is rapidly changing.

History of Land Use Issues in the Airport Vicinity

Since the airport is owned and operated by Riverside County, which also has land use planning jurisdiction for the area around the airport to the east of Winchester Road, it would appear that the opportunity to prevent incompatible development near the airport was good and that it would have been possible for the ALUC to work effectively with the county land use planning process. Unfortunately, this was not always the case: several developments near the airport that were opposed by the ALUC were subsequently approved by the County Board of Supervisors.

Airport Master Plan

The most recent update of the *Airport Master Plan* was approved by the County Board of Supervisors in 1995.⁶⁴⁷ The plan proposed an extension of the existing 4,600-foot runway to the south, to give a total length of 6,000 feet, and the later construction of a 3,600-foot parallel runway on the east side of the existing runway.

Airport Comprehensive Land Use Plan

The Riverside County ALUC adopted an updated version of the *Riverside County Airport Land Use Compatibility Plan* (ALUCP) in October 2004. This consists of a Policy Document (Volume 1) and two other volumes that contain background data for the various airports. Volume 2 covers the west county airports, including French Valley Airport, and Volume 3 covers the east county airports. Volume 1 contains an introductory chapter, a chapter on countywide policies, and a chapter with individual airport policies and compatibility maps for each airport. It also contains appendices that include legislative and regulatory requirements, land use compatibility guidelines, project referral forms, checklists, and sample implementation documents.

The discussion of French Valley Airport in the section on airports in Riverside County (page 73) was revised in October 2007 to add a number of compatibility policies addressing residential density and commercial/industrial usage intensity.

The ALUCP designates the Airport Influence Area (AIA) boundary as the outer boundary of the Federal Aviation Regulations (FAR) Part 77 conical surface to the north and south of the airport and a specified distance from the runway on the east and west to encompass the normal aircraft traffic pattern, as shown in Figure 65. The ALUCP also defines a set of noise compatibility contours expressed in decibels (dB) of Community Noise Equivalent Level (CNEL) and based on an ultimate traffic level of 185,000 annual aircraft operations, as shown in Figure 66.

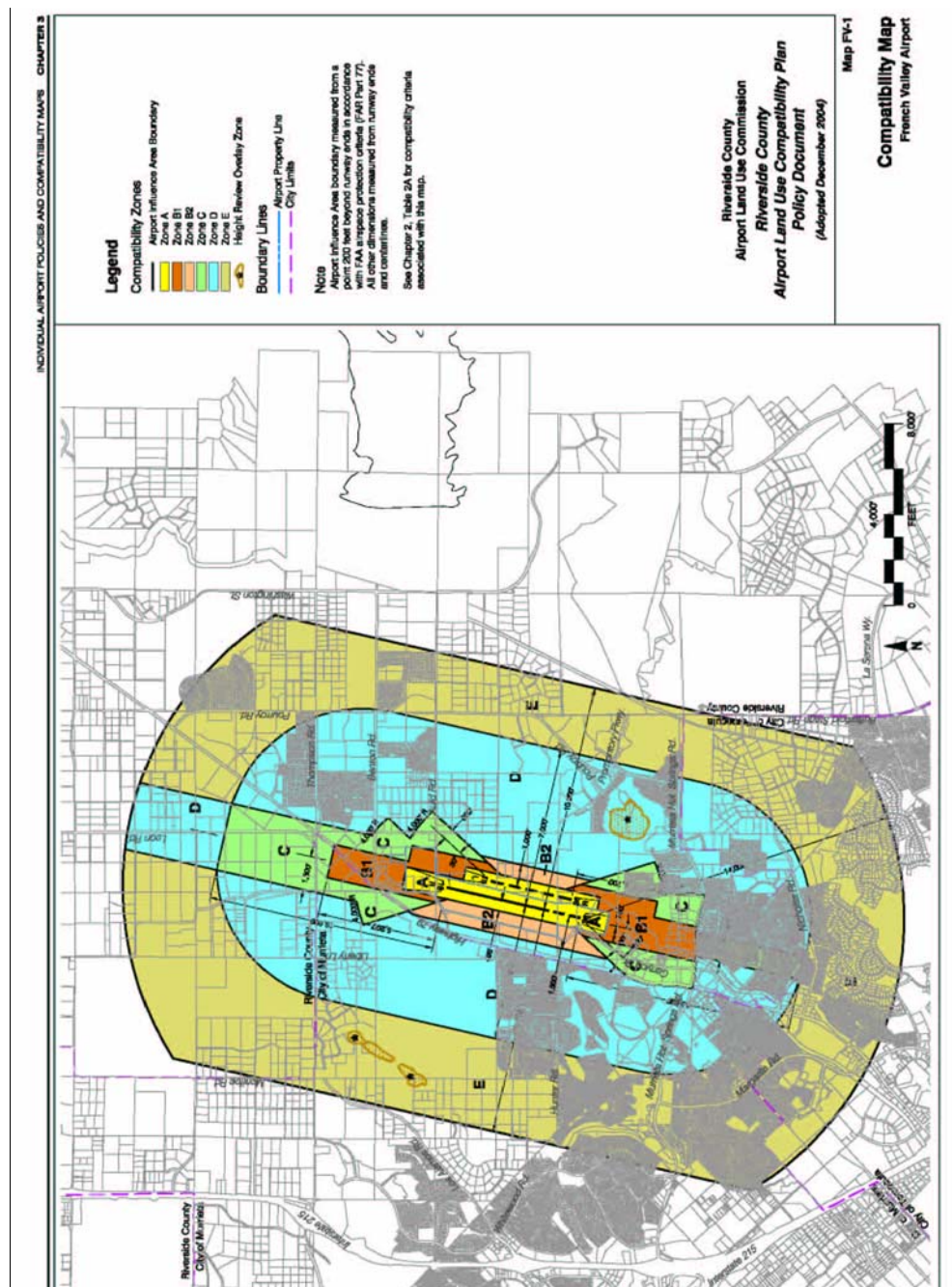


Figure 65 Airport Land Use Compatibility Map

Source Riverside County Airport Land Use Commission *Riverside County Airport Land Use Compatibility Plan*, October 2004, www.rcaluc.org/plan_new.asp (accessed October 16, 2006).

The land use compatibility criteria for noise are defined with respect to the noise compatibility contours shown in [Figure 66](#) as part of countywide policies. These generally are not tailored to the local circumstances of individual airports, although the criteria are adjusted downward by 5 dB for two low-activity outlying airports, Chiriaco Summit and Desert Center. Single-family residential uses are considered marginally acceptable in areas between 55 and 60 dB CNEL and normally unacceptable in areas between 60 and 65 dB CNEL. Multifamily

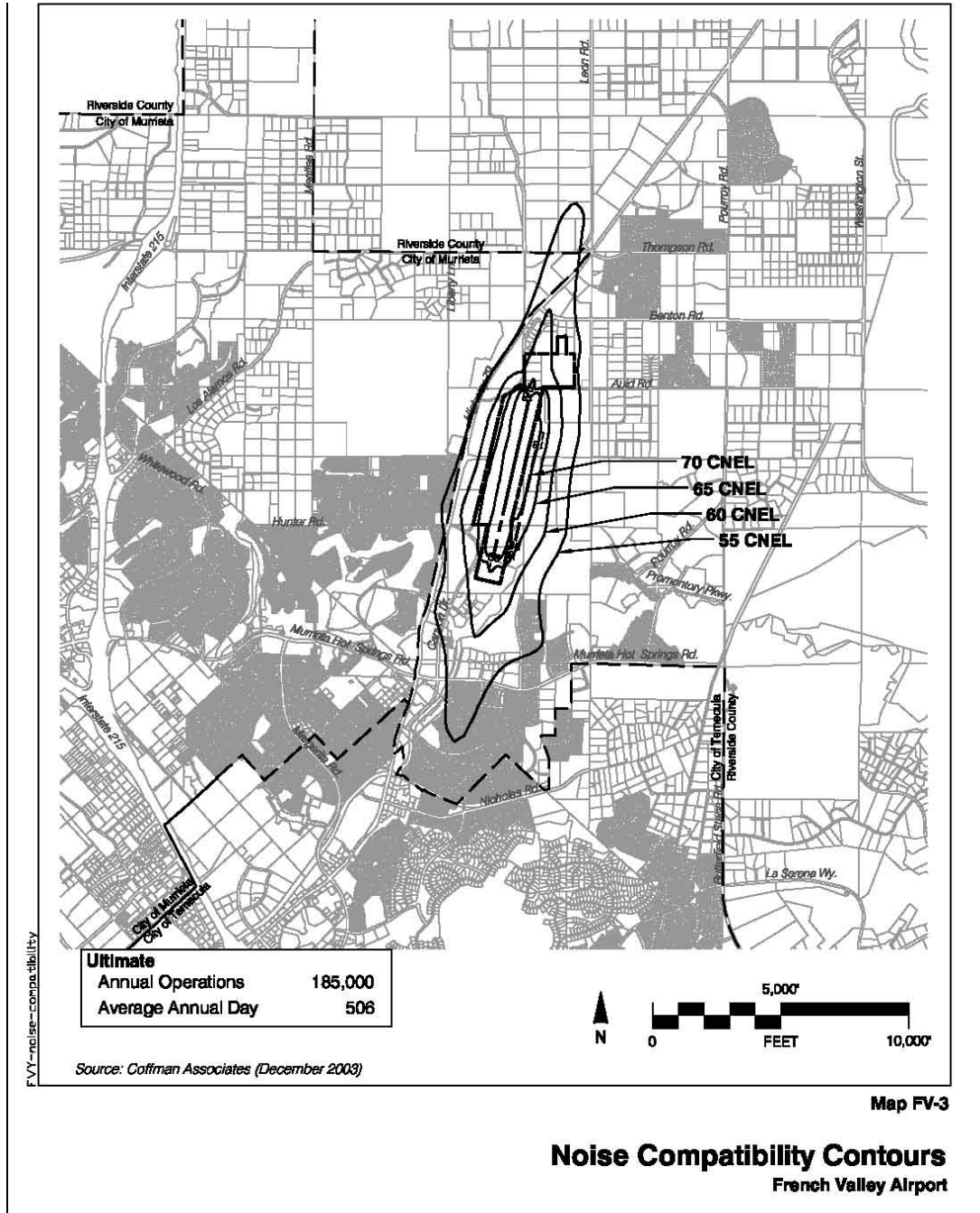


Figure 66 Noise Compatibility Contours

Source: Riverside County Airport Land Use Commission, *Riverside County Airport Land Use Compatibility Plan*, October 2004, www.rcaluc.org/plan_new.asp (accessed October 16, 2006).

residential uses are considered normally acceptable in areas between 55 and 60 dB CNEL, and marginally acceptable in areas between 60 and 65 dB CNEL. Marginally acceptable uses are allowable where outdoor activities are minimal and construction features provide sufficient noise attenuation, such as installation of air conditioning so that windows can be kept closed. While new homes in the vicinity of French Valley Airport are almost certain to have air conditioning, the climate is such that outdoor activities are quite likely. Furthermore, for

much of the year residents may want to have windows open. This suggests that single-family residential use should be restricted to areas outside the 55 dB CNEL contour, with multifamily residential use restricted to areas outside the 60 dB contour.

Role of Surrounding Jurisdictions

Although the French Valley Airport is located in an unincorporated area of Riverside County, the boundary of the City of Murrieta runs along Winchester Road immediately to the west of the airport. The City of Murrieta has recently expanded to annex the community of Murrieta Hot Springs, immediately to the southwest of the airport on the west side of Winchester Road, and the area to the west of Winchester Road north of Murrieta Hot Springs. [Figure 67](#) shows the current general plan and zoning map for the City of Murrieta. As indicated on the figure, the city Sphere of Influence (shown with the red boundary) extends even further north on the west side of Winchester Road.

POTENTIAL ROLE AND IMPACT OF SMART GROWTH

There are no projects in the vicinity of the airport that could be classified as smart growth. In fact, the general development patterns in this part of Riverside County is the complete antithesis of smart growth, with suburban housing tracts being developed in a hopscotch fashion in an area that was primarily agricultural and open space. There is minimal transit service and no attempt to balance jobs and housing. The residential developments are primarily to meet the housing needs of employment centers elsewhere in the region, resulting in classic bedroom communities.

While the airport could have been a focus for an integrated land use planning effort that would combine commercial and industrial developments in the area surrounding the airport, as a strategy to prevent residential encroachment, with affordable housing in less-noise-impacted areas to meet the needs of workers in the commercial and industrial enterprises, thus far there appears to have been only a limited effort to pursue such an approach, as discussed below.

CHANGES IN LOCAL LAND USE

The area around the airport has recently experienced a growing amount of residential development, with new housing developments under construction on either side of Benton Road north of the airport and starting to spread toward the airport from the city of Temecula south of the airport. Several specific plans have been approved by Riverside County in the unincorporated area around the airport, as shown by the orange areas in [Figure 68](#). As can be seen from the figure, when these projects have been completed, the airport will be completely surrounded by development. The approved land uses in these specific plans have designated the areas immediately adjacent to the airport for industrial and commercial use, while keeping

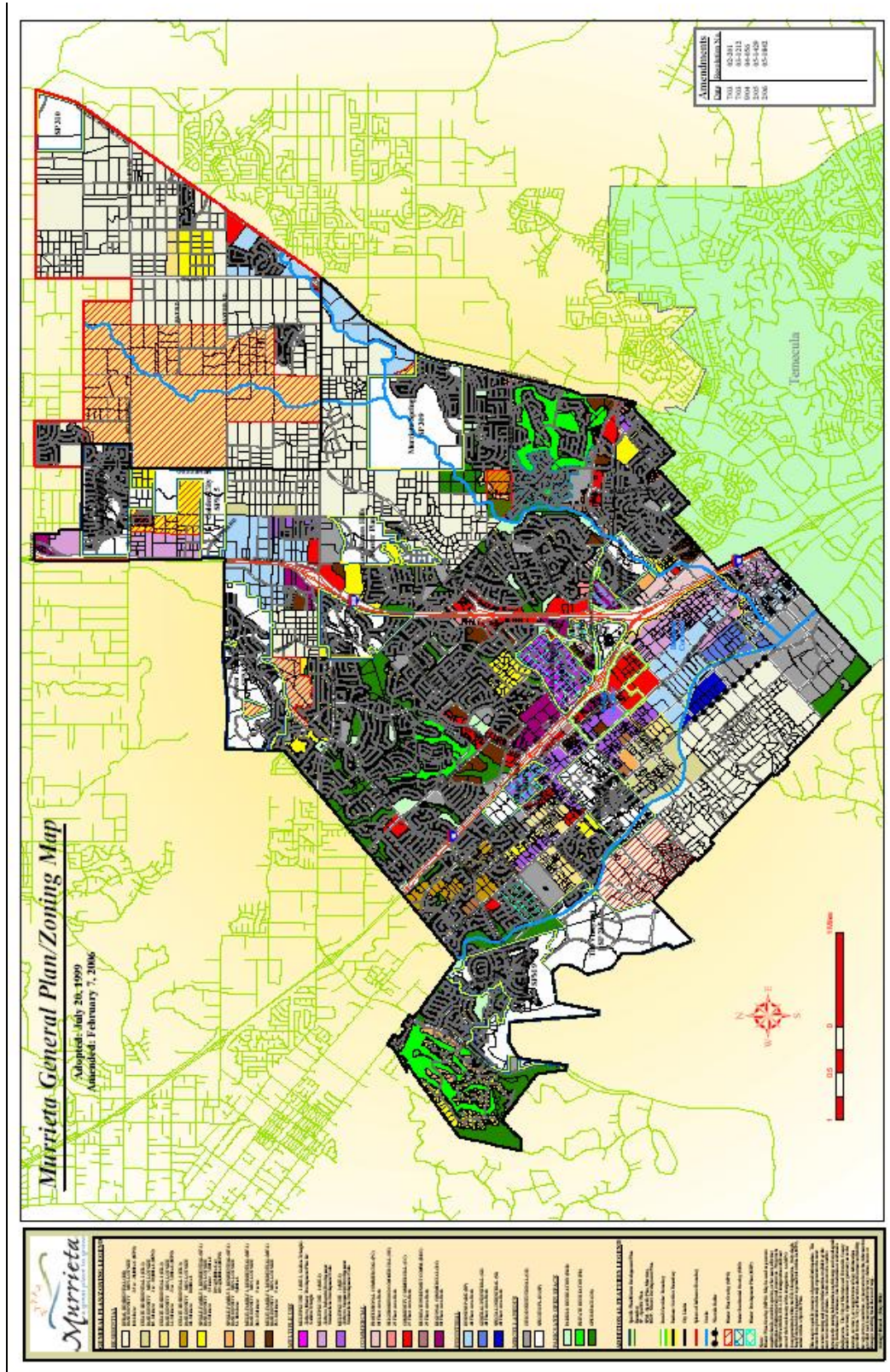


Figure 67 City of Murrieta Zoning Map

Source City of Murrieta, *Murrieta General Plan/Zoning Map*, February 7, 2006.
<http://murrieta.org/dev/planning/index.asp> (accessed October 12, 2006).

residential development well outside the 55 dB CNEL contour. The county has also required aviation easements and notification.

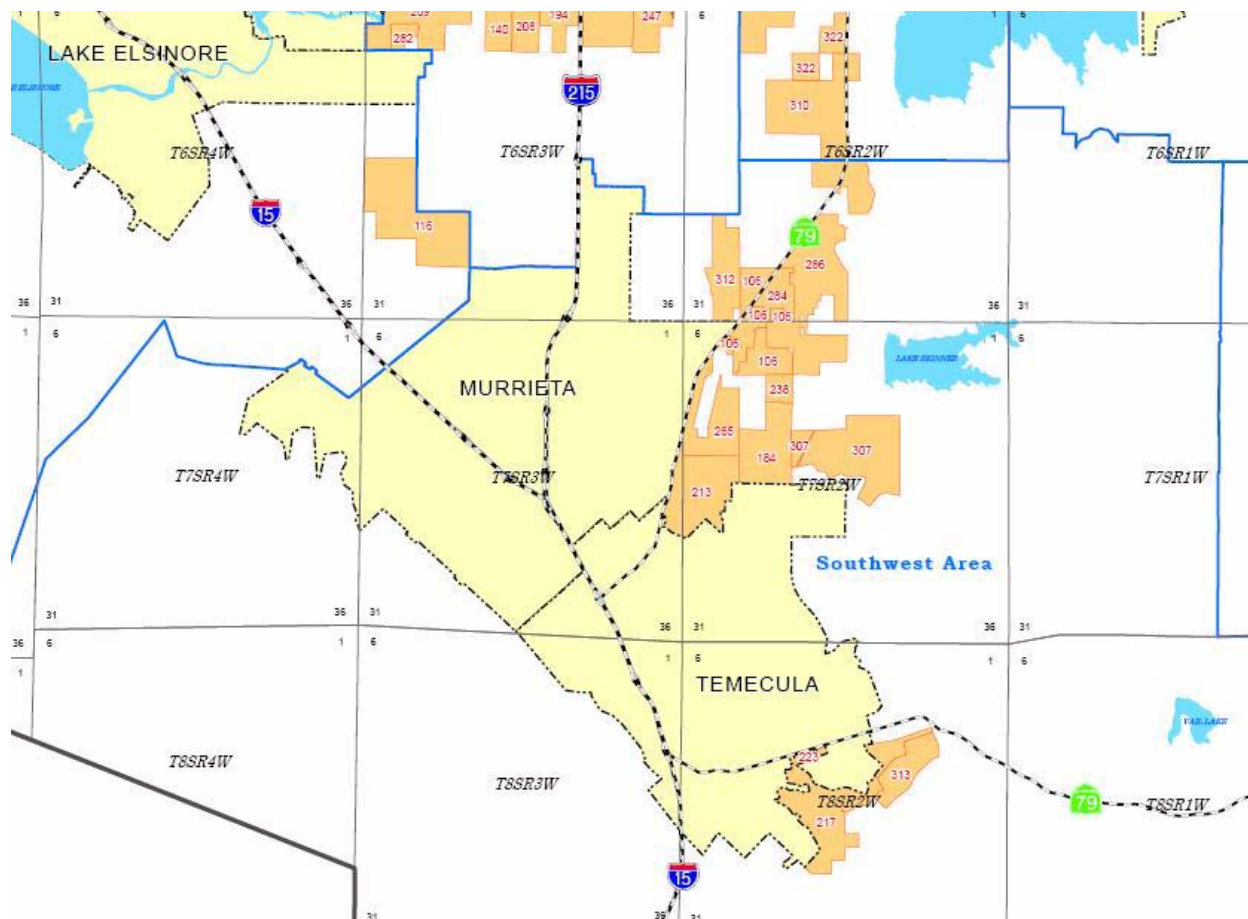


Figure 68 Approved Specific Plans in the French Valley Area

Source: Riverside County Planning Department, *Countywide Approved Specific Plan Map*, May 2005, www.tlma.co.riverside.ca.us/planning/content/splans/sp_database.html (accessed October 16, 2006).

EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS

At this time, it is difficult to assess the effectiveness of the airport land use planning process at French Valley Airport because the development in the vicinity of the airport is still underway and many of the planned residential areas have not yet been developed. It remains to be seen whether the existing noise compatibility criteria will be adequate to avoid future conflicts between the airport and the surrounding communities. In many ways, the airport has been well placed to prevent encroachment of incompatible development. The airport is owned and operated by the County of Riverside, which has land use planning jurisdiction over much of the surrounding area, while the same county agency that manages the airport also staffs the county ALUC. The ALUCP for the airport has been updated recently, and the *Airport Master Plan* was updated in 1995 to identify the long-term configuration of the airport. All the

elements are in place to ensure that development in the surrounding area is appropriately controlled.

SUMMARY

French Valley Airport is a good example of a general aviation airport located in a formerly rural area that is experiencing rapid suburban development. The Riverside County Airport Land Use Commission (ALUC) has thus far been reasonably successful in keeping residential development away from the ends of the runways and requiring aviation easements and notification of purchasers of homes near the airport. When residential development first began to occur in the vicinity of the airport, the ALUC attempted to keep the development even farther from the airport, but the county supervisors voted to override the recommendations, even though the ALUC is a county body.

APPENDIX L

CASE STUDY—MCCLELLAN-PALOMAR AIRPORT

McClellan-Palomar Airport (CRQ), San Diego County

Airport location	City of Carlsbad
Airport size	466 acres
Type of facility	Regularly scheduled commuter flights and general aviation
Level of airport activity	100,000 passengers and 209,000 aircraft operations in 2005
Curfew	None (voluntary quiet hours, 10 p.m. to 7a.m.)
Most recent ALUCP	Adopted in 1994, amended in 2004 (update underway)
Most recent <i>Airport Master Plan</i>	1997
Nearby cities (population 1/1/06)	Carlsbad: 98,700
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Surrounded by industrial, commercial, LEGOLAND theme park, open space, and vacant land • Some conflict related to nearby residential development
Major issues	<ul style="list-style-type: none"> • Majority of noise complaints from outside the 60 dB CNEL contour • New residential development near the predominant arrival flight path close to the airport
Approaches to solving airport/community conflicts	<ul style="list-style-type: none"> • Voluntary noise abatement procedures including a handout for pilots (“Fly Friendly” program) • FAR Part 150 Study completed in 2006
Stakeholder groups	Palomar Airport Advisory Committee (representatives from airport users and nearby community)
Integration with smart growth policies	City of Carlsbad has attempted to balance the number of jobs created by the commercial and industrial development in the airport vicinity with residential development further away
ALUC agency	San Diego County Regional Airport Authority
ALUC staff contact name	Linda Johnson
ALUC staff contact phone	(619) 400-2463
ALUC staff contact e-mail	Ljohnson@san.org

INTRODUCTION

McClellan-Palomar Airport is located within the city of Carlsbad in northern San Diego County, to the southeast of the city center on a ridge of land to the east of the Interstate 5 (I-5) corridor, as shown in [Figure 69](#). It has a single east-west runway 4,900 feet long and primarily serves general aviation traffic with a small number of regional airline flights.

The airport is owned and operated by the County of San Diego and is the only airport in the county—other than San Diego International Airport—that has commercial air service. As of December 2007, the airport was served by US Airways Express with service to Phoenix, Arizona, and United Express with service to Los Angeles International Airport. In 2006, the airport handled about 110,000 air passengers, down from about 150,000 in 2000. In 1999, there were just under 300,000 aircraft operations at the airport. By 2003 this had dropped to

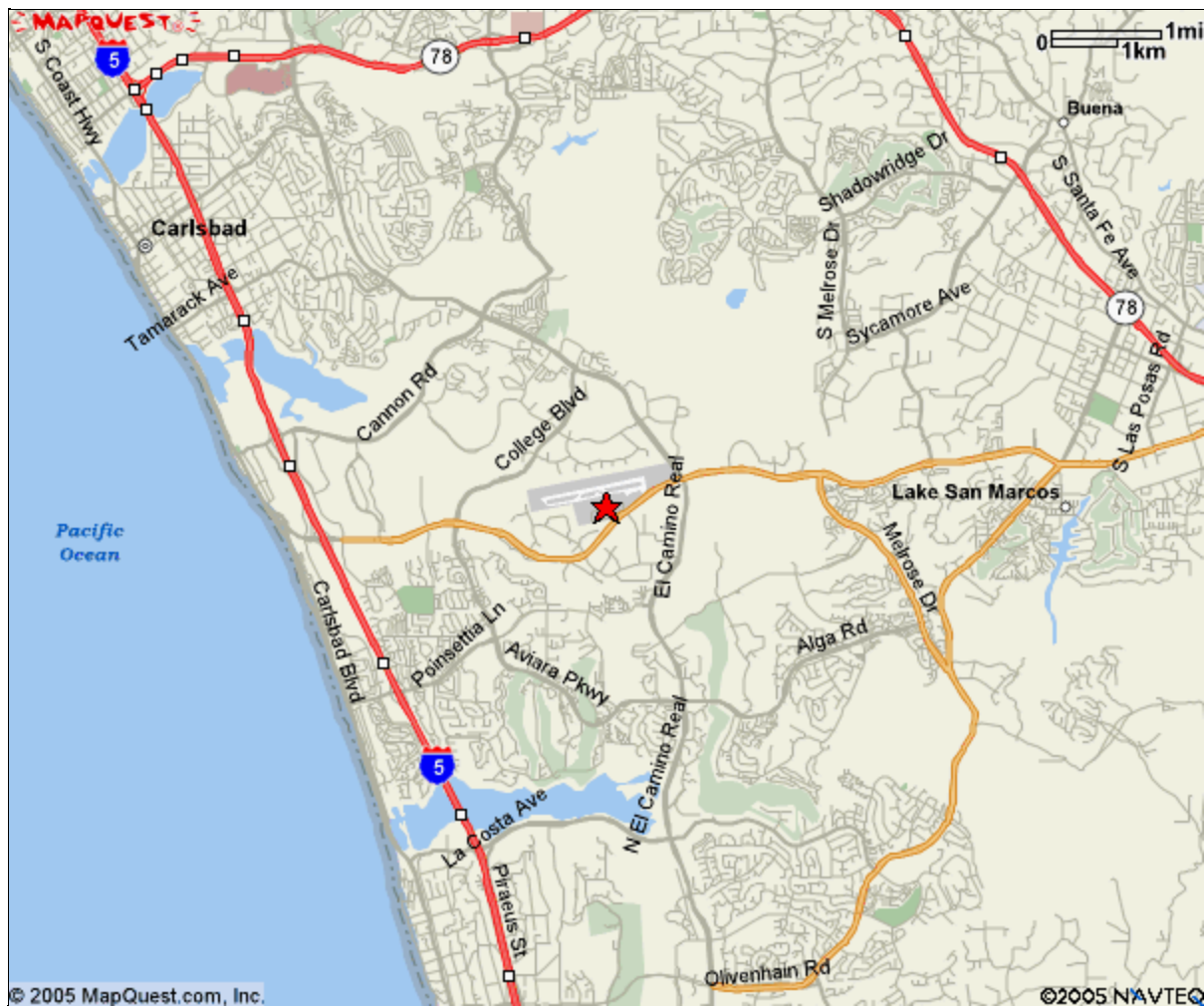


Figure 69 McClellan-Palomar Airport Vicinity

Source: Mapquest.com, Inc., www.mapquest.com (accessed December 3, 2005).

less than 200,000 operations, with a small increase in annual operations in the next two years to about 210,000. Annual operations declined slightly in 2006 to about 200,000, but activity as of late 2007 appears likely to reach 220,000 operations for the year.

The predominant direction of operations is with arrivals from the east and departures to the west. The runway is aligned 245/065 degrees magnetic, but departure procedures have been defined to keep jet departures from Runway 24 on a climb heading of 250 degrees magnetic to remain north of Palomar Airport Road until over water. The airport elevation is 328 feet above sea level; the airport traffic pattern altitude is 2,000 feet above sea level for jet and twin-engine propeller aircraft and 1,500 feet above sea level for single-engine fixed-wing aircraft. Helicopters are requested to remain above 1,000 feet above sea level and over major roads until entering the airport traffic pattern.

The airport has defined a number of voluntary noise abatement procedures and has published a handout for pilots that is designed to fit in the standard flight information publication binders, as shown in [Figure 70](#). This indicates noise-sensitive areas and defines visual flight

rule (VFR) departure and arrival procedures. Arriving aircraft are requested to maintain a minimum altitude of 2,000 feet above ground level (AGL) until within three miles of the airport. Aircraft in the local traffic pattern or departing to the east from Runway 24 or west from Runway 06 are encouraged to fly the downwind leg north of the airport (north pattern) to avoid overflying residential areas to the south of the airport. Jet takeoff and landing quiet hours have been defined from 10 p.m. to 7 p.m. and multiple touch-and-go operations or practice approaches are discouraged during these hours.

San Diego County maintains an airport noise report page on the county web site with links from the County Airport's home page and the McClellan-Palomar Airport home page. There is no dedicated telephone number for reporting aircraft noise complaints, but noise reports can be filed by calling the general information number for the airport. The recent pattern of aircraft noise complaints is shown in [Figure 73](#). The number of complaints increased significantly in the second quarter of 2001, reaching a peak of about 380 in June, then declined over the following quarter to between about 50 and 75 per month for the remainder of the year. Monthly complaints generally remained between about 25 and 75 for the next two years, increasing again during 2004 to a peak of a little over 300 in September. They declined steadily during the last quarter of that year and remained between about 40 and 100 per month for the first four months of 2005. They increased again during the summer to a peak of about 260 in August 2005, declining sharply to only 50 complaints in October.

An analysis of the October 2005 complaints presented in the "Airport Monthly Performance Report" shows that with the exception of one complaint from the city of San Marcos, they all were made by residents living to the southwest of the airport. About half the complaints were made by individuals who only made one complaint that month; the remaining 24 complaints were made by four individuals, one of whom filed 14 complaints. About 60 percent of the complaints related to jet operations, with a similar proportion reporting aircraft flying lower than they should be. A little over half the occurrences took place between 7 a.m. and 5 p.m., with about a third occurring between 5 p.m. and 10 p.m. In contrast, analysis of the August 2005 complaints shows a much larger proportion, almost half, reporting violations of the Voluntary Noise Abatement Procedures, while more than half of the reported occurrences took place between 10 p.m. and 7 a.m. Thus, some of the monthly variation in complaints may be due to changes in the pattern of operations at the airport.

Over the past 15 years, the county has taken a number of steps to address resident concerns about aircraft noise. In 1994, the airport acquired a noise monitoring system with a \$500,000 grant from the FAA. The airport was one of the first general aviation airports to implement such a system.⁶⁴⁸ The airport also appointed a noise officer and formed the Palomar Airport Advisory Committee, which included representatives of airport users and surrounding communities, to explore ways to reduce the impact of the airport operations on the communities, among other issues. Starting in March 2003, a Noise Compatibility Study in conformance with Part 150 of the Federal Aviation Regulations ("FAR Part 150 Study") was undertaken. This study developed noise exposure maps and identified and analyzed measures

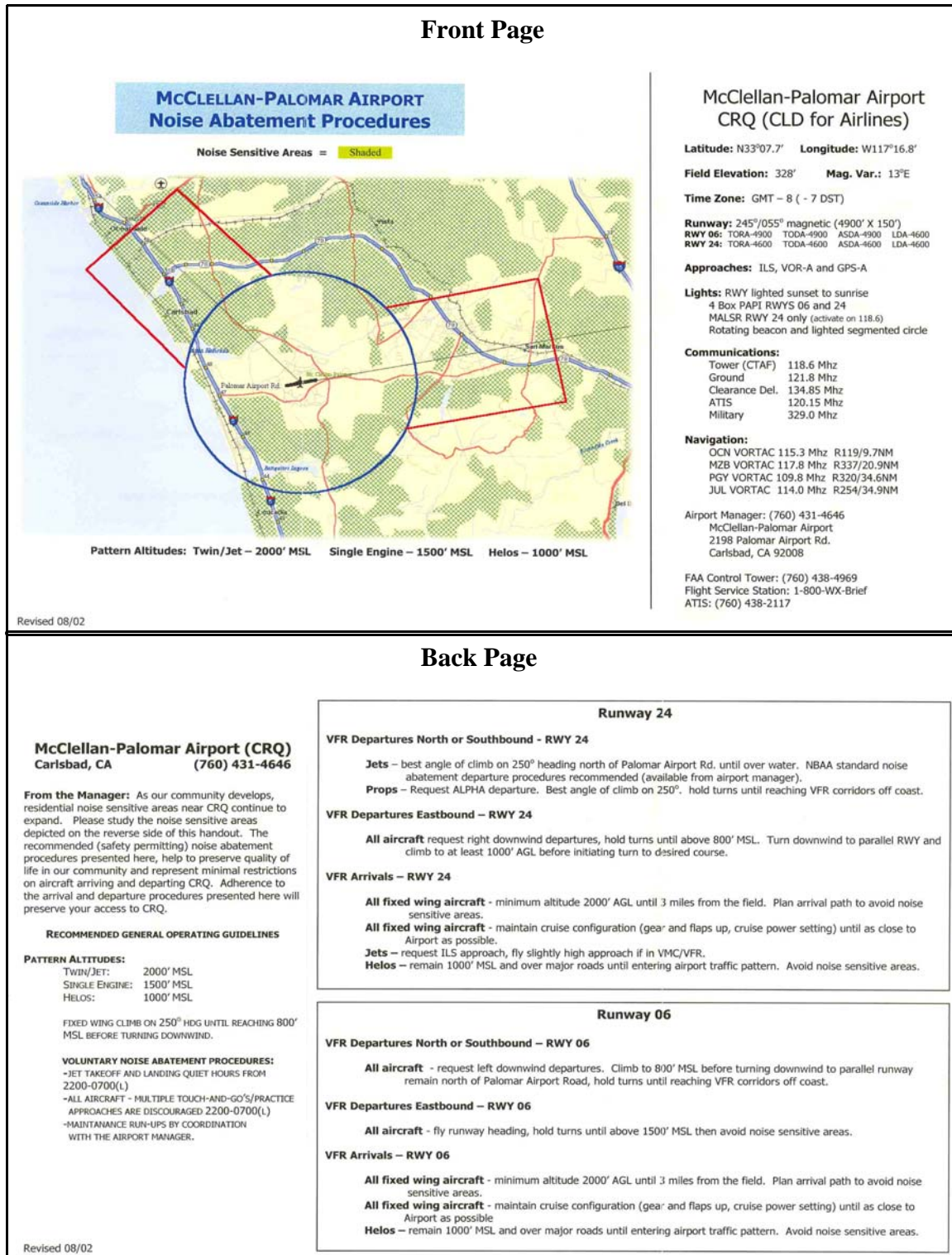


Figure 70 McClellan-Palomar Airport Noise Abatement Procedures

Source: County of San Diego, McClellan-Palomar Airport

that could be taken to reduce the noise impact of airport operations on the surrounding communities.⁶⁴⁹ The draft report on the study was presented at a public meeting on January 10, 2006, that attracted some 80 people. The consulting firm that undertook the study reported that the airport is not generating enough noise to meet FAA standards for mandatory noise reduction measures, but the report recommended a lengthy list of voluntary measures.⁶⁵⁰ The final report on the study was completed in March 2006⁶⁵¹ and approved by the FAA on December 5, 2006.⁶⁵²

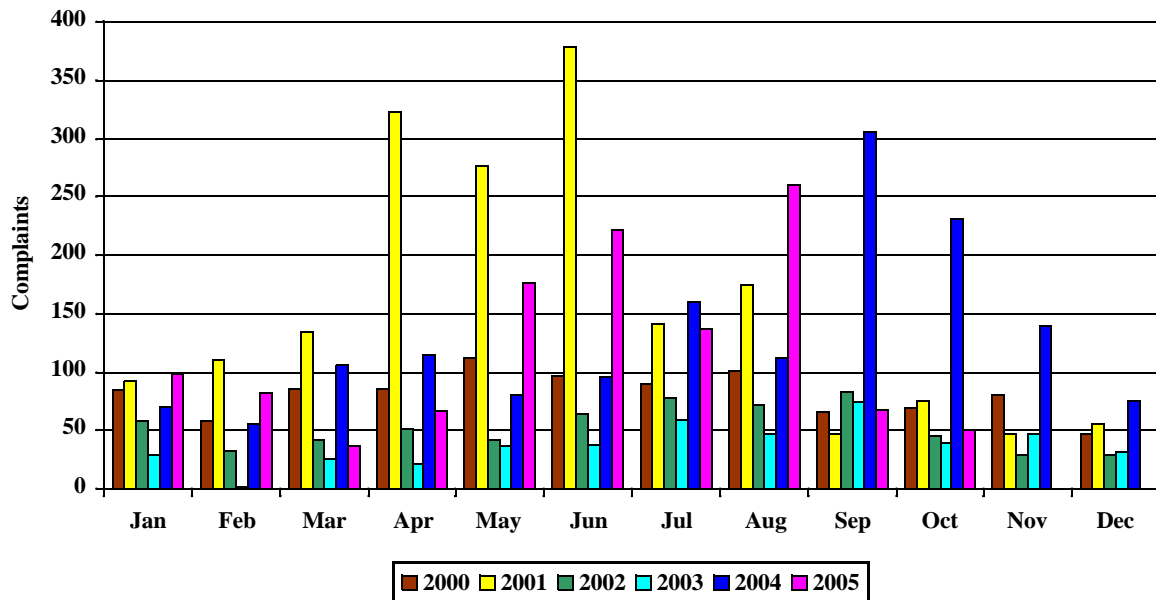
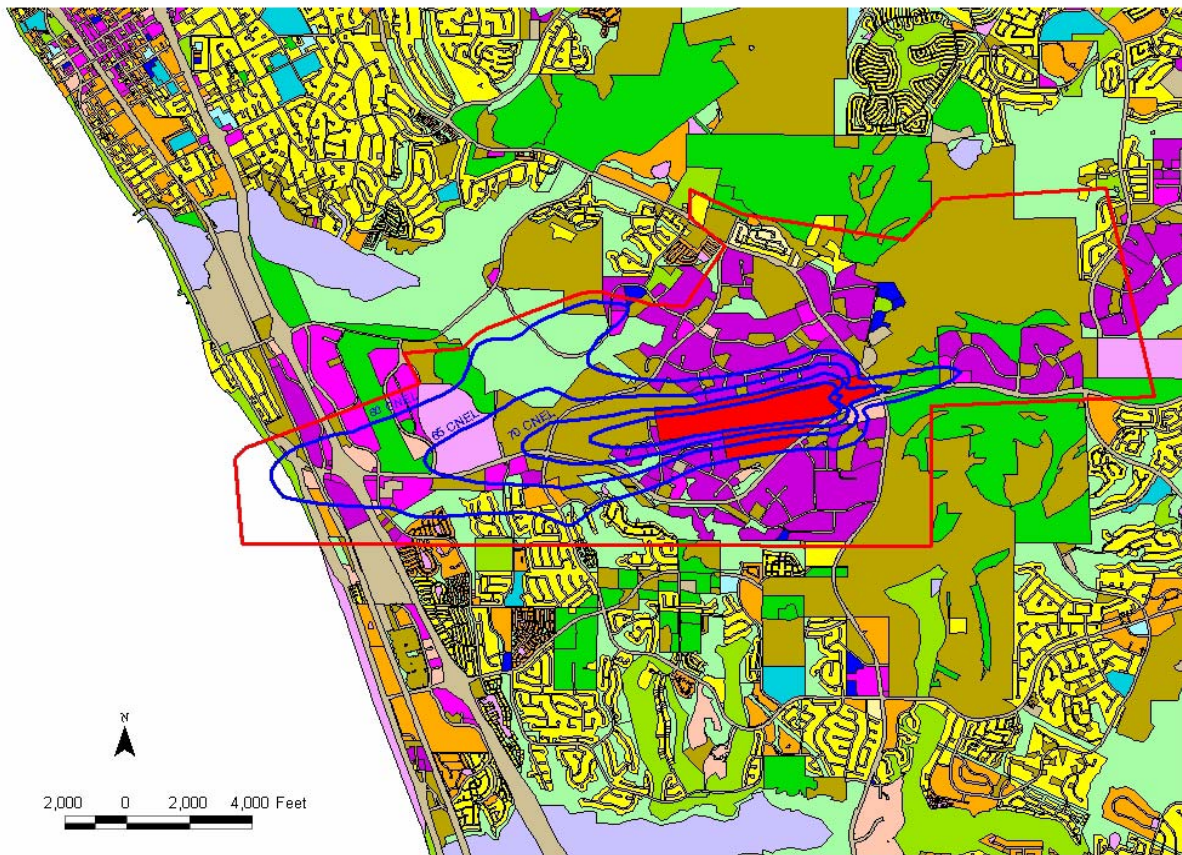


Figure 71 Recent Trends in Airport Noise Complaints

Source: McClellan-Palomar Airport, "Monthly Performance Report," October 2005, www.co.san-diego.ca.us/dpw/airports/mcpal.htm (accessed February 6, 2006).

AIRPORT LAND USE PLANNING

The pattern of existing land uses around the airport is shown in Figure 72, which also shows the 1990 Community Noise Equivalent Level (CNEL) contours for the airport. The Legoland California theme park lies to the west of the airport, between the airport and the I-5 freeway, and several resort and sports facilities are located in the vicinity of the airport. The land immediately to the north and south of the airport is predominantly commercial and industrial. However, the land to the southwest of the airport between the airport and the I-5 freeway is largely residential. Residential development is also occurring in the area immediately to the southeast of the airport, east of El Camino Real, known as Bressi Ranch, as discussed further below.



Land Use Classification

- Single family residential
- Multi-family residential
- Other residential
- Hotel/motel
- Commercial
- Industrial
- Public facilities
- Schools and colleges
- Religious facilities
- Military use
- Transportation/utilities
- Airports
- Recreation and entertainment
- Parks, beaches, golf courses
- Open space
- Agriculture
- Vacant land
- Water

Figure 72 McClellan-Palomar Airport Land Use 2003

Source: Author analysis of land use data from San Diego Association of Governments.

History of Land Use Issues in the Airport Vicinity

The principal land use compatibility issue at the airport is the proximity of residential development in the surrounding communities. Although these are all outside the 65 dB CNEL contour, residents frequently complain about aircraft noise from overflight activity. The addition of a large number of new homes in the Bressi Ranch development immediately to the east of the airport, just south of the predominant approach path, is likely to exacerbate this problem significantly.

By early 2000, the combination of increasing activity levels at the airport and continued residential development in the airport vicinity was generating a groundswell of community concern. Over the previous 3 years, some 800 homes had been added within 3 miles of the airport, and in January 2000, more than 100 people attended a public meeting to complain about aircraft noise and demand better enforcement of flight path limitations.⁶⁵³ In March 2000, the San Diego County Board of Supervisors voted to apply for a grant from the FAA to conduct an FAR Part 150 noise study.⁶⁵⁴ In February 2001, an ad-hoc committee of homeowners and airport users presented a report to the Airport Advisory Committee with a series of recommendations on ways to reduce aircraft noise, one of which was for the airport to hire a permanent environmental noise specialist.⁶⁵⁵ In March 2003, the Part 150 study got underway.⁶⁵⁶ Throughout the process, residents of the surrounding communities continued to attend public meetings and demand actions to reduce aircraft noise, including the implementation of a Fly Friendly program.⁶⁵⁷

Airport Comprehensive Land Use Plan

Before the formation of the San Diego County Regional Airport Authority (RAA) in 2002, the San Diego Association of Governments (SANDAG) served as the Airport Land Use Commission (ALUC) for all the airports in the county, including McClellan-Palomar. Since March 2002, the RAA has served as the ALUC for the county. As described in more detail in [Appendix M](#), as of late 2007 the San Diego RAA was still in the process of an extensive update of the Airport Land Use Compatibility Plans (ALUCPs) for all the airports in the county.

The *Comprehensive Land Use Plan* (CLUP) for McClellan-Palomar Airport was adopted in April 1994 by SANDAG and amended in 2002 to amend the boundary of the Airport Influence Area (AIA). The RAA began the process to update the ALUCPs (as they are now termed) for each of the airports in the county in July 2004, and adopted a revised version in October 2004 that contained mostly administrative changes to reflect the transition of the ALUC from SANDAG to the RAA. The RAA then embarked on a more comprehensive revision of the ALUCPs for each airport in the county. A draft of the revised ALUCP for McClellan-Palomar was released for public comment in March 2005. Following extensive controversy and public input on the process to update the ALUCPs, the RAA began a more extensive process to coordinate with the jurisdictions involved. Revised interim drafts of the ALUCP chapters on countywide policies and individual airport policies and compatibility maps were released in October 2005. The coordination with the affected jurisdictions and other stakeholders

continued into 2006 with the formation of an ALUCP Technical Advisory Group (ATAG) as described in Appendix M. In March 2007 the ATAG distributed preliminary noise compatibility maps for several airports, including McClellan-Palomar, for review and discussion. As of late 2007, the updated ALUCP for McClellan-Palomar Airport had not been finalized.

Role of Surrounding Jurisdictions

The area immediately surrounding the airport and under the arrival and departure flight paths is all within the City of Carlsbad. Further east, about three miles from the airport, the unincorporated community of Lake San Marcos lies a little to the south of the arrival flight path, while some residential areas in the city of San Marcos are directly under the flight path. The land to the north of the arrival flight path and immediately east of Carlsbad is in the city of Vista and is being developed primarily for commercial and industrial uses. The boundaries of the three cities, as well as the unincorporated county land containing the community of Lake San Marcos, are shown in [Figure 73](#).

Since 1986 Carlsbad has been a “growth management” city in which the major public facilities are carefully planned and financed, and their capacities sized to serve a targeted ultimate population and number of residential units. Based upon that targeted number of residential units, the city had developed to about 72 percent of its capacity as of January 2004. Another 11 percent of the capacity had been planned or was under construction. The remaining 17 percent of residential capacity remained vacant and much of that land will consist of infill development.⁶⁵⁸

The zoning map for Carlsbad as of October 2006 is shown in [Figure 74](#). The area to the east of the airport immediately under the predominant arrival flight path is zoned for a mixture of planned industrial (blue) and open space (green). The area to the south of Palomar Airport Road that runs east from the airport is zoned as planned community (light olive), which allows a mix of uses, including housing. The area immediately to the west of the airport is zoned planned industrial and open space; the area to the south of the predominant departure flight path is zoned for single-family residential (yellow) and higher-density multiunit residential (orange). The maroon area further west is the Legoland California theme park.

POTENTIAL ROLE AND IMPACT OF SMART GROWTH

Although the term “smart growth” has not been applied to any development in the vicinity of the airport, it is clear from the pattern of land use surrounding the airport that an attempt has been made to cluster commercial, industrial, and recreational uses adjacent to the airport, while keeping residential development further away. However, as can be seen from [Figure 72](#), the residential areas to the southwest of the airport extend north to the 65 dB CNEL contour and, perhaps more significant, experience overflights by aircraft departing to the south that

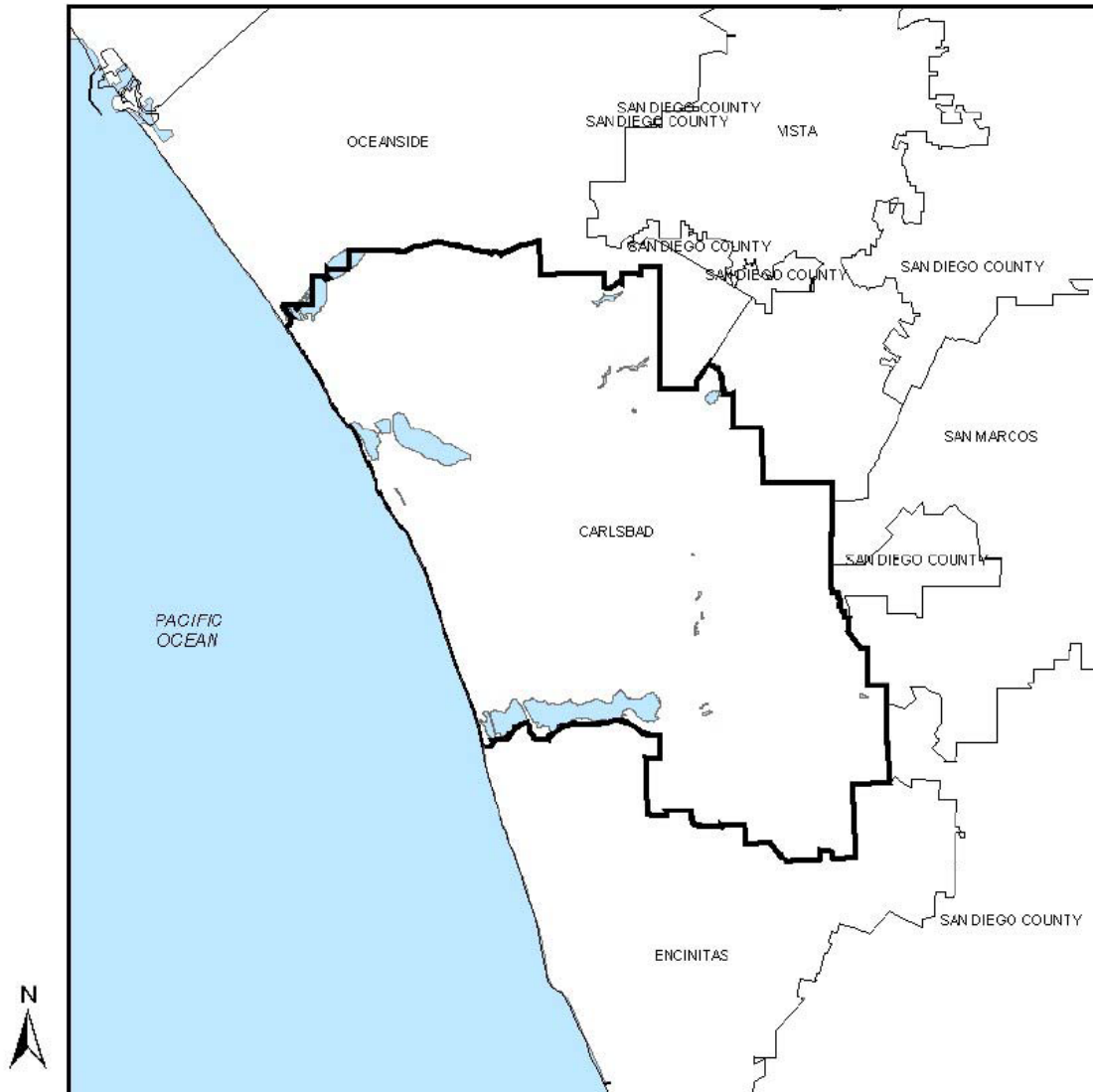


Figure 73 Jurisdictions Affected by McClellan-Palomar Airport Operations

Source: City of Carlsbad, *Guidebook to the Carlsbad General Plan*, August 2004, www.ci.carlsbad.ca.us/planning/plan8.html (accessed January 17, 2006).

turn before reaching the I-5 corridor, as indicated by the shape of the 60 dB CNEL contour in this area.

Carlsbad has attempted to balance the number of jobs created by the commercial and industrial development in the airport vicinity with residential development farther away. However, single-family house prices in these developments are such that few of the workers employed in the commercial and industrial establishments can afford to live in the city. Far from reducing travel demand, this development pattern results in a large out-commute of city residents and a corresponding in-commute of lower-wage workers. In addition, most of the residential developments are traditional suburban developments, with single-family homes at relatively low density that discourages the use of alternatives to the private automobile or provision of local community services and retail.

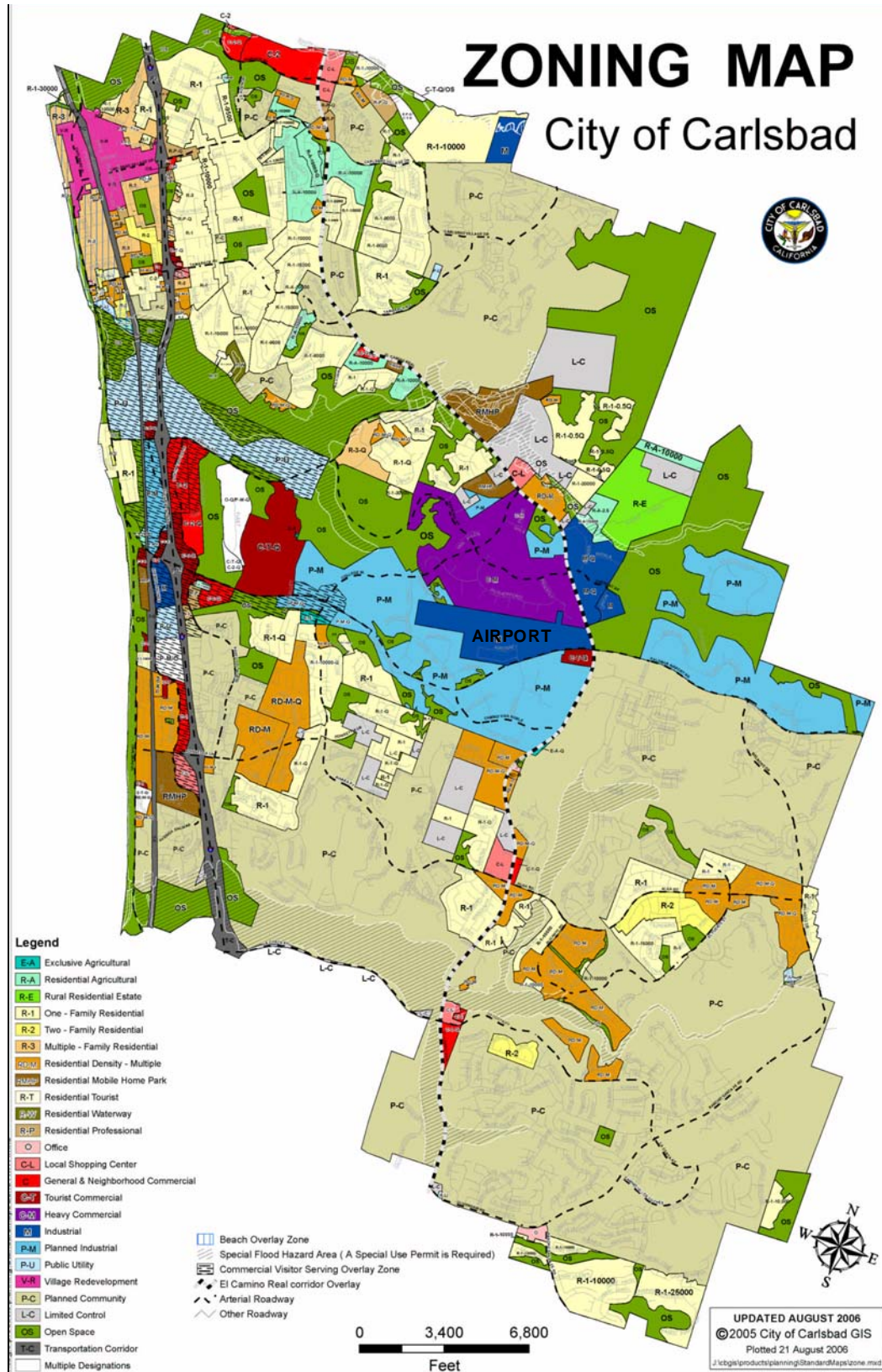


Figure 74 City of Carlsbad Zoning Map

Source: City of Carlsbad, www.ci.carlsbad.ca.us/planning (accessed October 16, 2006).

However, the imbalance between the nature of the employment in the vicinity of the airport and the predominant house prices in the area suggests that the need to keep the residential development away from the airport may not be such a disadvantage, and the usual goal in smart growth projects of achieving a balance between jobs and housing may not be applicable. The balance between jobs and housing needs to be viewed in a larger context, with affordable housing being provided well outside the airport noise contours targeted at the workers in the commercial and industrial areas and the Legoland park. These developments would almost certainly need to be higher density, with a significant fraction of multifamily units. This style of development would lend itself to being located closer to the I-5 transportation corridor and combined with retail and other residentially oriented commercial activities. These developments would need to be linked to the employment centers by public bus service to reduce the number of vehicle trips generated by the employment. Locating such developments adjacent to the I-5 corridor to the north or south of the airport, away from the departure flight path, could allow bus routes linking these areas to the employment centers adjacent to the airport to also serve the existing single-family residential communities to the southwest and north of the airport, which would be unlikely to justify regular service on their own.

Thus, a smart growth approach to land use compatibility planning in the vicinity of McClellan-Palomar Airport needs to consider the broader land use development pattern in the central part of Carlsbad, with a view to preventing the remaining undeveloped land within an expanded Airport Influence Area from being developed for residential use, and meeting the housing needs of existing and new employment through higher-density mixed-use development outside the expanded AIA, oriented toward the local and regional transit system.

CHANGES IN LOCAL LAND USE

The principal recent change in land use near the airport is the development of Bressi Ranch to the southeast of the airport and just south of the predominant arrival flight path. As of early 2006, this project was projected to include 623 homes at build-out, of which 523 would be single-family homes and 100 will be affordably priced multifamily condominiums.⁶⁵⁹ The development is divided into a number of designated communities, as shown in [Figure 75](#). A future corporate center is planned along the frontage of Palomar Airport Road and El Camino Real, which will keep the residential development farther from the arrival flight path to the airport. Even so, many of the homes are only about 2,000 feet south of the flight path.

Although the Bressi Ranch development lies just to the south of the predominant arrival flight path, the boundary of the Airport Influence Area was defined to exclude the majority of the property, including the area planned for development, as can be seen from the AIA boundary shown in [Figure 72](#). Based on the irregular shape of the AIA, and the fact that it extends much further to the north of the extended runway centerline than to the south, it would appear likely that the definition of the AIA boundary by SANDAG in its role as ALUC was influenced by political considerations to keep most of the Bressi Ranch property outside the AIA.

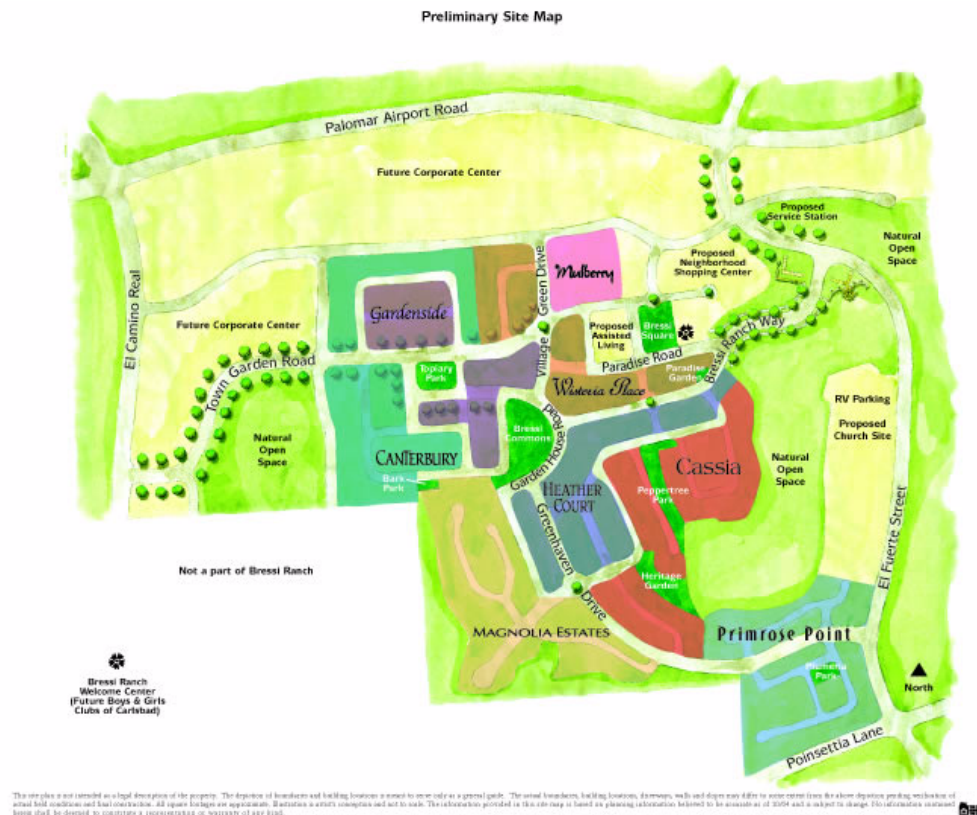


Figure 75 Bressi Ranch Site Plan

Source: www.bressiranch.com/images/img_map_community2.jpg (accessed February 3, 2006).

EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS

Within the immediate vicinity of the airport, the airport land use planning process appears to have been moderately successful at preventing residential encroachment, with the exception of the Bressi Ranch development and the residential areas immediately to the south of the predominant departure flight path. The zoning of the area surrounding the airport for industrial and commercial users, combined with the steep terrain to the west of the airport and beyond that the Legoland California theme park, has ensured that housing development to the north of the airport has been kept well away from the predominant departure flight path, while the area to the east of the airport under the predominant arrival flight path is a mixture of industrial uses, open space, and vacant land. The extent to which the Bressi Ranch development will increase the pressure to develop additional housing to the east near the arrival flight path remains to be seen. This area currently is zoned as planned community south of Palomar Airport Road, so further residential uses are certainly a possibility, and keeping new homes away from the predominant arrival flight path will depend on how development applications are handled by the city.

SUMMARY

McClellan-Palomar Airport is a good example of the importance of careful land use planning around smaller commercial airports. Carlsbad has been proactive in zoning the area around the airport for industrial and commercial uses, which has largely prevented residential development from encroaching on the airport. However, the development of housing quite close to the approach path at Bressi Ranch illustrates both the inadequacy of current noise criteria for airport land use planning at smaller commercial airports, where the CNEL contour may not extend very far from the airport, as well as the consequences of allowing political pressure to distort the boundary of the Airport Impact Area to favor particular parcels for development.

Despite the efforts of the airport to implement noise management measures, the surrounding residential communities continue to generate a significant number of noise complaints. Almost all of these originate from areas outside the 60 dB CNEL contour, providing further evidence of the inadequacy of current noise criteria to reflect the community response to aircraft noise. However, these areas are sufficiently far from the airport that it would not have been realistic to prevent residential development in them, even if the land use planning criteria had been different. This suggests the need for a different approach to dealing with noise compatibility planning for residential areas that are well outside the 60 dB CNEL contours but still experience relatively high single-event levels of noise from aircraft overflights. Such an approach could include a more assertive program to notify potential home buyers of the proximity to the airport and the consequent presence of aircraft activity, more stringent sound insulation criteria, and a requirement for avigation easements, coupled with strong community outreach efforts by the airport to meet with community groups to explain the steps being taken to reduce aircraft noise, the reason that aircraft follow particular flight paths, and to understand and respond to community concerns.

The final observation from the experience at McClellan-Palomar Airport relates to the effectiveness of developing industrial and commercial land uses around airports from the perspective of smart growth planning. Although these uses can be a buffer preventing residential development from encroaching on the airport, in communities such as Carlsbad, the cost of housing precludes most of those working in these facilities from living in the surrounding area, and those living in the residential areas are likely to work outside the city.

Thus, there is an in-commute of industrial and commercial employees and an out-commute of local residents, the opposite effect of that intended by smart growth planners. Efforts to develop commercial and industrial land uses adjacent to an airport should be coupled with an aggressive program to ensure that there is sufficient affordable housing in the surrounding communities but away from areas that are exposed to significant levels of aircraft noise. The development occurring to the east of the airport, in the cities of Vista and San Marcos and the community of Lake San Marcos, show the importance of the AIA extending well beyond the 60 dB CNEL noise contour, so that land use planning for communities under the approach

and departure flight paths that are some distance from the airport but still subject to significant levels of aircraft noise can be coordinated with the ALUCP.

APPENDIX M

CASE STUDY—SAN DIEGO INTERNATIONAL AIRPORT

San Diego International Airport (SAN), San Diego County

Airport location	City of San Diego
Airport size	661 acres (smallest of any large commercial airport in the U.S.)
Type of facility	Regularly scheduled passenger flights, cargo
Level of airport activity	17.4 million passengers, 188,000 tons of cargo, and 220,000 aircraft operations in 2005
Curfew	Airport Use Regulations adopted in 1989 limit departures by Stage 2 aircraft to the period from 7 a.m. to 10 p.m. and Stage 3 aircraft to the period between 6:30 a.m. and 11:30 p.m.
Most recent ALUCP	1992, amended in 1994 and 2004 (update underway)
Most recent <i>Airport Master Plan</i>	1998; update commenced in 2004, expected completion 2008. Final EIR released April 2008.
Nearby cities (population 1/1/06)	San Diego: 1,306,000
Types of land use/airport conflicts	<ul style="list-style-type: none"> • Surrounded by built-up urban area • Airport expansion constrained by surrounding commercial, industrial, and open space uses • Extensive residential development under arrival and departure flight paths • Airport approach flight path is constrained by high-rise buildings in downtown San Diego with continuing proposals for construction of new high-rise office and residential buildings
Major issues	<ul style="list-style-type: none"> • Airport Site Selection Study to replace airport has been underway for several years—recommendation for joint use at Miramar Marine Corps Air Station rejected by voters in November 2006 • Disagreement between ALUC and City of San Diego over land use compatibility criteria for aircraft noise and development density
Approaches to solving airport/community conflicts	<ul style="list-style-type: none"> • Extensive residential sound attenuation program • San Diego County Regional Airport Authority is both the airport operator and the ALUC for the county
Stakeholder groups	ALUCP Technical Advisory Group (about 80 stakeholders)
Integration with smart growth policies	Smart growth strategies promoting high-density residential and mixed-use development are increasing density near the airport with little consideration to airport noise issues
ALUC agency	San Diego County Regional Airport Authority
ALUC staff contact name	Linda Johnson
ALUC staff contact phone	(619) 400-2463
ALUC staff contact e-mail	Ljohnson@san.org

INTRODUCTION

San Diego International Airport, formerly known as Lindbergh Field, is the third-busiest commercial service airport in California and the principal commercial service airport serving the San Diego metropolitan region, handling over 99 percent of the region's airline passenger

traffic. It is located adjacent to San Diego Bay about two miles northwest of downtown San Diego, and is surrounded by dense urban development, as shown in Figure 76. It has a single runway and the predominant operating direction brings arriving aircraft in over downtown San Diego, with departing aircraft climbing out over residential areas to the west of the airport. In 2006, the airport handled 17.5 million air passengers and a little under 221,000 aircraft operations. Until 2003, the airport was owned and operated by the San Diego Unified Port District (Port of San Diego), but on January 1, 2003, responsibility for operating the airport was transferred to a newly formed San Diego County Regional Airport Authority (RAA).

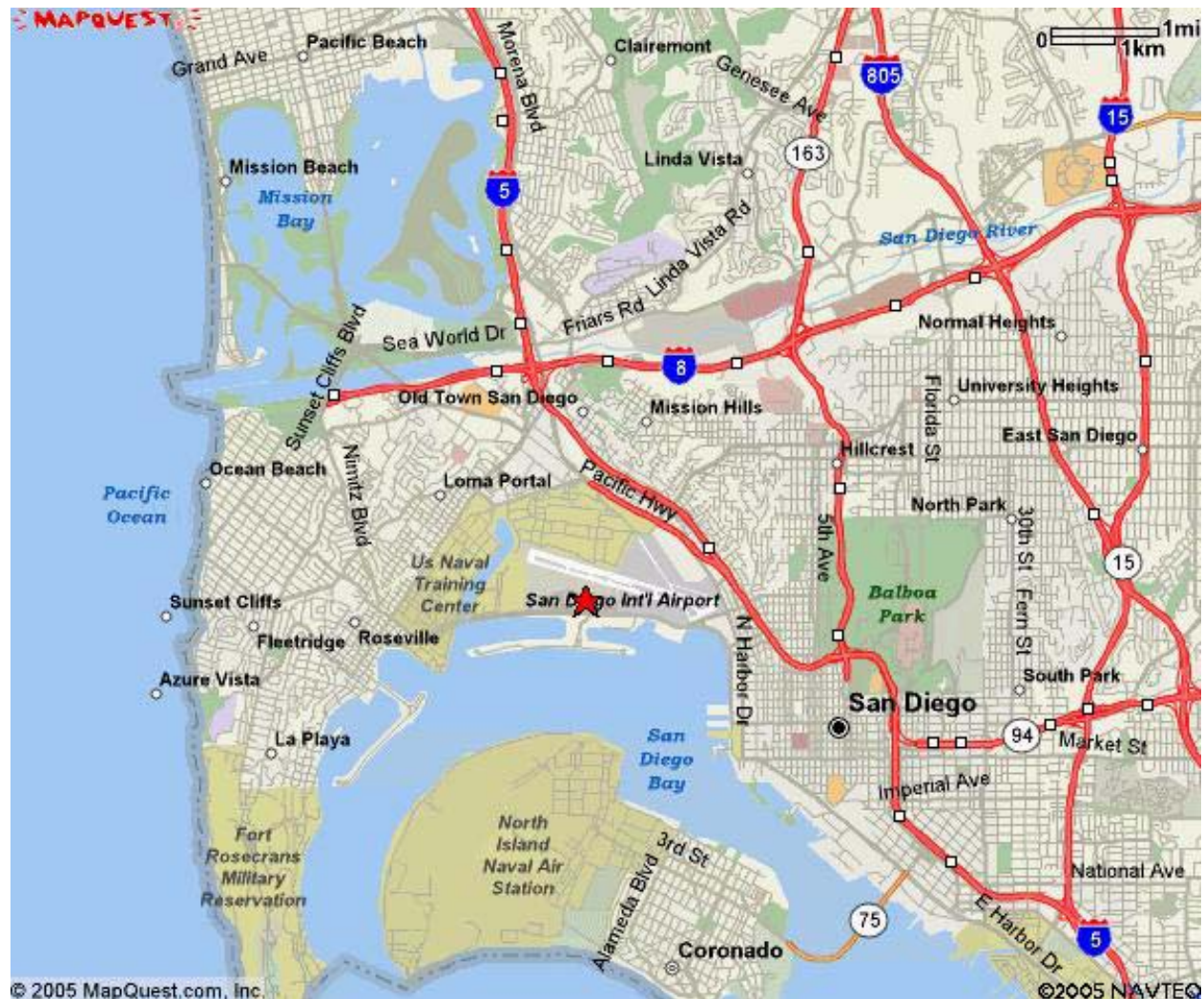


Figure 76 San Diego International Airport Vicinity

Source: MapQuest.com, Inc., www.mapquest.com (accessed September 20, 2005).

Before 2002, the San Diego Association of Governments (SANDAG) served as the Airport Land Use Commission (ALUC) for San Diego County. However, with the formation of the RAA in 2002, Assembly Bill 93 transferred responsibility for serving as the Airport Land Use Commission to the RAA Board, which has served as the ALUC for the county since March

2002. This places the board in the position of both operating the largest airport in the county and also serving as the ALUC for the county.

The airport and all the surrounding land are located within the city of San Diego. Prior to 1997, most of the land immediately to the west and north of the airport property was occupied by the U.S. Navy and Marine Corps. The U.S. Naval Training Center to the west of the airport closed in 1997, and by 2004, redevelopment of the site as a mixed-use development was well underway, as discussed in more detail below. The U.S. Marine Corps Recruit Depot lies to the north of the airport between the airport boundary and Pacific Highway and is still in operation. The area to the east of the Marine Corps Recruit Depot between the airport boundary and Pacific Highway consists of industrial facilities that have been occupied over the years by various aerospace companies.

San Diego International Airport (SDIA) is one of 10 “noise problem airports” in California that require a variance to the California Airport Noise Standards in order to operate. The eighth variance was issued by the California Division of Aeronautics in August 2001 and expired in August 2004. The Airport Authority requested the ninth variance on June 25, 2004, and as of late 2007 this request was still pending. Airport Use Regulations for the airport were adopted in 1989 and limit departures by Stage 2 aircraft to the period from 7 a.m. to 10 p.m. (most Stage 2 aircraft weighing more than 75,000 pounds have since been phased out). Stage 3 aircraft may depart between 6:30 a.m. and 11:30 p.m. Lifeguard, emergency flights, or flights for military necessity may operate as needed and aircraft may land at any time. Violations of the night departure curfew may incur an administrative fine.

The airport maintains an Airport Noise Mitigation Office as part of the Environmental Affairs Department. This office maintains an Airport Noise and Operations Monitoring System—Geographical Information System (ANOMS-GIS) that records data from 24 noise monitoring stations in the surrounding communities. There also is an Airport Noise Advisory Committee that meets on a bimonthly basis.

Over the years, proposals have been made to explore the feasibility of relocating the airport. In 2001, an airport site selection process began under the Air Transportation Action Program, a joint project of SANDAG and the San Diego Unified Port District. With the creation of the RAA in 2002, the RAA assumed responsibility for the process, termed the Airport Site Selection Program. Phase II of the process began in November 2003. The legislation establishing the RAA required the recommendations of this study to be presented to San Diego County voters for approval no later than November 2006. In the meantime, in 2004 the RAA began an Airport Master Plan update to address the short-term needs of the airport to accommodate future demand until the outcome of the Airport Site Selection Program (ASSP) could be implemented. Even if the ASSP were to recommend a new airport and the recommendations were approved by the electorate, it would undoubtedly take many years to acquire the land and develop a new airport, most likely well over a decade based on experience in other regions. Thus, the Airport Master Plan update, which was still under way at the end of 2007, has been addressing facility requirements at SDIA until 2030.

After extensive analysis of alternative sites, the ASSP recommended pursuing joint use with the military of Miramar Marine Corps Air Station (MCAS). However, the military opposed the proposal and in the November 2006 ballot, San Diego County voters overwhelmingly rejected the measure. This left the RAA to complete the Airport Master Plan update with a focus on continued development of the SDIA for the foreseeable future.

AIRPORT LAND USE PLANNING

Located as it is next to San Diego Bay with rising land and residential communities on the other three sides, land use compatibility has been a major concern at San Diego International Airport for many years. For most of the communities, aircraft noise is the primary concern. However, some high-rise developments on the northern edge of the downtown area lie close to the arrival flight path to the east of the airport and create safety concerns as well.

The dual-track approach of the ASSP and the Airport Master Plan update presents a dilemma for land use planning in the vicinity of the current airport that has not been completely resolved by the November 2006 vote. If a suitable site for a new airport is identified in the future and the voters decide to relocate the airport, concerns over what are currently considered incompatible uses will eventually disappear. On the other hand, if the decision is made not to relocate the airport but to continue to develop the existing site for the foreseeable future, then it will almost certainly become necessary to expand the existing airside facilities with potentially significant impacts on land use limitations in the surrounding communities. While it is obviously in the interest of the Regional Airport Authority to preserve as much flexibility as possible until this issue is ultimately resolved, there are considerable opportunity costs in doing so.

Given the location of the airport and the character of the surrounding communities, airport land use planning issues take two forms: the redevelopment of former military and industrial land immediately adjacent to the airport, and infill development that has been occurring in the surrounding communities, including the conversion of former industrial and commercial facilities in the downtown area to high-density residential or mixed use.

History of Land Use Issues in the Airport Vicinity

Although airport land use planning seeks to discourage or prevent new incompatible uses within the Airport Influence Area, while also pursuing opportunities to improve compatibility between the surrounding land use and the airport, the extent of incompatible uses within the existing noise contours, particularly single-family homes, necessitates an approach that emphasizes reducing the noise impact generated by aircraft operations as much as, or even more than, preventing new incompatible uses.

Airport Noise Management

Not surprisingly, given its location, aircraft noise has been a major concern of the communities surrounding SDIA for decades. The airport has been classified as a “noise problem airport” under California state law because of the existence of incompatible uses, including residences and schools, within the 65 dB Community Noise Equivalent Level (CNEL) noise contour and needs a variance from state law in order to operate. To obtain the variance, which is issued by the California Department of Transportation (Caltrans) and has to be renewed every three years, the airport must demonstrate that it is taking actions toward achieving compliance with the noise standards. The airport has implemented an 11:30 p.m. to 6:30 a.m. curfew on departures as a major component of its compliance effort, together with a Quieter Home Program that funds residential sound attenuation measures for homes located in the areas where noise has the most impact. The airport also has established an Airport Noise Advisory Committee and has established and maintains an Airport Noise Monitoring System. The 65 dB CNEL noise contour extends some distance to the east and west of the airport. Immediately to the west, the community of Loma Portal is a neighborhood of mostly owner-occupied single-family homes that lies below the primary departure flight path from the airport. The area immediately to the east of the airport, south of Laurel Street, lies below the primary arrival flight path and is also predominantly residential, with a higher proportion of multifamily residences.⁶⁶⁰ However, the 1990 65 dB CNEL noise contour extends much further to the west and east, reaching the communities of Ocean Beach on the coast and Greater Golden Hill to the southeast of Balboa Park, where the higher terrain causes the noise contour to extend as much as three miles from the airport boundary.

In January 1999, in an effort to reduce the noise impact on neighborhoods surrounding the airport and to respond to concerns that violations of the airport’s 11:30 p.m. to 6:30 a.m. curfew on departures were increasing, the Port of San Diego began requiring airlines to use only aircraft meeting the quieter Stage 3 federal noise standards at SDIA, one year earlier than the national deadline to phase out the noisier Stage 2 aircraft. However, it was suggested at the time that the reduction in noise from the early phase-out of Stage 2 aircraft would be limited because about 98 percent of the jets using the airport already met the Stage 3 standards.⁶⁶¹ Nyle Marmion of the airport’s Noise Information Office was quoted in a July 1999 article in the *San Diego Union-Tribune* as reporting that in the first quarter of 1998 the noise contour included an area of 1.4 square miles, containing 13,000 homes and 31,000 people. In the first quarter of 1999, with 100 percent of the aircraft using the airport meeting the Stage 3 standards, the noise contour had reduced to an area of 1.2 square miles, containing 11,000 homes and 27,000 people.⁶⁶² In fact, these statistics appear to refer to the “noise impact area,” defined in the California airport noise standards as the area of incompatible uses within the 65 dB CNEL noise contour, rather than the total area within the contour, which is much larger. By the fourth quarter of 2004, the noise impact area had further reduced to 1.03 square miles, which included about 11,300 homes and about 24,500 people.⁶⁶³ Thus, while some success has been achieved in reducing the geographical extent of the noise impact area and the affected population over the six-year period from 1999 to 2004, there has been little, if any,

progress in reducing the total number of homes affected. However, these aggregate statistics conceal important underlying trends discussed in more detail below, in which the reduction in the number of single-family homes within the noise impact area is being offset by an increase in multifamily units. This tends to reduce the population affected, since the average household size in the multifamily units in the noise impact area is smaller than that in single-family homes.

In November 2000, the results of a state audit of noise monitoring at SDIA showed that the Port District had been providing accurate information to the FAA, Caltrans, and the general public. However, the audit found that the San Diego County government had allowed its Noise Control Hearing Board to become inactive and recommended that the board start meeting again on a regular basis to review the quarterly noise reports prepared by the Port. At that time, the port was reported as receiving about 1,000 noise complaints a year, including allegations that aircraft taking off from the airport failed to follow established departure routes.⁶⁶⁴

In June 2001, the Quieter Home Program completed work on the first of about 700 homes under the aircraft flight path to receive sound attenuation measures under an accord reached between residents and the Port District after eight months of negotiations that had been required by the Caltrans Division of Aeronautics as a condition of granting the airport's eighth noise variance. The port agreed to contribute as much as \$9 million and to seek a further \$21 million from the FAA to insulate those homes most affected by the noise. However, Julia Kelety, president of the Airport Coalition, stated in an article in the *San Diego Union-Tribune* at time that the program would only provide attenuation for a small fraction of the homes in the noise-impact area. The residential sound attenuation program involved the installation of special doors and double- or triple-paned windows, with air conditioning as an option because doors and windows must be closed to get the benefit of the insulation. The Port District also agreed to establish a noise monitoring system to track noisy planes. The 700 homes scheduled for sound attenuation were to be completed in three years. No other homes were scheduled to be retrofitted, but the program could be expanded as part of future variance agreements.⁶⁶⁵

The Quieter Home Program retrofitted its 500th home in August 2004, and was scheduled to complete about 200 homes a year. At that time, about 150 homes were on a waiting list for Phase I, which focused on the noisiest neighborhoods surrounding the airport, defined as those within the 70 dB CNEL contour with a one-block buffer added. The boundaries for a follow-on Phase II were being discussed with the Airport Noise Advisory Committee, a group of community planning board members. Work on Phase II was scheduled to begin that fall. The sound attenuation measures reduce interior noise levels about five dB when all the windows in a home are closed. Aircraft still can be heard, but the resulting noise levels no longer violate the California state noise standards.⁶⁶⁶

Building Height and Safety

The construction of high-rise office and residential buildings in the downtown area has also raised concerns about the proximity of these structures to the arrival flight paths into SDIA. For many years the Air Line Pilots Association (ALPA) has expressed concern about buildings close to the approach path to the airport. In April 1994, an ALPA spokesman called the airport unsafe, overcrowded, and fraught with “inadequacies [that] are insurmountable.” The ALPA spokesman said that the surrounding terrain, airport traffic patterns, frequent fog, and a six-story building close to the runway make the airport one of the toughest places in the world to land.⁶⁶⁷ The Laurel Travel Center, a six-story building that ALPA stated that pilots think descending planes come uncomfortably close to on final approach, was constructed in the mid-1980s after the owner obtained permission from the City of San Diego and the FAA over the strong opposition of the San Diego Unified Port District.

Two recent projects provide examples of the potential conflicts that can arise from high-rise development in the downtown area. In July 2004, the ALUC determined that a proposed 19-unit residential project at 2561 First Avenue in San Diego was not consistent with the *Comprehensive Land Use Plan* (CLUP) because its height exceeded the allowable height defined by the San Diego Airport Approach Overlay Zone (AAOZ) by some 21 feet.⁶⁶⁸ The project was submitted to the San Diego City Council for an override hearing, held on January 25, 2005. The City Council voted not to override the ALUC determination but gave the applicant the option of redesigning the project to comply with the CLUP and AAOZ requirements. The project was redesigned to eliminate three units and reduce the height and resubmitted to the city and ALUC, which on September 8, 2005, determined that it was conditionally consistent with the CLUP, provided that the residential units would be sound attenuated to an interior noise level of 45 dB and an avigation easement for noise and height be provided to the airport operator.⁶⁶⁹

In September 2004, the ALUC determined that a proposed 128-unit condominium project beneath the approach flight path to the airport at 222 Laurel Street would penetrate safety surfaces established by the FAA and the City of San Diego, and that it was not consistent with the CLUP. According to an article in the *San Diego Union-Tribune*, the high-rise project would devote half its units to affordable housing and was not considered a hazard to aircraft under FAA guidelines. However, the building was reported as being located within an FAA buffer zone designed to provide additional safety protection.⁶⁷⁰ Airport Authority staff stated that the building would penetrate an FAA safety surface for the approach corridor by up to 45 feet and therefore would be regarded as an obstruction. It also would exceed an even more stringent building height restriction established by the City of San Diego by up to 95 feet. The article noted that building height guidelines cover a broad area surrounding the airport, and the condominium project would be near the edge of the area. On a normal approach to the airport, an aircraft would pass 1,500 feet south of the site and would be 100 feet above the roof of the proposed structure. The article reported that airport officials expressed concern about the potential cumulative effect of too many similar structures on the use of airspace on the

approach to SDIA, and the Airport Authority decided to oppose the proposed project if it came before the San Diego City Council for approval.

The issue of the height limitations at the site of the proposed project is more complex than suggested by the newspaper article. The rising terrain to the east of the airport prevents the application of the normal criteria for determining obstructions to aircraft operation defined in the Federal Aviation Regulations Part 77. The standard approach surface for an airport like SDIA would be below ground level for much of its area. Indeed, this prevents aircraft flying a standard approach based on the end of the runway. Instead, the FAA has defined a displaced threshold 1,810 feet from the end of the runway and a 20:1 approach surface from a point 200 feet before the displaced threshold. The building height limits specified in the AAOZ regulations require an additional 50-foot buffer below the FAA approach surface. According to the staff report prepared for the ALUC consistency determination, the originally proposed project not only penetrated the AAOZ height restriction surface but also the FAA approach surface.⁶⁷¹ Despite this, the project applicant had obtained a “Determination Of No Hazard To Air Navigation” from the FAA, based on an aeronautical study undertaken by the FAA. The ALUC staff report argued that enforcing the AAOZ height restrictions would “serve to protect the airport’s operational flexibility in inclement weather and poor visibility conditions from potential future modification by the FAA as a result of cumulative impact of incompatible development(s).” There was no discussion of what this “potential future modification” might involve nor what criteria the FAA might use to assess the “cumulative impact of incompatible development.”

In addition to expressing concern about the height of the proposed project, the ALUC staff report also noted that the proposed number of units exceeded the density criteria defined in the SDIA CLUP, which limited the human occupancy of proposed projects to an intensity no greater than 110 percent of the average intensity of existing uses within a quarter-mile radius of the proposed site. The staff report stated that the average density within a quarter-mile radius ranged from 38 to 60 dwelling units per acre (although it is unclear how an average can be expressed as a range, unless this was intended to imply that the average could not be calculated with any precision). Thus, under this criterion the proposed project would be limited to no more than 91 units on the 1.37 acre site.

On May 1, 2006, a revised project for the site was submitted to the ALUC for a consistency determination. The number of residential units was reduced to 69 and the height of the structure reduced to comply with the AAOZ height restriction surface and the density limitations of the Airport Land Use Compatibility Plan (ALUCP), as the CLUP had been renamed in the meantime. The project was placed on the consent agenda for the ALUC meeting on July 6, 2006, with the staff recommendation that the ALUC Board determine that the project was conditionally consistent with the ALUCP,⁶⁷² and approved.

While the ALUC review process appears to have been successful in these two cases at preventing the construction of buildings that penetrate the height restrictions around the airport, continued high-rise development in the area under the arrival flight path to the

airport is likely to present future challenges to meeting safety standards for aircraft approaches to the airport. Developers naturally will attempt to take maximum advantage of their sites by building to the limits allowed by the regulations. In principle, this should not be a problem as long as the building height restrictions in the Airport Approach Overlay Zone regulations are enforced uniformly.

The issue of changes in density is more problematical. The 1994 CLUP limits increases in density for projects located beneath the airport approach or departure surfaces designated in the AAOZ to 110 percent of the average intensity of existing uses within a quarter-mile radius of the project site, with some exceptions. However, this could significantly limit efforts to redevelop existing residential uses at higher densities, and thereby conflict with smart growth goals of increasing residential units within the general downtown area. The intent of density restrictions in airport land use planning is to prevent the introduction of significant increases in human occupancy in areas at higher risk from an aircraft accident. While this makes eminently good sense in areas of predominantly low residential density, the application of identical criteria to a dense downtown area of multiunit buildings suggests a failure to base the regulations on any sort of risk analysis. The RAA, in its role as the ALUC, will need to work closely with the City of San Diego to achieve a balance between the competing interests of downtown development and the requirements to protect the safety of airport operations and surrounding communities.

Airport Comprehensive Land Use Plan

When the San Diego County Regional Airport Authority assumed responsibility for acting as the ALUC for the county, the most recent *Comprehensive Land Use Plan for Lindbergh Field* had been prepared by SANDAG in 1992 and amended in 1994. The CLUP defined an Airport Influence Area (AIA) within which land use compatibility criteria were to be applied, the boundaries of which were based on 1990 aircraft noise contours. Although the noise contours at Lindbergh Field have changed considerably since 1990, as the Stage 2 aircraft were largely phased out, the AIA boundaries had not been revised since the CLUP was last amended in 1994. In April 2003, the RAA established Airport Authority Policy 8.30, which defined its role as the ALUC and undertook to update the CLUPs for the nine airports within its jurisdiction by June 30, 2005.

The 2004 CLUP Amendments

As an interim step, the RAA decided to pursue a number of amendments to the 1994 CLUPs that it hoped could be adopted relatively quickly, pending the more extensive update to be undertaken later. These amendments were primarily intended to resolve a number of inconsistent compatibility criteria between the CLUPs for different airports in the county and to reflect the role of the RAA as the ALUC. Specifically, the amendments were intended to accomplish the following:⁶⁷³

- (i) Designate as “incompatible” all new residences and other noise-sensitive uses (*i.e.*, neighborhood parks, playgrounds, hospitals and related uses, preschools, schools and libraries) proposed to be located within the 65 dB CNEL and greater noise contours of county airports;
- (ii) Designate as “conditionally compatible” all new residences and other noise sensitive uses (*i.e.*, hospitals, schools, and libraries) located within the 60-65 dB CNEL noise contours of county airports, provided that the interior noise levels attributable to exterior noise sources not exceed 45 dB CNEL in any habitable room, that an avigation easement be required as a condition of project approval, and that, for all property transactions, appropriate notice be provided to all purchasers, lessees, and renters of property which describes the potential for impacts from aircraft noise associated with airport operations;
- (iii) Designate as “incompatible” any proposed development project that has been determined by the Federal Aviation Administration (FAA) to be a “hazard” to airspace navigation pursuant to a Federal Aviation Regulation (FAR) Part 77 determination;
- (iv) Replace the San Diego Association of Governments (SANDAG) ALUC policies with the Airport Authority’s current policies relating to ALUC duties and responsibilities; and
- (v) Make certain technical and legal modifications consistent with State requirements and the Airport Authority’s current policies related to the ALUC duties and responsibilities.

While the last two of the above five types of amendment affected all the existing CLUPs, the first three varied in their applicability to different airports because several of the existing CLUPs already incorporated some or all of the requirements. In particular, the San Diego International Airport CLUP already satisfied the third issue (consistency with FAR Part 77 requirements) but was not consistent with the first two compatibility issues addressed by the amendments.⁶⁷⁴

RAA staff presented preliminary recommendations for proposed amendments to the nine CLUPs to the ALUC on September 8, 2003, and indicated that staff had initiated coordination efforts with the other airport proprietors and local jurisdictions with a view to having the CLUP amendments and environmental documents certified in the November to December time frame.⁶⁷⁵ Staff made a further presentation to the ALUC on November 24, 2003, at which they gave an overview of the proposed amendments and described the implementation steps, coordination efforts, and timeline.⁶⁷⁶

The RAA circulated a Notice of Preparation and Initial Study (NOP/IS) for the *Draft Environmental Impact Report* (DEIR) for what was termed the *Annual Amendment to the Comprehensive Land Use Plans for San Diego County* on January 16, 2004. Comments on the NOP/IS were requested by February 20, 2004, and the Initial Study (IS) anticipated the DEIR would be available in early 2004, followed by a 45-day public review period, a hearing before the county ALUC in mid-2004, and an action by the RAA Board in its capacity as the County ALUC shortly thereafter.⁶⁷⁷ The significance of the term “Annual Amendment” (later changed to “Annual Amendments” in the DEIR) is unclear. Throughout the body of the DEIR and subsequent *Final Environmental Impact Report* (FEIR), the project is described as the CLUP Amendment Project. There is no suggestion in the discussion of the project that the ALUC envisaged amending the CLUPs on an annual basis, although the IS noted that the CLUP Amendment Project was separate and distinct from a CLUP update process in 2005 that the RAA was required to undertake for each of the nine county CLUPs.

The DEIR for the CLUP amendments was circulated for public review and comment for a period of 45 days beginning on May 19, 2004, and later extended for an additional 30 days to August 5, 2004. Comments were received from some 20 organizations, including San Diego County and the City of San Diego. The City of San Diego raised a number of concerns, including the difficulty that it would have amending its general plan to comply with the proposed changes before the comprehensive update of the CLUPs that was planned for 2005, as well as the need to recognize the unique situation of SDIA within a dense urban environment. At a meeting of the ALUC on September 9, 2004, several commissioners expressed concern about a letter from the City of San Diego dated August 25, 2004, that expressed concern that the city had not been involved in the preparation of the draft amendments and that additional housing that they felt was necessary would be prohibited. The issue was referred to the Strategic Planning Committee for further discussion.⁶⁷⁸ Staff from the City of San Diego attended the next meeting of the Strategic Planning Committee on September 13, and presented information about the extent of the changes that would be required to the city general plan, eight community plans, and the Local Coastal Program to incorporate the changes that were being proposed. The Director of the City Planning Department suggested that the entire process could take three to five years, and proposed that the city and the RAA take additional time to create language in the CLUP that could meet the RAA’s goal and that the city could implement. The board members present voted to direct staff to modify the CLUP amendments to eliminate the issues that the City of San Diego objected to and to work with the city to develop a Memorandum of Understanding addressing these issues.⁶⁷⁹

The ALUC finally certified the EIR and adopted the CLUP amendments on October 4, 2004, more than a year after the amendment process had begun. To address the concerns of the City of San Diego and others, the issues addressed by the amendments were reduced from five to four by eliminating the first of the proposed amendments, and the requirement for an aviation easement was removed from the second of the original amendments (this provision only applied in the case of SDIA and two other airports).

The 2005 ALUCP Update

Authority staff began the process of preparing an updated *Airport Land Use Compatibility Plan* for each airport in the county in July 2004, with a view to completing the update by June 30, 2005. In addition to the nine airports included in the 1994 CLUP, the 2005 ALUCP update included four more public-use general-aviation airports and three military airports. It was decided to conduct the California Environmental Quality Act (CEQA) review process for the individual reports in the 2005 ALUCP update in parallel with the review of the draft 2005 ALUCP document. It was recognized that an EIR would be required for SDIA, but anticipated that Negative Declarations or Mitigated Negative Declarations would satisfy CEQA requirements for many of the other 15 airports.

A Notice of Preparation (NOP) of a DEIR for an *Airport Land Use Compatibility Plan* (ALUCP) for SDIA was released on February 24, 2005, together with an Initial Study. The IS defined a set of six compatibility zones within a redefined AIA and included a table of proposed compatibility criteria for each zone. These criteria included limits on residential density (in dwelling units per acre) and land use intensity for other land uses expressed as the maximum number of people per acre. The intensity limits specified the average usage intensity on a project site, the maximum intensity on a single acre, and an intensity bonus for single-acre areas that can be allowed if the building design includes features intended to reduce risks to occupants in the event of an aircraft collision with the building. The criteria also included prohibited uses and other development conditions in each zone. An NOP scoping meeting for the SDIA EIR was held on March 10, and public comments on the NOP were due on March 25.

ISs for the other 15 airports were announced on March 16, with public comment periods beginning between March 17 and March 29 and ending between April 18 and April 29, 2005. Four public workshops were scheduled between March 22 and March 29. The workshops were held in different areas of the county and discussed the ALUCPs for the airports in that area. These workshops were intended to provide the community with information about the updated ALUCPs and solicit public input on those plans before their approval by the ALUC. The workshop on March 24 was devoted solely to SDIA. Two workshops were held between 5 p.m. and 7 p.m. and two, including the SDIA workshop, were held in the afternoon.

The draft ALUCP and associated draft environmental documents were released by the end of March 2005, with a public comment period that began on April 1 and initially ended on May 15. Additional public workshops were held in April. On April 15, 2005, the City of San Diego wrote to the RAA expressing several concerns with the provisions of the draft ALUCP and recommending specific changes to address the city's concerns.⁶⁸⁰ The city letter also expressed concern that there had been insufficient outreach to the affected community planning groups and other stakeholders because of the time pressure to adopt the ALUCP by the end of June, 2005, and recommended that the RAA Board delay action on adopting the proposed ALUCP for six to 12 months to provide sufficient time to refine the proposed policies with local jurisdictions, community planning groups, and affected stakeholders.

A presentation on the status of the ALUCP update was made to the RAA Strategic Planning Committee on April 25. In response to public comments about the need for better notice of RAA meetings addressing the ALUCP update, for more time for input from the public and affected jurisdictions, and for more extensive environmental review, the committee endorsed staff's recommendation to extend the timeline for adoption of the plans for several airports. The ALUC accepted the recommendation at its next meeting, on May 2, and at the following meeting, on June 6, directed airport authority staff to work with local jurisdictions and airport operators to develop a revised ALUCP completion schedule and return to the board within 90 days with a new adoption timeline. The revised timeline presented to the ALUC on September 8 envisaged that the Strategic Planning Committee would consider the updated plans for six rural airports in September 2005, followed by a board decision on policy issues for these plans in early October and adoption in early November. The plans for the remaining airports would be considered first by the Strategic Planning Committee and then by the board in three groups between October 2005 and February 2006, with the plan for SDIA considered last.⁶⁸¹

At the meeting of the Strategic Planning Committee on September 12, Airport Authority staff was directed to conduct public workshops for discussion of countywide ALUCP policy issues and provide additional time for community stakeholder input. A further revision to the timeline, presented to the Strategic Planning Committee on September 26, envisaged group stakeholder meetings between mid-October and mid-January 2006, with draft ALUCPs for the six rural airports and three others presented to the Strategic Planning Committee in February, followed by a 30-day review period and public workshops to discuss the draft ALUCP document in March 2006. The draft ALUCPs for the remaining airports would be presented to the Strategic Planning Committee in mid- to late March, followed by Strategic Planning Committee recommendations to the ALUC in April and adoption of the ALUCPs by the ALUC in May and June 2006, a full year after it was originally planned.⁶⁸²

The proposed timeline was presented to the ALUC on October 3, 2005. At this meeting, the City of San Diego requested that the board schedule a separate workshop for Lindbergh Field. Several board members expressed concern about the amount of time that might be required to address all the issues that were likely to arise. After some discussion, it was recognized that RAA staff would not be prepared for a workshop on Lindbergh Field until some time in 2006.⁶⁸³

Subsequently, revised interim drafts of Chapter 2 ("Countywide Policies") and Chapter 3 ("Individual Airport Policies and Compatibility Maps") of the ALUCP were released later in October 2005, with a discussion paper on major policy issues in early November.

On November 9, 2005, the ALUC held a special meeting to discuss policy issues regarding the update of the ALUCPs. RAA staff identified seven major policy issues that required policy direction, and two minor outstanding issues to be resolved in ongoing discussions with jurisdictions and interested parties. Staff also identified three outstanding issues related to Lindbergh Field to be deferred to a future workshop. Representatives of the City of San Diego,

the Centre City Development Corporation, the San Diego Regional Chamber of Commerce, and several other cities in the county, as well as several members of the public, urged the ALUC to work more closely with the stakeholders. The City of San Diego proposed the creation of a technical group to pursue the policy issues in more detail together with the municipalities and other stakeholders. After discussion, the ALUC directed staff to form a technical working group that would include municipalities and other stakeholders and would come back to the board with policy recommendations. The ALUC also directed staff to have more interaction with community planning groups.⁶⁸⁴

The ALUCP Technical Advisory Group

The ALUCP Technical Advisory Group (ATAG) was formed in January 2006 and held its first meeting on January 25. Participation in the group comprised more than 80 individuals representing some 50 cities, local agencies, associations, community planning groups, and other stakeholders. Meetings of the group were held about every two weeks from February 1 to April 18. Initial discussions addressed how to define existing development for the purpose of land use compatibility as well as establishing standards for density and land use intensity. The discussion moved on to objectives and criteria for land use compatibility zones. ATAG members expressed concern with the use of a composite approach to defining compatibility zones that combined the effect of different criteria, such as noise and safety, and argued for a layered approach that clearly showed the application of the different criteria. At the meeting on March 3, it was agreed to form a subcommittee to work on the language of the proposed recommendation on existing land use definitions and at the following meeting, on March 14, a further subcommittee of representatives of jurisdictions was formed to develop language addressing proposed policy on in-fill, reconstruction, and development.⁶⁸⁵

The group continued to discuss the alternative approaches to compatibility zones at its meeting on March 30 and agreed to form a third subcommittee to analyze the advantages and disadvantages of the two approaches, to present to the ALUC Board on April 17. During the subcommittee discussion it became clear that the layered approach could be used to create a composite system of compatibility zones that would be easier for some jurisdictions and RAA staff to use. Therefore, the RAA staff agreed that they would prepare layered maps for all the airports and no longer saw a need for the ALUC Board to choose between the two approaches. The ATAG met again on April 18 and May 16 without coming to a final resolution of either the existing land use definition or infill, reconstruction, and redevelopment policy issues, although both subcommittees reported that they were fairly close to having recommended wording to present to the full group. It was also decided at the May 16 meeting to form three additional subcommittees on overflight and noise, airspace protection, and safety to address the remaining policy issues that had been identified at the first meeting, and that were grouped into these three areas.

The three new subcommittees met on May 26 and June 1, and together with the existing land use subcommittee on June 6 and 15. At the June 1 meeting, the noise and overflight subcommittee divided into separate subcommittees to address each topic. The safety

subcommittee met again on June 19, and a subgroup of the safety subcommittee met on the morning of June 22, before a meeting of the full ATAG that afternoon. That meeting reviewed the consensus recommendations of the existing land use, airspace protection, overflight, and noise subcommittees, and reviewed status reports from the in-fill/reconstruction/redevelopment and safety subcommittees. The consensus recommendations were presented to the ALUC Board on July 6 for approval. At that time, it was anticipated that the ATAG would finalize its recommendations on the remaining issues at its next meeting on July 17, with ALUC Board approval at a subsequent meeting.

Even if this schedule could be met, this still left the other airports to address, with a number of major issues affecting Lindbergh Field that the RAA staff and the relevant stakeholders had not even begun to consider. It appeared unlikely that the 2005 ALUCP update would be completed for all the airports before 2007. Since the ATAG represented a broad range of countywide jurisdictions and interests, it was also unclear what changes would be needed to this structure to address more local issues at Lindbergh Field.

Also at the July 6 ALUC Board meeting, RAA staff presented a proposed adoption timeline for the ALUCP update that envisaged preparing revised draft ALUCPs and environmental documents for seven airports (Agua Caliente, Borrego Valley, Fallbrook, Jacumba, Marine Corps Air Station Camp Pendleton, Ocotillo, and Ramona) in August, with public review in August and September, and adoption of the ALUCPs for these airports by the ALUC Board in November 2006. As of July 2006, it was unclear how this timeline could be achieved, since policy direction from the ALUC Board on the two outstanding policy issues would be required and the next regular meeting of the ALUC was not scheduled to occur until September. In fact the ALUCPs for each of these airports with the exception of MCAS Camp Pendleton were not adopted in December 2006. The Draft ALUCP for MCAS Camp Pendleton was not released for public review and comment until April 2008, together with the Draft ALUCP for MCAS Miramar.

Although the formation of the ATAG appears to have provided a process that engaged a large number of diverse stakeholders in the county and resulted in a set of consensus policy recommendations on a number of controversial issues, this required an enormous commitment of time from the RAA staff and ATAG members. Between January and July 2006, the ATAG met 10 times as the full group, while its subcommittees held 20 separate meetings. From August 2006 to December 2007 there were a further seven meetings of the full group and 17 subcommittee meetings.

Role of Surrounding Jurisdictions

The area surrounding SDIA lies entirely within the City of San Diego, which has overall jurisdiction for land use planning. Planning functions are divided between two city departments: the Planning Department is responsible for the development of the city general plan and long-range planning in general; zoning and development permits are the responsibility of the Development Services Department. The current zoning for the city is

shown on an Official Zoning Map that was adopted by the City Council on February 28, 2006.⁶⁸⁶ The map can be viewed on, or downloaded from, the Development Services Department website. In addition, the address of a property can be entered on the website to display the current zoning for that property.

The city general plan is also being updated. The *Progress Guide and General Plan* was originally adopted in 1979, and has been expanded, revised, and updated periodically thereafter. The Strategic Framework Element was adopted by the City Council in October 2002 to replace the chapter on Guidelines for Future Development that was adopted in 1992. The Strategic Framework Element defines a strategy termed The City of Villages, that in turn defines a set of 55 Community Planning Areas, as shown in [Figure 77](#). For each area, a community plan has been developed by city staff and the community, coordinated through community planning groups that are formed and operate following city policies and provide official recommendations to the city.⁶⁸⁷ The Community Planning Areas surrounding SDIA that include land within the AIA are Peninsula and Ocean Beach to the west, Midway-Pacific Highway to the north, Uptown to the northeast, and Centre City to the southeast. Further east, parts of Balboa Park, Greater Golden Hill, Southeastern San Diego, and small areas of the City Heights and Encanto neighborhoods are also within the AIA. Thus, airport land use issues potentially affect a significant number of community plans.

Development within the Centre City Community Planning Area is coordinated through the Centre City Development Corporation, a public, nonprofit corporation created by the City of San Diego to implement redevelopment projects and programs in the downtown area. The boundaries of the redevelopment area and the Centre City Community Planning Area coincide.

Community profiles for each of the Community Planning Areas are provided on the City of San Diego Planning Department website, along with the current *Community Plan*, information on the Community Planning Group, community contact and demographic information, and other community-related resources (at www.sandiego.gov/planning/community/index.shtml). The community profile for the Centre City area provides links to the relevant pages of the Centre City Development Corporation website.

The *July 2005 Draft General Plan* provided the first complete public review draft of the updated general plan. Since then, significant revisions have been made to the draft plan based on public comments and input from the Planning Commission, Land Use and Housing Committee, and other decision-makers. New working drafts of 12 of the general plan elements were posted on the Planning Department website between May and July 2006, with a subsequent public review draft released in October 2006 and September 2007. A Draft General Plan Program EIR was released for public comment in April 2007, with the final EIR released in September 2007. The updated *General Plan* was adopted by the City Council and approved by Mayor Jerry Sanders in March 2008.

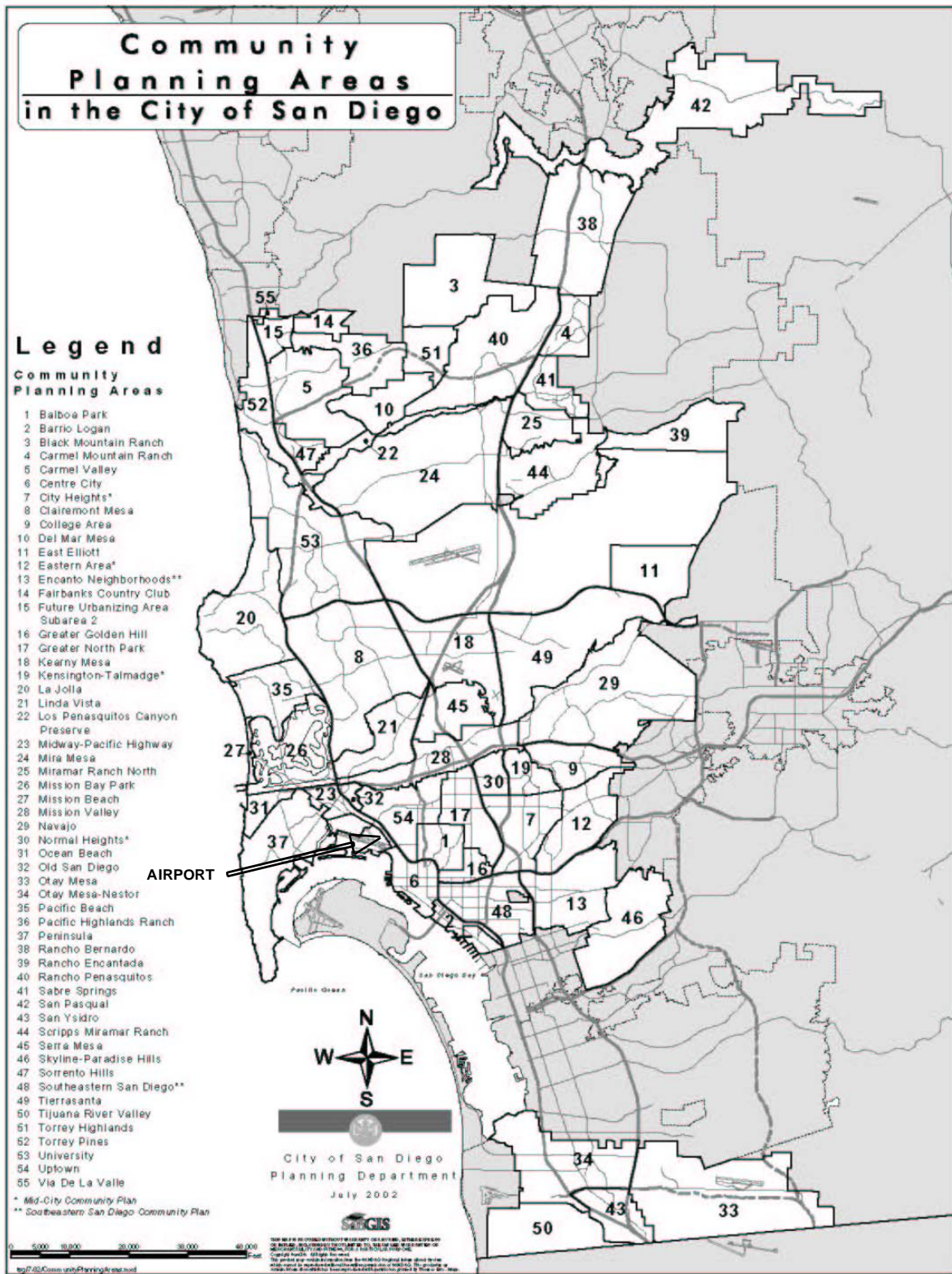


Figure 77 San Diego Community Planning Areas

Source: City of San Diego, July 2002, www.sandiego.gov/cityofvillages/documents (accessed November 2, 2005).

The *General Plan* comprises the following elements:⁶⁸⁸

- Introduction
- Strategic Framework
- Land Use and Community Planning
- Mobility
- Urban Design
- Economic Prosperity
- Public Facilities, Services and Safety
- Recreation
- Conservation
- Noise
- Historic Preservation
- Housing

The Land Use and Community Planning Element primarily focuses on the relationship between the general plan and community plans in terms of land use classification and the associated zoning. This element contains a *General Plan Land Use Map and Street System* map showing the planned land uses throughout the city in terms of eight use categories: residential; commercial employment, retail, and services; multiple use; industrial employment; institutional and public and semipublic facilities; parks, open space and recreation; agriculture; and military use. The element discusses the City of Villages strategy, general plan land use categories, and the community planning process. It also addresses such aspects of land use planning as the plan amendment process, planning for coastal resources, achieving balanced communities with housing for all income levels and equitable development, environmental justice, transfer of land from Future Urbanizing to Planned Urbanizing Area phase of development, and annexation of land into the city.

The Land Use and Community Planning Element includes a section on airport land use compatibility that discusses the role of the ALUC and the relationship between the ALUCP and the city's land use planning process. This section defines city policies to work with the ALUC to develop policies that are consistent with state and federal regulations and guidelines, that balance airport land use compatibility goals with other citywide and regional goals, and ensure that the general plan, community plans, specific plans, airport plans, development regulations, and zoning ordinances affected by an Airport Influence Area are consistent with the ALUCP unless the city council has taken steps to overrule the ALUC.

The Noise Element contains a section on noise and land use compatibility and a section on aircraft noise. The section on noise and land use compatibility addresses all sources of noise and contains a table showing the exterior noise levels in CNEL for which different land uses

are considered incompatible or conditionally compatible. Single-unit residential use is considered incompatible above 65 dB CNEL and conditionally compatible between 60 and 65 dB CNEL, provided that interior noise levels are mitigated to 45 dB CNEL. Multiple-unit residential use could be conditionally compatible between 65 and 75 dB CNEL, subject to mitigating interior noise levels to 45 dB CNEL and other restrictions discussed in policies on aircraft noise. The section on aircraft noise identifies these policies as follows:

- NE.D.1 Encourage noise-compatible land use within airport influence areas in accordance with federal and state noise standards and guidelines.
- NE.D.2 Limit future residential uses within airport influence areas to the 65 dBA CNEL airport noise contour, except for multiple-unit, mixed-use, and live work residential uses within the San Diego International Airport influence area in areas with existing residential uses and where a community plan and the Airport Land Use Compatibility Plan allow future residential users.
- NE.D.3 Ensure that future multiple-unit, mixed-use and live work residential uses within the San Diego International Airport influence areas that are located greater than the 65dBA and CNEL airport noise contour are located in areas with existing residential uses and where a community plan and Airport Land Use Compatibility Plan allow future residential uses.
 - a. Limit the amount of outdoor area subject to exposure above the 65dBA CNEL, and
 - b. Provide noise attenuation to ensure an interior noise level that does not exceed 45 dBA CNEL.
- NE.D.4 Discourage outdoor uses in areas where people could be exposed to prolonged periods of high aircraft noise levels greater than the 65 dBA CNEL airport noise contour.
- NE.D.5 Minimize excessive aircraft noise from aircraft operating at Montgomery Field to surrounding residential areas.
 - a. Implement a noise monitoring program to assess aircraft noise
 - b. Implement nighttime aircraft noise limits and a weight limit for aircraft using the airport
- NE.D.6 Encourage civilian and military airport operators, to the extent practical, to monitor aircraft noise, implement noise-reducing operations measures, and promote pilot awareness of where aircraft noise affects noise-sensitive land uses.

The Noise Element does not discuss what would be considered “prolonged periods of high aircraft noise levels in outdoor areas.” Without defining what is considered a “high aircraft noise level” or “prolonged period,” policies to discourage or avoid uses that result in such exposure are difficult to apply in a defensible way.

The section on aircraft noise establishes a goal of “Minimal excessive aircraft-related noise on residential and other noise-sensitive land uses.” The subsequent discussion does not specifically address what is considered “excessive” aircraft-related noise, although it notes that the state-required *Airport Land Use Compatibility Plan* “incorporates the California Airport Noise Standards that establishes the 65-dBA CNEL as the boundary for the normally acceptable level of aircraft noise for noise-sensitive land uses including residential uses near airports.” However, when the working draft of the Noise Element was released in May 2006, the San Diego County ALUC had not yet addressed appropriate noise standards around San Diego International Airport as part of its ongoing update of the ALUCP, as discussed above.

Surprisingly, given the varied character of different neighborhoods in the city, from the dense urban environment of the downtown to the quieter atmosphere of more suburban areas, there is no discussion in the Noise Element of how the characteristics of a given neighborhood might influence what the local community would consider an acceptable level of ambient noise for different uses.

Zoning in Nearby Areas

The large number of Community Planning Areas has resulted in a large number of different zoning classifications. To standardize these for the draft *Official Zoning Map*, a system of zoning designators has been defined comprising two letters followed by two numbers separated by hyphens, for example, RS-2-4. The two letters indicate the type and category of zone (for example, RS is residential, single-family), and the two numbers refer to packages of permitted uses and development regulations respectively.⁶⁸⁹ There are currently 82 such designators. In addition, other zoning designators have been defined for specific Planned Districts identified in the Municipal Code (for example, CCPD-A is Centre City Planned District land use district A). Planned Districts are not the same as Community Planning Areas, although their boundaries may coincide. However, a Community Planning Area may contain more than one Planned District as well as land that is not in a Planned District. Planned Districts typically contain a number of defined land use districts. There are 166 more designators for zoning within the various Planned Districts. The detailed rules for each zoning classification are contained in the Land Development Code chapters of the Municipal Code.

There are five types of zone in the standard designator system, indicated by the first letter of the designator, as follows: agriculture (A), commercial (C), industrial (I), open space (O), and residential (R). Single-family residential is assigned the two-letter designator RS and multifamily residential is assigned the two-letter designator RM.

The land use zoning in the area immediately to the west of SDIA shown in the *Official Zoning Map* is shown in [Figure 78](#), which contains information from two of the map grid tiles, Grid

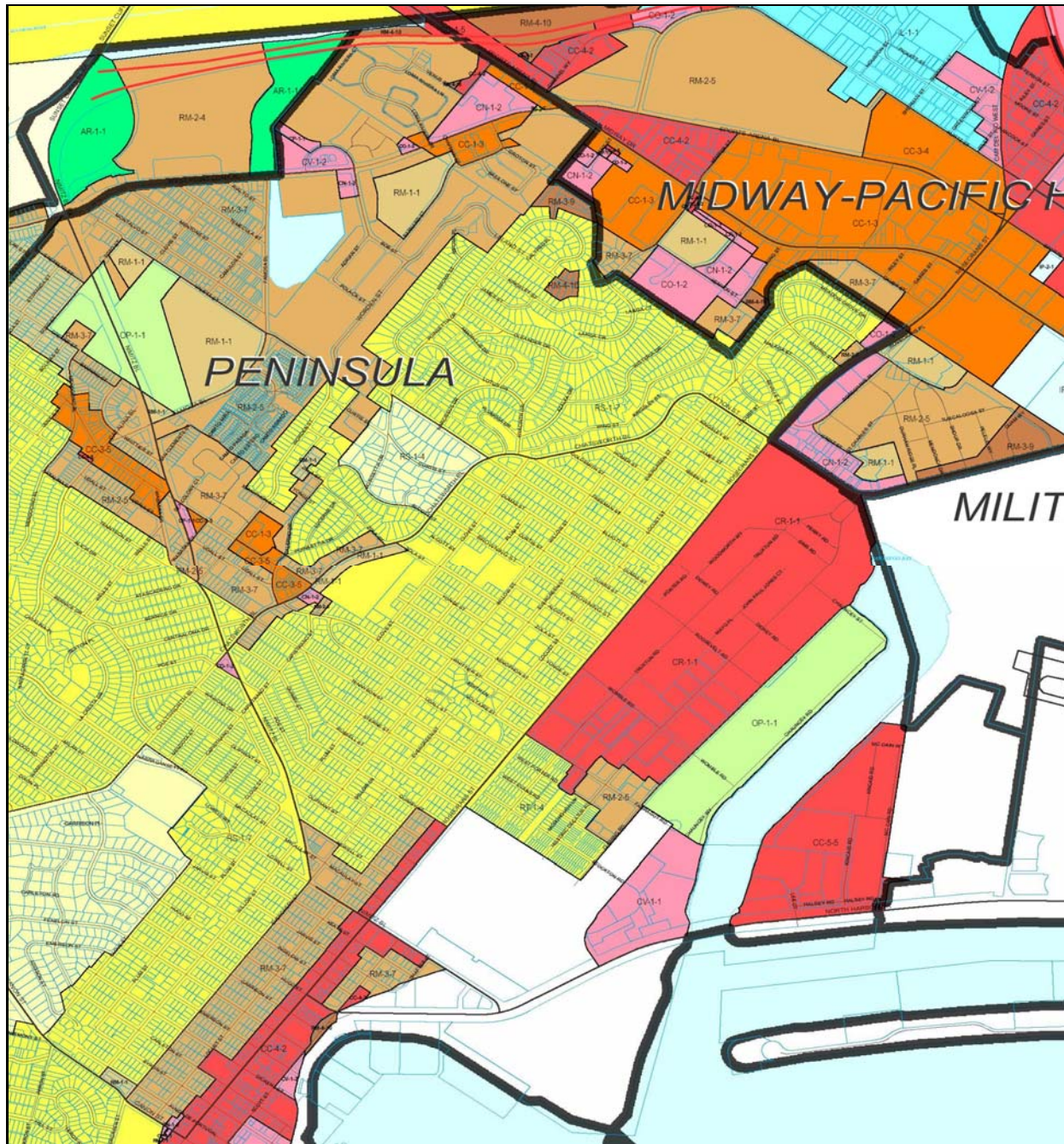


Figure 78 Land Use Zoning in Nearby Areas to the West of SDIA

Source: City of San Diego, "Official Zoning Map," February 28, 2006, www.sandiego.gov/development-services/zoning/zoninggridmap.shtml (accessed July 30, 2006).

14 (Peninsula Community Planning Area) and Grid 18 (Midway-Pacific Highway Community Planning Area). (The *Official Zoning Map* for the entire city is divided into 49 panels, termed grid tiles.) The legend shown in [Figure 79](#) applies to zoning designations in Grid 14, but the same colors are used for the same zoning designation in other grid tiles, and for similar land uses with different zoning designators. Thus yellow tones indicate single-

family residential; brown tones indicate multifamily residential; orange, red, and pink tones indicate different types of commercial zoning; blue tones indicate industrial zoning.

The end of the SDIA runway can be seen on the right edge of [Figure 78](#). Directly across the channel to the west of the runway end lies the former Naval Training Center (NTC) site, which is mostly zoned commercial with open space adjacent to the channel and some residential zoning at the southeastern end. A large area zoned for single-family residential use lies beyond the NTC site. Further west, the zoning changes to multifamily residential use with some pockets of commercial use. Immediately to the northeast of the NTC, quite close to the end of the runway, is a smaller area zoned for multifamily residential use.

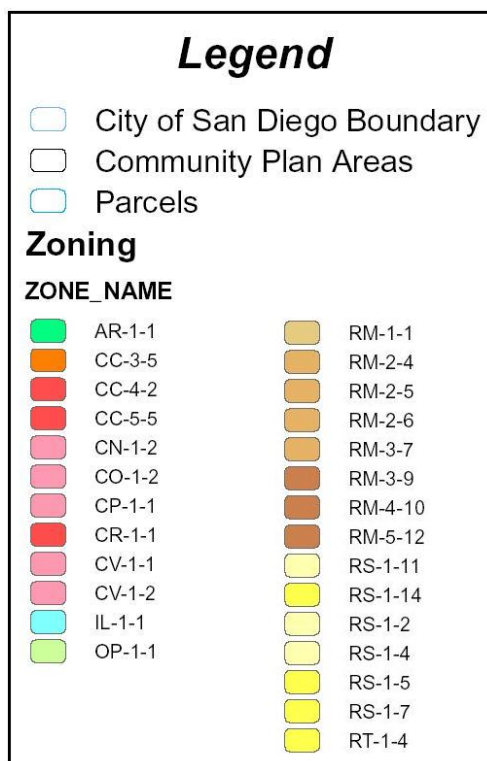


Figure 79 Land Use Zoning Color Codes

The land use zoning to the east of the airport is shown in [Figure 80](#). The land immediately beyond the runway end is zoned for commercial, industrial, and mixed use, but beyond that is an area zoned for multifamily residential use, with an area of predominantly commercial use on the west side of Balboa Park. Further north in the Uptown Community Planning Area is an area predominantly zoned for single-family residential use, with multifamily residential use between this and the highway corridor adjacent to the airport. These areas to the northeast of the runway end are not directly under the arrival flight path; however, they are fairly close to the runway end, and because of the rising terrain to the east of the airport are exposed to greater levels of aircraft noise than would be the case if the land were at the same elevation as the airport.

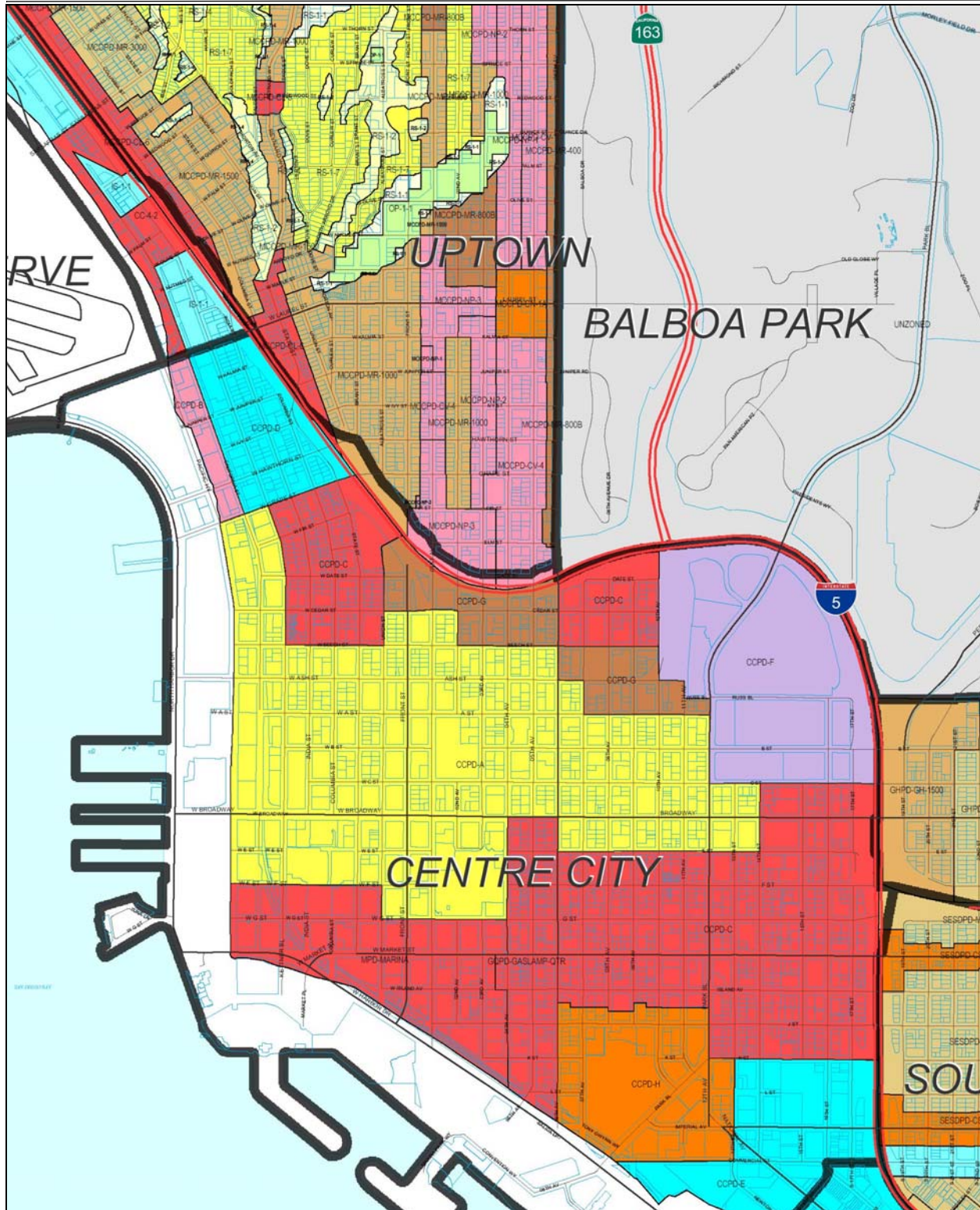


Figure 80 Land Use Zoning in Nearby Areas to the East of SDIA

Source: City of San Diego, "Official Zoning Map," February 28, 2006, www.sandiego.gov/development-services/zoning/zoninggridmap.shtml (accessed July 30, 2006).

The northwest corner of the Centre City Community Planning Area, an area referred to as Little Italy, includes two land use districts close to the end of the airport runway and partly under the arrival flight path. The larger of these has been designated a mixed-use district (marked CCPD-D and shown in light blue on [Figure 80](#)) while a narrow strip closer to the waterfront has been designated a recreation/visitor/marine district (marked CCPD-B and shown in pink on [Figure 80](#)). According to the land use district definitions in the Municipal Code, a mixed-use district “is intended to provide for commercial services that support office, business, professional, and personal needs” while a recreational/visitor/marine district “is expressly designed for application to the waterfront and is intended to accommodate major tourist and local visitor attractions, recreation areas, and marine-related industry.”⁶⁹⁰ Multifamily residential use is permitted in both types of district.

The remainder of the Centre City Community Planning Area lies farther south of the arrival flight path, with the land immediately to the south of the Interstate 5 freeway designated as mixed-use/residential-emphasis districts (marked CCPD-C and shown in red on [Figure 80](#)) and hotel/residential district (marked CCPD-G and shown in brown on [Figure 80](#)). The zoning rules for mixed-use/residential-emphasis districts in the Municipal Code generally require at least 80 percent of the total gross floor area of a project for residential use. Multifamily residential use is permitted in all zones within the Centre City Planned District (CCPD) and the zoning rules for hotel/residential districts require at least 75 percent of the total gross floor area of a project other than a hotel development to be for residential use.

Farther south, the land is designated as a commercial/office district (marked CCPD-A and shown in yellow on [Figure 80](#)). According to the land use district definitions in the Municipal Code, this classification “is intended to accommodate government, business and professional offices, hotels, judicial facilities, and a variety of support commercial services and residential development.” Thus, while the area is not predominantly residential, multifamily residential use is not precluded, and there are some apartment, condominium, and live/work loft developments in this area.

In addition to the land use rules for different zones, the Municipal Code defines two Overlay Zones, an Airport Approach Overlay Zone⁶⁹¹ and an Airport Environs Overlay Zone.⁶⁹² The Airport Approach Overlay Zone (AAOZ) establishes height limitations for structures in the vicinity of approach paths to SDIA and requires an applicant for a development or building permit within the AAOZ to obtain a letter from the FAA stating that the proposed development either does not require notice to the FAA or the FAA has issued a Determination of No Hazard. The AAOZ regulations also provide for notification of the airport authority and procedures for the airport authority to appeal an FAA Determination of No Hazard, as well as procedures to be followed if the FAA issues a Determination of Hazard.

The Airport Environs Overlay Zone (AEOZ) provides additional regulations for conformance with land use compatibility zones defined by the CLUPs for four airports in the county. In the case of SDIA, the overlay zone regulations require that interior noise levels attributable to airport operations for residential development within the 60 dB CNEL noise contour defined

in the CLUP shall not exceed 45 dB. However, there are no limits on the type of use that is permitted. The regulations also specify that an aviation easement shall be required if a development increases the number of dwelling units and is located within the 1999 65 dB CNEL noise contour for SDIA.

As of the end of 2007, the AEOZ regulations contained in the Municipal Code had not been updated to reflect the creation of the San Diego County RAA and its role as the ALUC, although the AAOZ regulations were amended in August 2006 to reflect the role of the RAA as the airport operator.

POTENTIAL ROLE AND IMPACT OF SMART GROWTH

Both SANDAG and the City of San Diego have made significant commitments to the principles of smart growth. SANDAG recently established a Smart Growth Incentive Program based on the *Regional Comprehensive Plan*.⁶⁹³ The program is designed to provide funding incentives to encourage coordinated regional planning to stimulate smart growth development that combines transit service, housing, and employment. In September 2005, SANDAG approved \$19 million funding for 14 projects as part of a Pilot Smart Growth Incentive Program. A longer-term smart growth incentive program will begin in 2008 with \$280 million funding from a local half-cent sales tax for transportation projects. None of the projects so far approved in the pilot program are located in the immediate vicinity of SDIA.

The City of San Diego has structured its long-range planning around the “City of Villages” strategy, and since its creation in 1975, the Centre City Development Corporation (CCDC) has promoted residential development in the downtown area. The increasing residential density in the downtown (Centre City) and the Uptown area to the northeast of the airport is greatly expanding the number of residential units in or close to downtown commercial, retail, and entertainment activities, and in areas well served by the San Diego Trolley. However, many of these locations are also close to or under the primary arrival flight path to the airport and a significant part of the Uptown area is within the 1990 65 dB CNEL noise contour.

The redevelopment of the Naval Training Center site immediately to the west of the airport is creating a new mixed-use development with a significant number of residential units close to the primary departure end of the airport runway, although mostly outside the 1990 65 dB CNEL noise contour. However, the site is not served directly by the San Diego Trolley light-rail system, the closest station being about a mile from the northern boundary of the site.

This debate has been complicated by the fact that the noise analysis on which the ALUC has continued to base its land use planning activities and to define the Airport Influence Area before the 2005 update of the ALUCP is well over a decade old; therefore, it fails to account for all the changes that have occurred in traffic levels, aircraft fleet composition, and noise characteristics during that period. The noise contours that were used to define the AIA were developed by SANDAG in February 1992, based on air traffic conditions for 1990.⁶⁹⁴ The 2004 *Environmental Impact Report for Annual Amendments to the Comprehensive Land Use Plans for*

*San Diego County Airports*⁶⁹⁵ prepared by the RAA includes detailed maps showing land uses and noise contours around SDIA. These noise contours were still based on the 1990 traffic level and composition, as noted in comments on the Draft EIR from the City of San Diego (Final EIR, Volume 3, comment L5-114, p. 114). In General Response NS-6 (Final EIR, Volume 3, p.16) the RAA noted that the noise contours might expand in the future from their current extent, and in any event, the amendments for which the EIR had been prepared did not involve changing the assumptions and forecasts for the projected noise contours.⁶⁹⁶

The proximity of SDIA to the downtown, while an advantage from the perspective of airport access, creates a conflict with respect to efforts to increase residential density and to encourage mixed-use development in and near the downtown area and along the San Diego Trolley line to the west of downtown. Although highly desirable from the perspective of smart growth, this places increasing numbers of residential units close to the airport and under the primary arrival flight path. The seriousness of this conflict is a matter of some debate. The RAA, in its role as the ALUC, is concerned that creating additional incompatible uses, as defined by established California airport land use planning criteria, in proximity to the airport may lead to greater pressures to restrict the operation of the airport or at least to expose large numbers of people to unacceptable noise levels. On the other hand, city planning staff and the CCDC have suggested that these criteria might be inappropriate for a dense urban environment like the downtown area, where noise levels from other sources are already fairly high, most modern high-rise buildings are well insulated against noise, and those moving into residential units in these areas are well aware of the nearby presence of the airport and presumably have made a conscious choice to balance any disamenity from aircraft noise against the advantages of proximity to downtown.

These concerns over the dated noise analysis will be addressed by the 2005 ALUCP update, but the underlying issue of the uncertainty over the extent of future air traffic growth at SDIA will not go away in the foreseeable future. Therefore, considerable conflict is likely to continue between those promoting future residential development in the communities around SDIA and the efforts of the ALUC to protect the airport from incompatible uses.

Naval Training Center Redevelopment

The planned redevelopment of the former U.S. Naval Training Center (NTC) site immediately to the west of SDIA is one of the largest mixed-use developments in the vicinity of the airport and a perfect example of the conflicts that can arise when pursuing smart growth goals in the vicinity of an airport. The NTC closed in 1997 and the site is being redeveloped as a joint project between the City of San Diego Redevelopment Agency and The Corky McMillin Companies as a new urban village under the name Liberty Station.⁶⁹⁷ Following a request for qualifications for a master development/partner for the NTC development and a selection and negotiation process, a Disposition and Development Agreement was approved by the Redevelopment Agency in June 2000.

The redevelopment project involves a 361-acre site divided into several specific planning areas, as shown in [Figure 81](#), including a 37-acre residential district at the southwest end of the site, a 28-acre civic, arts, and cultural district, a 22-acre educational campus, 60 acres of retail and commercial uses, a 22-acre office district, a 37-acre hotel area, and 70 acres of public parks and open space. The retail/commercial and civic, arts, and cultural districts occupy rehabilitated buildings in the NTC historic core at the northeast end of the site, directly under the departure flight path from the airport. Although the residential district lies outside the 1990 65 dB CNEL noise contours, it is bisected by the 1990 60 dB CNEL contour, and its northwest corner is only about 2,500 feet from the extended runway centerline. The promenade that forms the central axis of the NTC historic core, as shown on [Figure 81](#), lies directly under the departure flight path about 3,000 feet from the end of the runway.



Figure 81 Naval Training Center Redevelopment Planning Areas

Source: City of San Diego, "Redevelopment of NTC," www.sandiego.gov/ntc/redevelopment/ (accessed August 3, 2005). (North Point added.)



Figure 82 Aerial View of Airport and Naval Training Center Site

Source: Liberty Station. "Maps," 2004, www.libertystation.com/maps (accessed March 8, 2005).

The location of the site in relation to the airport can be clearly seen in the aerial photograph shown in [Figure 82](#), which shows the state of the redevelopment in 2004. The golf course and buildings in the NTC historic core can be seen at the head of the boat channel.

The educational district is even closer to the departure flight path than the residential areas. Although there are no established criteria for exterior noise levels for schools or other educational facilities in the *California Airport Land Use Planning Handbook*, state law requires Caltrans to review proposed sites for public schools or community colleges within two miles of an airport runway and submit findings and recommendations to the California Department of Education or the Community College Board of Governors before sites are acquired. This review is primarily intended to address safety concerns, although it also can address aircraft noise issues. In July 2003, the Gary and Jerri-Ann Jacobs High Tech High, a public charter high school within the San Diego Unified School District, completed the purchase of four buildings in the educational district. Operating at Liberty Station since September 2000, initially in a rented building, High Tech High was serving 400 students by 2003. One of the four buildings was acquired for an associated middle school to serve 240 students, which opened in September 2003, and another for a new high school for international studies that opened a year later. Two additional charter schools were added to the campus in September 2005: High Tech High Media Arts and High Tech Middle Media Arts. By August 2007, two other educational organizations had located in facilities in the educational district, including an elementary charter school and the Rock Academy and Church.

The first residents began moving into the new homes at Liberty Station in June 2003. Most of the homes planned as part of the development had been sold by the summer of 2004, and home construction was nearing completion by early 2005. The first of the new office buildings was being occupied by the spring of 2004; by June 2004, five firms occupied space in the

office building. An off-airport parking operator opened a facility at the site in August 2004, and additional firms occupied office space during 2005 or made commitments to purchase buildings or lease space for occupancy in 2006. In May 2005, plans were announced for a new medical campus at the development. By the end of 2007 there were almost 20 firms in the office buildings, with seven retail and 18 food service establishments on the site. A hotel opened in September 2007 with another planned to open in 2008 and a third scheduled to open in 2010.

In summary, while the development of Liberty Station may satisfy the technical requirements of the CLUP and has been steadily attracting residential, educational, and commercial occupants, the location of the site, directly off the departure end of the SDIA runway, is hardly the most promising setting for developing a new “urban village.” However, those choosing to locate in the development are presumably well aware of their proximity to the airport and therefore must have decided that the aircraft noise and overflights are an acceptable tradeoff for the other advantages of the site. How long they will continue to hold this view after moving to the development remains to be seen. If the occupants continue to find the levels of aircraft noise and overflights acceptable, while communities further to the west continue to complain about aircraft noise, this would raise important questions about the justification for applying the same land use compatibility criteria to a new planned development as is used for an established neighborhood. Whatever else it may do, the redevelopment of the NTC site is performing a dramatic experiment in airport land use compatibility planning, the outcome of which could significantly influence future criteria for planning similar developments in the immediate vicinity of airports.

CHANGES IN LOCAL LAND USE

To examine the effectiveness of the local land use planning process at preventing incompatible development within the AIA, the changes in land use from 1990 to 2003 were analyzed as part of the current study. SANDAG maintains geographical information system (GIS) files of actual land use within the region and provided copies of these files for both 1990 and 2003. This allowed an analysis of changes in the pattern of land use around the airport over the 13-year period.

The land use data in the GIS files was classified using 68 different land use codes. To simplify the depiction and analysis of the land use, these codes were consolidated into the 18 land use categories shown in [Figure 83](#). Each category was assigned a color to facilitate the depiction of land use patterns on figures showing the land uses in the vicinity of the airport.

The land use patterns in the vicinity of the airport in 1990 and 2003 are shown in [Figure 84](#) through [Figure 87](#), classified using the defined categories shown in [Figure 83](#). The figures also show the boundary of the Airport Influence Area in red and the 1990 noise contours in blue. The outermost noise contour is 60 dB CNEL and the innermost is 80 dB CNEL. The areas shown in white are uses that were not assigned a specific land use code in the GIS file. The two

Land Use Classification

	Single family residential
	Multi-family residential
	Other residential
	Hotel/motel
	Commercial
	Industrial
	Public facilities
	Schools and colleges
	Religious facilities
	Military use
	Transportation/utilities
	Airports
	Recreation and entertainment
	Parks, beaches, golf courses
	Open space
	Agriculture
	Vacant land
	Water

Figure 83 Land Use Classification Categories

larger areas to the east of the downtown are cemeteries, and the smaller area between the downtown and waterfront is a convention center.

The most obvious change in land use between 1990 and 2003 is the conversion of the former Naval Training Center site from military use to a combination of vacant land, multifamily residential, and other residential use (under construction). The multifamily residential area is not part of Liberty Station. The remainder of the NTC site was not strictly vacant because redevelopment was in progress; some buildings were occupied by 2003. More subtle land use changes are harder to identify at the scale of the four figures. Some apparent changes in land use between the two years may reflect corrections in the land use database rather than changes in use. Also, the land use database only reflects the use of each parcel, not the intensity of use. Thus, replacement of a two-unit duplex by a 12-unit condominium would not change the land use classification.

Using the GIS files, the change in the total land area in each of the land use categories between 1990 and 2003 was analyzed. The analysis measures the land area within the AIA and between each of the 1990 CNEL noise contours. The results of the analysis for the areas between the noise contours in each year are summarized in [Table 5](#); the change in area for each land use category is shown in [Table 6](#); the change in land use within the AIA as a whole is shown in [Table 7](#).

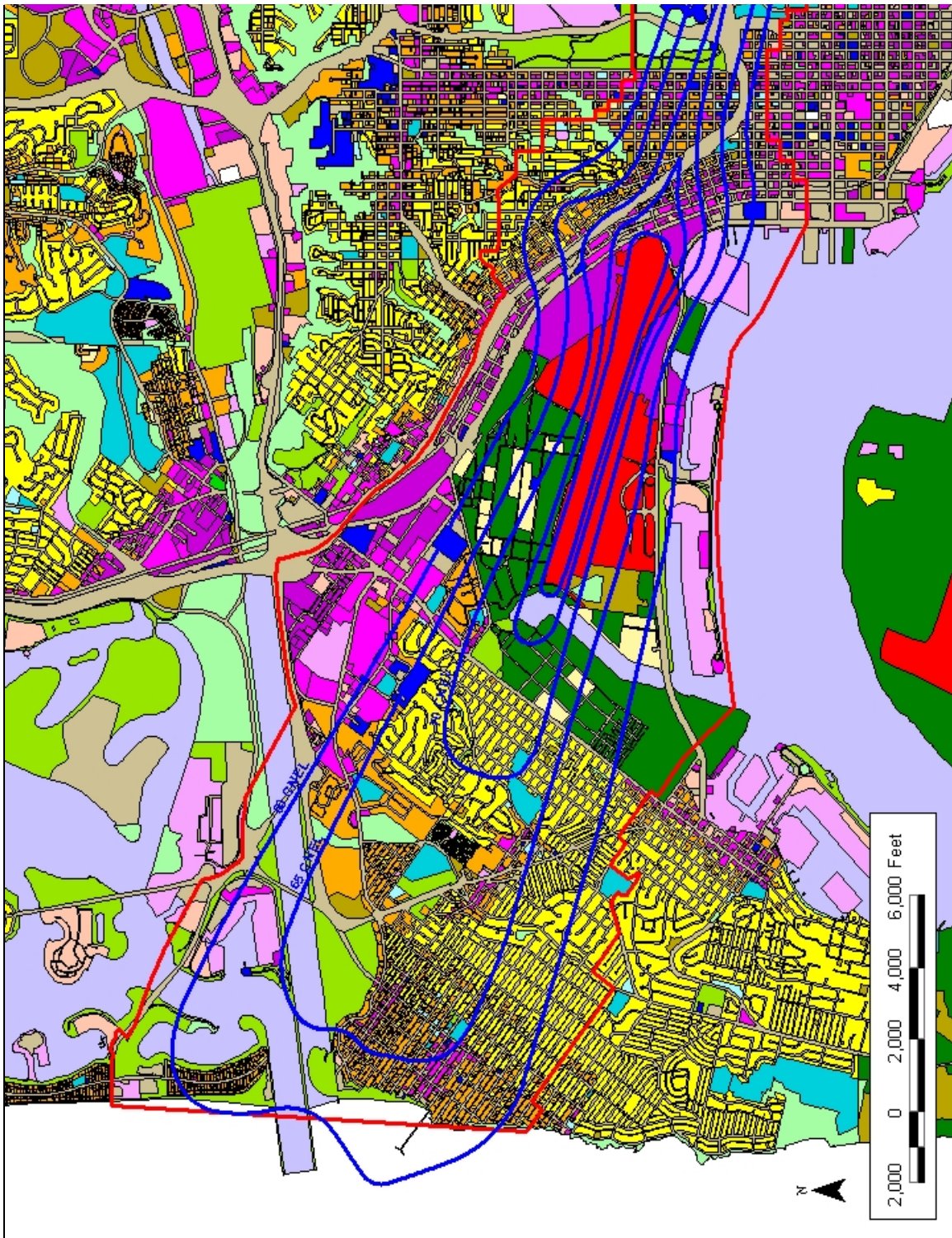


Figure 84 Airport Vicinity Land Use 1990—West of Airport

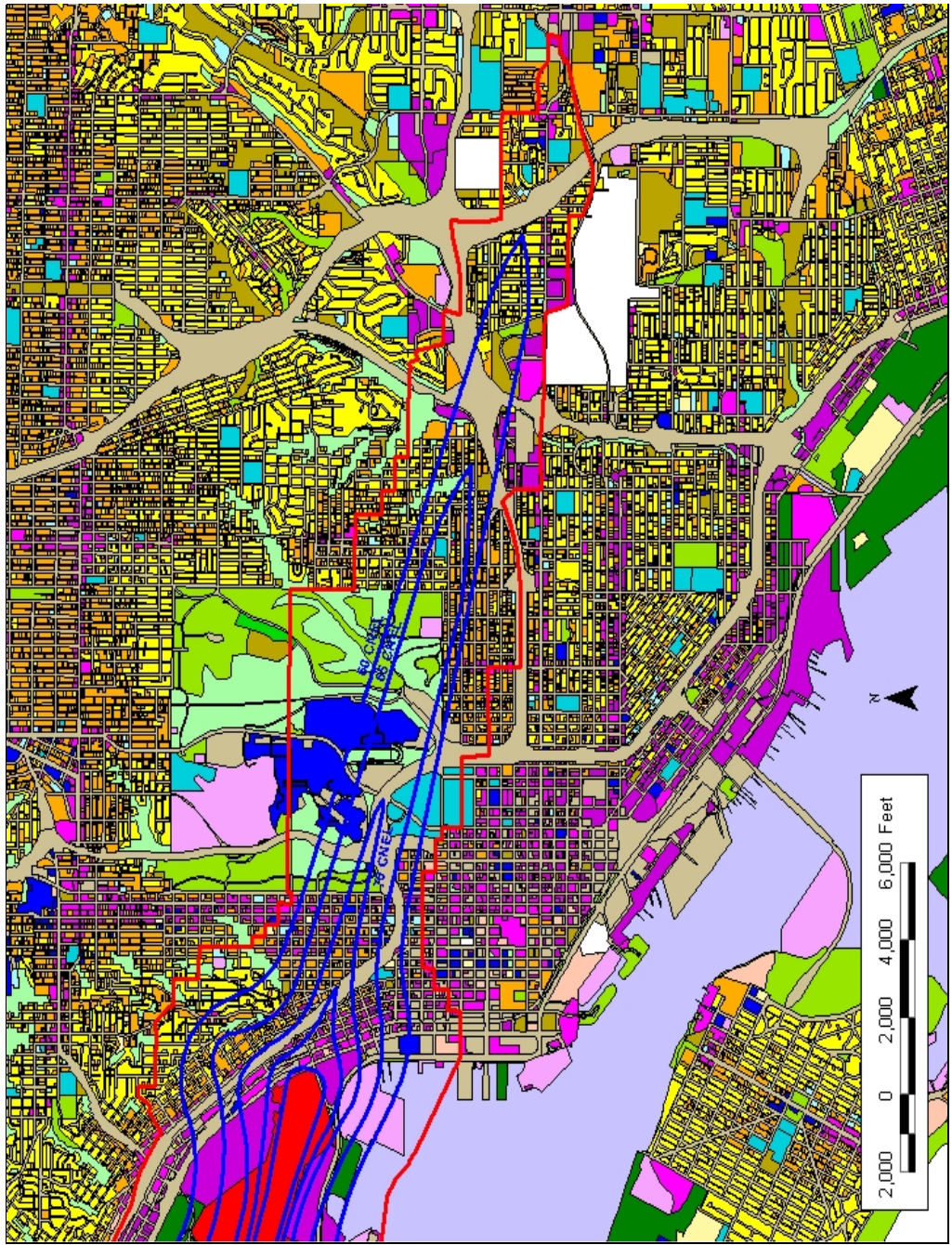


Figure 85 Airport Vicinity Land Use 1990—East of Airport

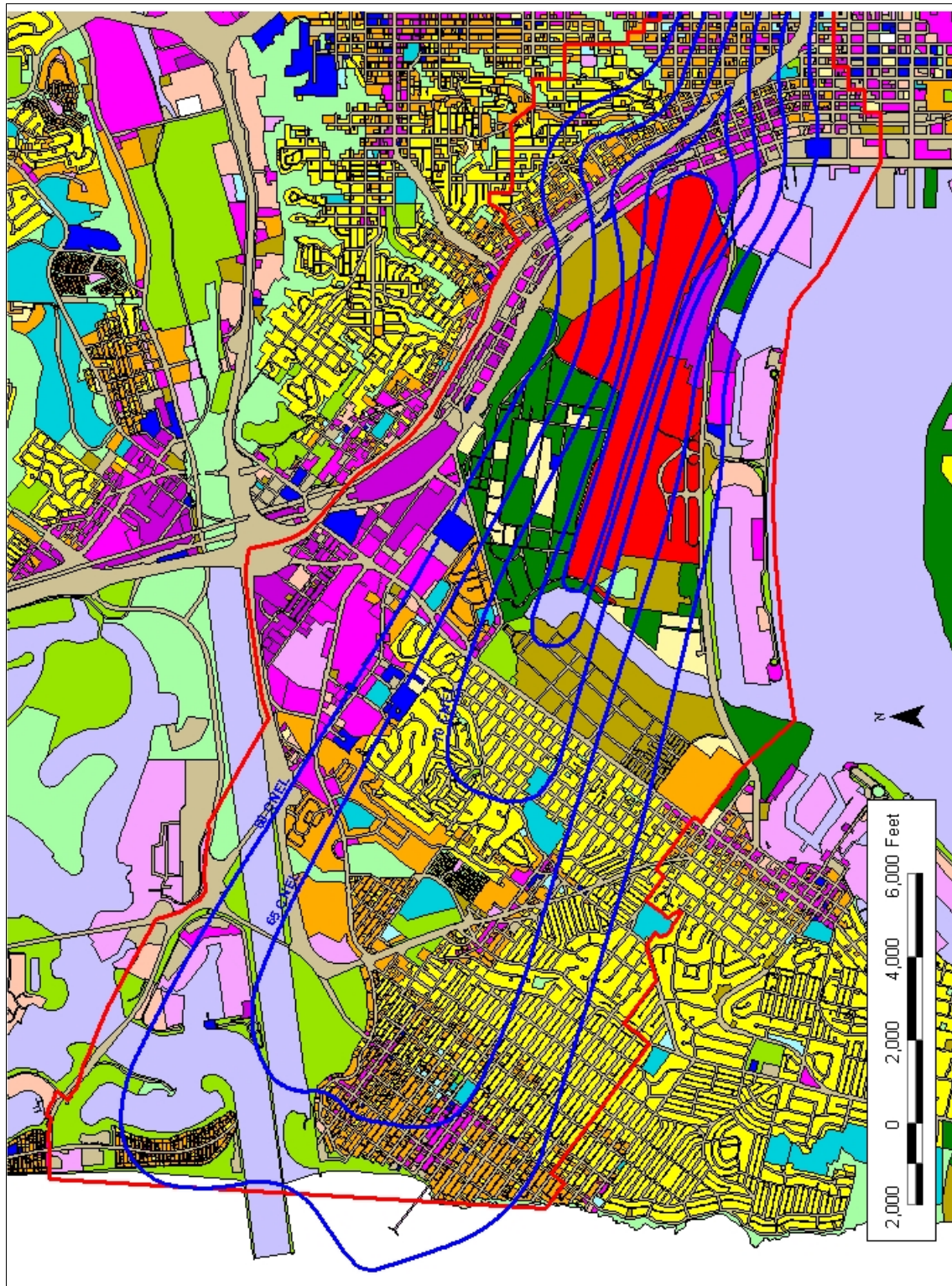


Figure 86 Airport Vicinity Land Use 2003—West of Airport

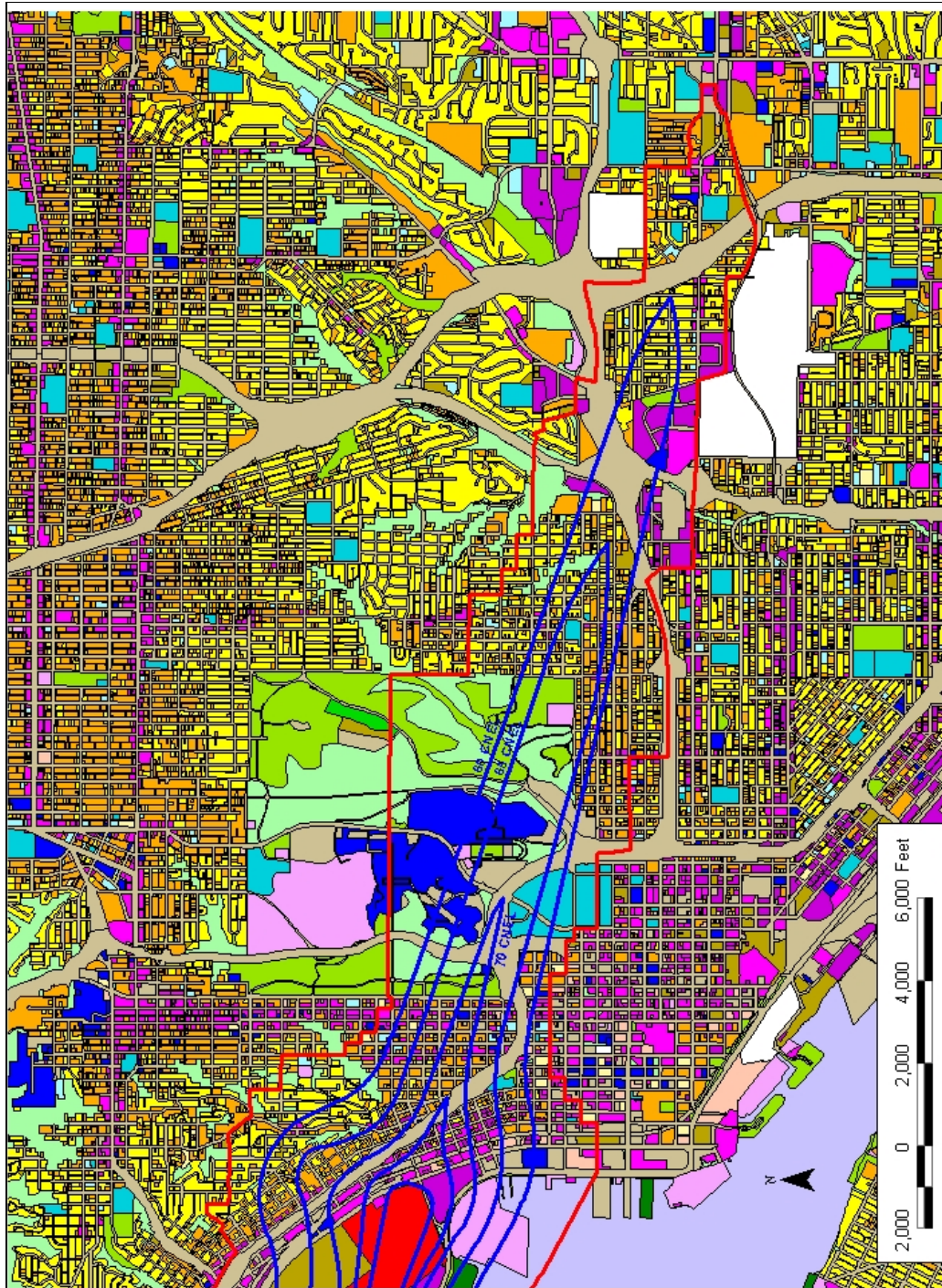


Figure 87 Airport Vicinity Land Use 2003—East of Airport

Table 5 Land Use Within CNEL Noise Contours—1990 and 2003

Land Use	Area Between 1990 CNEL Noise Contours (acres)					
	60-65	65-70	70-75	75-80	80+	Total
1990						
Single-family residential	360.3	359.1	90.8	1.0		811.2
Multifamily residential	247.4	314.2	20.0	0.7		582.4
Other residential	40.7	36.7	13.0			90.4
Hotel/motel	14.7	1.9		1.0		17.5
Commercial	103.9	47.1	20.6	9.2	1.1	181.9
Industrial	61.6	58.4	45.3	28.3	0.7	194.4
Public facilities	57.3	50.9	3.4			111.6
Schools and colleges	30.9	74.3	7.6			112.8
Religious facilities	3.9	9.3	0.8			14.0
Military use	169.1	85.6	142.9	37.6	2.7	437.8
Transportation/utilities	597.7	549.7	164.6	32.6	3.1	1,347.7
Airports	55.1	110.9	65.9	71.5	155.7	459.2
Recreation and entertainment	65.9	33.3	8.5			107.7
Parks, beaches, golf courses	161.7	164.3	27.5	0.1		353.6
Open space	66.3	115.4	6.5	0.5		188.8
Vacant land	66.0	46.1	5.5	0.3		117.9
Water	324.2	75.8	7.7	19.8	0.4	427.8
	2,426.8	2,133.1	630.6	202.7	163.6	5,556.7
2003						
Single-family residential	365.1	361.6	90.7	1.0		818.4
Multifamily residential	251.4	312.7	20.0	0.7		584.8
Other residential	38.3	31.3	9.3			78.9
Hotel/motel	15.8	2.1	0.1	1.0		19.0
Commercial	107.3	47.3	20.5	9.1	0.0	184.1
Industrial	42.4	32.1	23.2	17.6	0.7	115.9
Public facilities	58.4	47.9	3.4			109.6
Schools and colleges	31.1	74.3	7.6			113.0
Religious facilities	3.9	9.3	0.8			14.0
Military use	108.4	58.9	87.6	25.8	2.7	283.4
Transportation/utilities	595.6	551.7	164.6	32.6	3.1	1,347.6
Airports	55.7	112.6	73.1	78.6	156.7	476.7
Recreation and entertainment	69.1	46.3	8.5			123.9
Parks, beaches, golf courses	159.2	168.0	27.5	0.1		354.7
Open space	61.8	110.8	6.5	0.5		179.7
Vacant land	139.8	91.3	80.2	16.6	0.0	327.8
Water	323.4	75.1	7.2	19.1	0.4	425.1
	2,426.8	2,133.1	630.6	202.7	163.6	5,556.7
Note: There was no agricultural land within the 60 dB CNEL contour						

Table 6 Change in Land Use from 1990 to 2003 Within CNEL Noise Contours

Land Use	Change in Area Between 1990 CNEL Noise Contours (acres)					
	60-65	65-70	70-75	75-80	80+	Total
Single-family residential	4.8	2.5	-0.1	0.0		7.2
Multifamily residential	4.0	-1.6	-0.1	0.0		2.4
Other residential	-2.4	-5.4	-3.8			-11.5
Hotel/motel	1.1	0.2	0.1	0.0		1.5
Commercial	3.5	0.2	-0.1	-0.1	-1.1	2.2
Industrial	-19.3	-26.4	-22.2	-10.7	0.0	-78.5
Public facilities	1.1	-3.1	0.0			-2.0
Schools and colleges	0.2	0.0	0.0			0.2
Religious facilities	0.0	0.0	0.0			0.0
Military use	-60.7	-26.6	-55.3	-11.8	0.0	-154.4
Transportation/utilities	-2.1	2.0	0.0	0.0	0.0	-0.1
Airports	0.6	1.6	7.3	7.0	1.1	17.6
Recreation and entertainment	3.2	13.0	0.0			16.2
Parks, beaches, golf courses	-2.5	3.6	0.0	0.0		1.2
Open space	-4.5	-4.7	0.0	0.0		-9.1
Vacant land	73.7	45.2	74.7	16.3	0.0	209.9
Water	-0.8	-0.7	-0.5	-0.7	0.0	-2.7

Table 7 Change in Land Use from 1990 to 2003 Within AIA

Land Use	Area within AIA (acres)		
	1990	2003	Change
Single-family residential	1,191.2	1,213.3	22.1
Multifamily residential	770.1	813.4	43.4
Other residential	110.3	111.7	1.3
Hotel/motel	77.1	73.9	-3.2
Commercial	402.6	410.8	8.2
Industrial	403.9	316.8	-87.1
Public facilities	221.0	220.3	-0.7
Schools and colleges	166.9	167.7	0.7
Religious facilities	25.4	25.6	0.2
Military use	605.4	355.7	-249.7
Transportation/utilities	2,338.2	2,337.7	-0.5
Airports	459.2	476.7	17.6
Recreation and entertainment	290.9	305.0	14.1
Parks, beaches, golf courses	522.7	523.6	0.9
Open space	398.1	388.6	-9.5
Agriculture	0.9	0.9	0.0
Vacant land	164.3	409.4	245.1
Water	752.8	749.9	-2.9
	8,901.1	8,901.1	

The principal changes are a reduction in military and, to a lesser extent, industrial land and a corresponding increase in vacant land. The increase in vacant land is largely a result of the revised classification of the NTC site, and in fact comprises a mix of uses, including residential, commercial, schools and colleges, parks, and open space. The reduction in other residential use between the 60 dB and 75 dB noise contours is mostly due to the removal of military barracks, which are classified as other residential rather than military use.

Within the 60 dB CNEL contour there was an increase of 7.2 acres of single-family residential use and 24 acres of multifamily residential use. However, most of this increase occurred outside the 65 dB contour, with an increase of only 2.5 acres of single-family residential use between the 65 and 70 dB contours and a reduction of 1.6 acres of multifamily residential use between these contours. The areas of both single-family and multifamily residential use within the 70 dB CNEL contour decreased by an insignificant amount. Even so, in 2003 there were still 453.3 acres of single-family residential and 333.4 acres of multifamily residential use within the 65 dB contour, with 91.7 acres of single-family residential use within the 70 dB contour.

Within the AIA as a whole, the area of single-family use increased by 22.1 acres, and the area of multifamily residential use increased by 43.4 acres. It may be argued that the land use planning process appears to have been reasonably successful at keeping the majority of the increase in residential use outside the 60 dB CNEL contour and limiting most of the increase in residential use within that contour to the area outside the 65 dB contour. However, these data do not include the residential district within the NTC site (which was classified as vacant land in the database). As can be seen from [Figure 86](#), about half of this lies between the 60 and 65 dB CNEL contour, which would increase the total change in residential use within the AIA by about 55 percent and the increase in residential use within the 60 dB contour by about three times to about 28 acres, or about a quarter of the total increase in residential use within the AIA.

Other changes in land use all seem to be fairly positive. Most of the increase in commercial use occurred outside the 60 dB CNEL contour, with the majority of the increase within that contour occurring outside the 65 dB contour. The small increase between the 65 and 70 dB contour was more than offset by the reduction within the 70 dB contour and the elimination of all commercial land use within the 80 dB contour, although the latter appears to result from expansion of the airport area rather than conversion to a more compatible nonairport use.

The area of public facilities within the 65 dB CNEL contour decreased by 3.1 acres, with an increase in public facilities use between the 60 dB and 65 dB contour of 1.1 acres. Since the total area of public facilities within the AIA decreased by 0.7 acre, this implies that there was an increase of 1.3 acres outside the 60 dB contour but within the AIA. On balance, there was a shift in the distribution of public facilities outside the 65 dB contour. However, this still left more than 50 acres of public facilities within the 65 dB CNEL contour in 2003.

Similarly, there was no increase in the area of schools and colleges within the 65 dB CNEL contour from 1990 to 2003, while the small increase within the AIA of 0.7 acre was mostly outside the 60 dB contour. However, in 2003 there were still almost 82 acres of school and college use within the 65 dB CNEL contour. These areas do not include the educational district at the NTC site, which mostly lies between the 60 dB and 65 dB CNEL contour, as can be seen from [Figure 86](#). This would increase the total area of schools and colleges within the AIA by about 22 acres, or about 13 percent, and the area between the 60 dB and 65 dB CNEL contour by about 70 percent.

There was a net loss of parks, golf courses, and open space of 8.6 acres within the AIA and 1.1 acres within the 65 dB CNEL contour. However, this excludes the 70 acres of planned park and open space within the NTC site. Most of this lies within the 60 dB contour with perhaps half of that within the 65 dB contour, so on balance there will be a significant increase in these land uses. There was also an increase in recreation and entertainment land use of 13 acres between the 65 dB and 70 dB contour.

To put these changes into context, the change in the area of each land use classification within the 65 dB CNEL contour between 1990 and 2003 is shown in [Table 8](#) as a percent of the total area of each land use within the contour in 2003.

Table 8 Change in Land Use within the 1990 65 dB CNEL Contour from 1990 to 2003

Land Use	Area within 65 dB Contour (acres)		
	2003	Change from 1990	Percent of Area in 2003
Single-family residential	453.3	2.4	0.5%
Multifamily residential	333.4	-1.6	-0.5%
Other residential	40.6	-9.1	-22.5%
Hotel/motel	3.2	0.3	10.4%
Commercial	76.8	-1.2	-1.6%
Industrial	73.6	-59.2	-80.4%
Public facilities	51.2	-3.1	-6.0%
Schools and colleges	81.9	0.0	
Religious facilities	10.1	0.0	
Military use	175.0	-93.7	-53.6%
Transportation/utilities	752.0	2.0	0.3%
Airports	421.0	17.0	4.0%
Recreation and entertainment	54.8	13.0	23.8%
Parks, beaches, golf courses	195.6	3.6	1.9%
Open space	117.8	-4.7	-4.0%
Vacant land	188.0	136.1	72.4%
Water	101.8	-1.9	-1.8%
	3,129.9		

The change in single-family and multiple-family residential use is less than one percent of the resulting area, while that of commercial use is less than two percent. However, there was a

large reduction in industrial use of about 80 percent of the resulting area, while the area of military use was reduced by more than 50 percent of the resulting area. The increase in recreation and entertainment use accounted for about 24 percent of the resulting area, and the increase in hotel and motel use accounts for about 10 percent of the resulting area. The large percentage increase for vacant land is accounted for by the change in classification of the NTC site, while the percentage changes in the area of parks and open space are relatively small, accounting for about two and four percent of the resulting area, respectively. In fact, the area of parks and golf courses (there are no beaches within the 65 dB CNEL contour) increased by a little less than the area of open space decreased, and the net change was less than 0.5 percent of the resulting area for the combined uses.

Airport Quarterly Noise Reports

As a designated noise problem airport, SDIA is required to submit quarterly noise reports to the California Department of Transportation as a condition of the operating variance that it requires under the State Noise Standards for airport operation. These quarterly reports include data on the population, dwelling units, and single-family residences within the noise impact area. In general, the noise impact area is defined by the 65 dB CNEL noise contour for the quarter (strictly the area of incompatible land within the contour). However, excluded from the calculation of the noise impact area (and from the calculation of population, dwelling units, and single-family residences) are any residential properties that have been acoustically treated to be compatible with the Noise Standards or for which an avigation easement has been acquired, as well as schools, hospitals and convalescent homes, or churches or other places of worship for which an avigation easement has been acquired or which have an interior noise level of 45 dB CNEL or less. Thus the residential sound attenuation undertaken through the Quieter Home Program implemented by the RAA at SDIA and requirements to provide the RAA with avigation easements as a condition of development permits would reduce the extent of the noise impact area over time, even if the land uses and aircraft noise contours remained unchanged. In contrast to the land use analysis described above that used the same CNEL contours to measure the change in land use over time, the 65 dB CNEL noise contour used to define the area of incompatible land in the Quarterly Noise Reports changes every quarter, reflecting the change in the number of aircraft operations and fleet composition, and other operational factors.

Thus, the previous analysis and the Quarterly Noise Reports provide two quite different perspectives on the change in land use around the airport over time. The former focuses on changes in use within the AIA and geographical areas defined by the noise contours used in the CLUP, without considering the intensity of that use, efforts to mitigate the impact of aircraft noise, or changes in the noise environment over time. The latter focuses solely on the area that is deemed incompatible and the population and dwelling units within that area, without considering the extent to which a given property experiences noise levels above the 65 dB CNEL threshold.

To examine recent trends in the area of incompatible land use around SDIA, the relevant data from the Quarterly Noise Reports for the two-year period through the second quarter of 2005 are shown in [Table 9](#). The extent of the noise impact area and the associated population and dwelling units show a declining trend with some fluctuation from quarter to quarter.

Table 9 Recent Trends in Incompatible Land Use at SDIA

Measure	2003		2004				2005	
	3 Qtr	4 Qtr	1 Qtr	2 Qtr	3 Qtr	4 Qtr	1 Qtr	2 Qtr
Noise impact area (sq mi)	1.06	1.10	1.04	1.03	1.02	1.03	1.03	0.97
Military land (sq. mi)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Population	24,932	26,119	26,119	26,119	26,119	24,537	24,537	24,438
Dwelling units	11,191	12,047	12,047	12,047	11,559	11,291	11,219	10,473
Single-family residences	3,017	3,114	3,114	3,114	2,809	2,571	2,571	2,666

Source: San Diego County Regional Airport Authority, *Quarterly Noise Reports*

On the basis of the data shown in [Table 9](#), the average annual decrease in extent of the noise impact area and associated population is about four percent, with a somewhat greater average annual decrease in the number of dwelling units in the noise impact area of about 6 percent and an average annual decrease in the number of single-family residences in the noise impact area of about 14 percent. It seems reasonable that the number of single-family residences would decline faster than the number of dwelling units, since those residences are eligible for the residential sound attenuation program. The slower rate of decline of the population in the noise impact area than the number of dwelling units is presumably because of the population in military residential accommodation, which is not included in the count of dwelling units.

EFFECTIVENESS OF AIRPORT LAND USE PLANNING PROCESS

The analysis of land use changes in the previous section suggests that the overall airport land use planning process at SDIA has been fairly effective at reducing the area of incompatible land use, notwithstanding the concerns expressed by the RAA, although the changes are relatively modest compared to the total area for each use within the 65 dB CNEL contour. Nevertheless, given the development pressures in the surrounding communities, particularly the downtown area and the redevelopment of the NTC site immediately to the west of the airport, even preventing any increase in incompatible land is no small achievement. The data from the RAA Quarterly Noise Reports suggest that the residential sound attenuation program and the requirements for aviation easements have contributed more to the reduction in the area of incompatible land than land use development controls. However, this is only a partial solution to the impacts of aircraft noise. While reduction of interior noise is clearly better than doing nothing, it does not reduce the adverse impacts of exterior noise. Given the large number of single-family homes to the west of the airport and the climate of the San Diego region, it can be expected that people in these areas will want to have their windows

open for much of the year and spend time outdoors in their gardens, or on their patios, decks, and balconies, as well as in local parks and other public outdoor areas.

Although the analysis in the previous section has suggested that the land use compatibility situation is steadily improving in the vicinity of SDIA, these data may be misleading for two reasons. First, the analysis of changes in land use from 1990 to 2003 only considered the area of each parcel, not the number of dwelling units or people occupying it. An increase in residential density as property is developed could result in a situation in which the residential land area in a particular zone is decreasing but the number of dwelling units is increasing. This analysis also takes no account of the type of construction in different areas, or the typical floor area ratios (the ratio of building floor area to the size of the parcel). Second, the measurement of incompatible land and associated dwelling units contained in the Quarterly Noise Reports is only concerned with satisfying the requirements of State Noise Standards, not with ensuring that the surrounding communities are exposed to an acceptable level of aircraft noise. When a property owner signs an aviation easement, that property is no longer considered to be an incompatible use, no matter how loud the noise levels are. Similarly, when a residence, school, or other noise-sensitive use is constructed or modified to ensure that the interior noise level is 45 dB or less, that property is also no longer considered an incompatible use, no matter how intolerable the exterior noise levels are. Furthermore, the State Noise Standards only consider whether or not the property is within the 65 dB CNEL noise contour, not what noise level it is exposed to. No distinction is made between a property that is experiencing a CNEL of 66 dB and once exposed to a CNEL of 75 dB.

While the existing procedures for controlling heights of building and other obstacles around SDIA appear to have been reasonably effective at ensuring that new development does not intrude into the 50-foot buffer below the FAA approach surfaces, the rising terrain to the east of the airport makes establishing reasonable height restrictions challenging. The City of San Diego Municipal Code allows the height of any development to be at least 40 feet above the highest point of the site, irrespective of the height of the FAA approach surface above the ground at that point. While the FAA approach surface is at least 90 feet above the ground over most of its extent, there are places where it is not.

Land use intensity is another difficult issue, particularly in the relatively densely developed area under the approach flight path. The land use density criteria in the *California Airport Land Use Planning Handbook* clearly were not developed with situations like San Diego in mind. Resolving the conflicting interests of the City of San Diego and the RAA, while also achieving an appropriate level of safety for aircraft using the airport and those on the ground under the flight paths, requires a careful assessment of the risks involved. The need for such an assessment was identified in the 1994 CLUP, but to date does not appear to have been performed, although the ATAG formed a safety subcommittee to develop criteria for development intensity in various airport safety zones as part of the ALUCP updates.

The effectiveness of airport land use planning around SDIA over the past decade has been compromised by the fact that the CLUP has not been updated or revised from 1994 until the

interim amendments were adopted in late 2004. Even so, this was only a limited revision, and continued to base the land use compatibility criteria on 1990 aircraft noise contours. A more extensive effort to prepare a new ALUCP for each airport in the county will help greatly to resolve these issues, although the update for SDIA was still in progress at the end of 2007. The transfer of the ALUC responsibilities to the RAA also created considerable disruption to airport land use planning around SDIA during several critical years while the RAA Board became familiar with its new duties and struggled to find the time to attend to ALUC matters while also addressing two major airport planning studies and attending to the ongoing operation of the airport.

SUMMARY

San Diego International Airport presents an interesting and challenging case study from the perspective of airport land use planning and smart growth. The airport is located in a dense urban environment than is undergoing a substantial amount of redevelopment. The creation of the San Diego County Regional Airport Authority as both the operator of SDIA and the ALUC for the county is a unique institutional arrangement for a major commercial airport in California: it provides the RAA Board acting as the ALUC with staff resources that other ALUCs do not have, but also raises difficult questions about the ability of the board to approach its duties as the ALUC in a neutral way. The primary duty of an ALUC is to create a comprehensive land use plan that balances the need to protect airports from incompatible development with the legitimate interests of the surrounding communities. The composition of most ALUCs reflect this either by including representatives of the county and cities within the county or by designating an existing body with broader planning interests to serve as the ALUC, such as a regional planning agency or county board of supervisors.

San Diego has been successful in promoting in-fill residential development in the downtown area. However, the new RAA acting as the ALUC attempted to limit the ability to add new residential units within the noise impact area of SDIA through amendments to the CLUP that were finally adopted in October 2004, after agreement was reached with the City of San Diego to defer the more controversial of the proposed restrictions to a comprehensive update of the renamed ALUCPs for each airport in the county. This update was started in late 2004 and was still in progress at the end of 2007. Airport land use planning for SDIA is further complicated by an Airport Site Selection Study that was in progress for several years exploring potential sites for a replacement airport for SDIA, while in parallel, an airport master plan update was undertaken to define near-term development needs for SDIA. This created considerable uncertainty over the likely future expansion needs of SDIA and the resulting noise impacts and need for land use controls in the surrounding communities.

With the rejection of the Airport Site Selection Study recommendations by the San Diego voters in November 2006, the RAA has focused on completing the airport master plan update. However, the fundamental capacity limitations of the existing highly constrained site at SDIA that had led to the Airport Site Selection Study remain, and thus the long-term future of SDIA

and the resulting implications for land use planning in the surrounding area is as uncertain as ever.

The San Diego region has been aggressively pursuing smart growth development policies. The City of San Diego has structured its general plan around a concept termed the City of Villages, while the San Diego Association of Governments has recently initiated a Smart Growth Incentive Program. The Centre City Development Corporation has been promoting residential development in the downtown area, and the San Diego Redevelopment Agency has undertaken a major redevelopment of the former Naval Training Center site immediately to the west of SDIA to create a new urban village. Unfortunately, many of these development projects in the vicinity of the airport lie under the arrival and departure flight paths and are exposed to significant levels of aircraft noise, and in the case of development under the arrival flight path may also present height conflicts. The City of San Diego has objected to the application of conventional airport land use compatibility criteria in what is a dense urban environment out of concern that these will unduly limit the ability to meet housing and other needs. While there is no disagreement over the need for height limitations, there is significant disagreement with the RAA over land use compatibility criteria for aircraft noise and development density. It remains to be seen how these will be resolved in the ongoing update of the ALUCP.

Whether the established airport land use compatibility planning process has been effective in San Diego depends greatly on what are considered appropriate land use compatibility criteria for the urban environment that surrounds SDIA. The RAA has expressed concern about continued residential development within areas exposed to aircraft noise in excess of 65 dB CNEL and increasing density under the arrival and departure flight paths. On the other hand, San Diego argues that the market has shown that people are willing to tolerate these noise levels in order to live close to the downtown, and that limiting density of new development when the surrounding parcels are already built to a much higher density makes little sense. This debate has thrown into sharp relief the limitations of the scientific basis for most of airport land use compatibility criteria. It is obvious that the reaction to aircraft noise is likely to be different for someone living in a high-rise condominium in a downtown urban environment than for someone living in a single-family home in a suburban setting. Yet the data presented in the *California Airport Land Use Planning Handbook* and most other guidance documents do not distinguish between these two situations. Similarly, a thoughtful treatment of the safety issues posed by infill development under aircraft flight paths needs to carefully consider the nature and magnitudes of the risks involved and economic consequences of reducing those risks, rather than applying standard safety zones that are based on the past occurrence of accidents that happened under different circumstances elsewhere, irrespective of the traffic levels or local circumstances. Unfortunately, the information and guidance needed to develop appropriate criteria in a more considered way have not yet been developed, much less accepted by the airport land use planning community.

APPENDIX N

COMMENTS FROM INDUSTRY DISCUSSIONS

Discussions were held with the following agency staff, consultants, and representatives of industry organizations:	
Steven Alverson	Environmental Science Associates
Terry Barrie	Caltrans Division of Aeronautics
Ron Bolyard	Caltrans Division of Aeronautics
Gregory Chew	Sacramento Area Council of Governments
David Cohen	Caltrans Division of Aeronautics
Keith Downs	Riverside County Economic Development Agency
Walter Gillfillan	Walter E. Gillfillan & Associates
Doug Kimsey	Metropolitan Transportation Commission
Joanne McDermott	Caltrans Office of Community Planning
Bob Moore	Caltrans Division of Aeronautics
John Pfeifer	Aircraft Owners and Pilots Association
Glen Rickelton	Caltrans Division of Aeronautics
George Smith	Caltrans Division of Research and Innovation
Leslie Snow	Caltrans Division of Aeronautics
Alan Thompson	Southern California Association of Governments
Patrick Tyner	Caltrans Office of Goods Movement
Austin Wiswell	Caltrans Division of Aeronautics

Table 10 COMMENTS FROM INDUSTRY DISCUSSIONS

The following comments were noted in the course of the industry discussions described in “[Case Study Analysis](#)” beginning on [page 49](#). They reflect the statements and opinions of the agency staff and others involved in the discussions and have not been checked for accuracy.

Commercial Airports

Chico	Residential development is occurring around airport.
Lake Tahoe	Planning has involved the Tahoe Regional Planning Agency. The airport was constructed in the late 1950s. Development occurred between the airport and the lake, and controversy erupted when Air Cal began operating B737s into the airport. A noise ordinance was established in response that established single-event noise limits, but the issue became moot when service was suspended.
Long Beach	Boeing has been trying to develop the site of the old McDonnell Douglas plant adjacent to the airport with a combination of commercial and residential uses. Initial proposal ran into heavy opposition from local citizens and has been redesigned to better comply with state regulations. The City of Long Beach does not want to see airport activity increase beyond 41 daily commercial operations.
Los Angeles International	There has been considerable controversy surrounding efforts to update the <i>Airport Master Plan</i> . There have been efforts to control development in Inglewood to establish compatible uses.
McClellan/Palomar	A large number of corporate jets (about 40) are based there for access to the Los Angeles basin. Residential development is occurring in what was previously an agricultural area.

Table 10 COMMENTS FROM INDUSTRY DISCUSSIONS (Continued)

Modesto	The City of Ceres approved a residential development and issued an override on the ALUC recommendation opposing the development. Litigation was brought by the City of Modesto (owner of the airport). The court found against the City of Ceres on the grounds that their decision was not based on any "findings" as required by legislation.
Monterey	The airport wanted to lease property off the end of the runway to the east for a commercial development. The land drops about 200 feet from the runway end. The runway has a displaced threshold but no runway safety area. There were concerns with occupancy and density, but the ALUC found the development compatible on grounds of special circumstances.
Oxnard	The old high school to the east of the airport has been closed. There is continuing pressure for residential development, with a housing development proposed to the east of the airport.
Sacramento International	The airport is generally regarded as a successful example of the land use planning process. One issue has been the role of military training operations in establishing the 60 dB CNEL contour. Urban development is occurring on previously undeveloped land near the airport. High-end housing has been developed along the Sacramento River off the departure end of the runways to the south and the airport settled a lawsuit by the residents. Sutter County has been approving development to the north of the airport.
Sacramento Mather	Conflicts have arisen between the role of the airport as an economic engine and desires for nearby residential development. The ALUC has defined an Airport Land Use Policy Area that is considerably larger than the 60 dB CNEL contour. The village of Zinfandel was developed fairly close to the runways with appropriate restrictions. The town of Independence was a former military housing area, but has not generated many complaints.
San Diego International	The ALUC has been moved into the Regional Airport Authority. The airport has environmental planners on the staff and has posted the Airport Influence Area maps on their web site. They are updating the ALUCPs and plan to post these on the web site. The City of San Diego has requirements that they have to meet in order to approve infill development, but constant effort is needed to enforce this.
San Francisco International	The U.S. Navy Facilities Command had an approximately 10-acre parcel with office buildings in San Bruno on El Camino Real off the centerline of Runway 28L. The City of San Bruno acquired the site and proposed a mixed-use development, but when the market for commercial development collapsed, they converted the proposal to entirely high-density residential use. The city argued that they needed the development to meet state housing goals. The ALUC was concerned about the development and the Community Noise Roundtable recommended against the development, but it went ahead anyway.
San Luis Obispo	The City of San Luis Obispo considers the <i>Airport Area Specific Plan</i> to be its most successful example of smart growth policies.
Santa Barbara	Land to the west of the airport is in the jurisdiction of the county. A proposal for a regional shopping center would have compromised a planned runway extension in the <i>Airport Master Plan</i> but was approved anyway.
Stockton Metropolitan	A good example of an airport that has worked with the local land use planners to encourage commercial development and has done a good job protecting the airport from incompatible development in spite of difficulty retaining air service.
General Aviation Airports	
Camarillo	The airport is a former Air Force airfield currently owned by Ventura County within the boundary of the city of Camarillo. The county agreed to shorten the runway to 6,000 feet, but keep the airport boundary to provide additional buffer to the residential areas to the east.
Chino	A large residential development has been proposed in conjunction with closing the airport.

Table 10 COMMENTS FROM INDUSTRY DISCUSSIONS (Continued)

Desert Resorts (Thermal) [now Jacqueline Cochrane Regional Airport]	Development has been proposed off the end of the runway at Kohl Ranch. The developer has tried to tailor the plans to meet the ALUC requirements, but the ALUC is still opposed to the development. The airport has become a major center for corporate jet activity. The runway has been extended, but not as much as had been proposed when air cargo activity was envisaged in the past. A high school was approved in the Kohl Ranch development, with Caltrans agreement. Riverside County has an integrated planning process with countywide policies that are applied at each airport on an airport-specific basis.
Livermore	The airport established an Airport Protection Area that went well beyond the extent of the noise contours typically used for land use planning, but the airport and ALUC were only able to hold the line on development to the boundary of Pleasanton to the west. The airport was previously located to the east of the town closer to the urban core and was relocated to the present site. The biggest encroachment on the new airport prior to the establishment of the Airport Protection Area was to the east, within Livermore.
Oceanside	There has been pressure from a homeowners' group to close the airport, but there was an organized effort by airport users to counter this.
Reid Hillview	There is a long history of the development of incompatible land uses in the area surrounding the airport.
Rio Vista	The City of Rio Vista authorized a residential subdivision across the street from the new airport.
Sonoma County	Several adjacent developments were proposed by influential local developers. The ALUC opposed the developments but the county supervisors were supportive of the developments. There were concerns about the currency of the CLUP. The ALUC was trying to update the CLUP and was sued by one of the developers over its adequacy. The Windsor School District wanted to build a new high school near the airport that was opposed by the ALUC but approved by Caltrans.
Tracy Municipal	The airport prepared a master plan update about 5 years ago that envisaged an extension of the runway to 6,000 feet. The city was also preparing an update to the general plan that projected growth occurring in the area proposed for the runway extension. The city considered moving the airport to New Jerusalem Airport to the south (also owned by the city) but this was resisted by the existing airport users.
Truckee-Tahoe	The City of Truckee has done a good job controlling land use in the past, but a high-end residential development has been proposed near the airport.
Watsonville	The airport puts on a popular air show every year. The city has already approved development off one end of the crosswind runway and wants to see development off the other end. This may result in closing the crosswind runway. Development has also occurred fairly close to the approach end of the main runway. Santa Cruz County is exempt from ALUC legislation, so there is no ALUC.
Yuba County	A good example of an airport that has had compatible development occur around it. The airport developed an enterprise zone and industrial area to protect the airport from incompatible development.

ENDNOTES

Executive Summary

1. Whit Blanton, "On the Airfront," *Planning* 70, no. 5 (May 2004): 34–35.
2. Grant Boyken, *Growing Pains: Airport Expansion and Land Use Compatibility Planning in California* (Sacramento, CA: California Research Bureau, September 2006), www.library.ca.gov/crb/06/10/06-010.pdf.

Introduction

3. Vince Papsidero, *Airport Noise Regulations, Planning Advisory Service Report 437* (Chicago, IL: American Planning Association, 1992).
4. Federal Aviation Administration (FAA), *FAA Aerospace Forecasts—Fiscal Years 2003–2014*, FAA-APO-03-1 (Washington DC: Federal Aviation Administration, 2003).
5. "Noise Control: Airport Master Plans to Take Increasing Note of Limited Manoeuvring/Building Space," *Airports International* 35, no.2, March 2002: 28.
6. Robert E. Caves and Geoffrey D. Gosling, *Strategic Airport Planning* (Oxford, GB: Elsevier Science, 1999).
7. Richard W. Lee, et al., *The California General Plan Process and Sustainable Transportation Planning* (San José, CA: Mineta Transportation Institute, 2002).
8. Earl Bossard, et al., *Envisioning Neighborhoods with Transit-Oriented Development Potential* (San José, CA: Mineta Transportation Institute, 2002).
9. Peter Calthorpe and William Fulton, *The Regional City: Planning for the End of Sprawl* (Washington DC: Island Press, 2001).
10. Smart Growth Network, "Smart Growth Online," www.smartgrowth.org, accessed July 23, 2004.
11. California Department of Transportation, *Aviation in California: Fact Sheet* (Sacramento, CA: Division of Aeronautics, 2005).

Airport Land Use Planning in California

12. *California PU Code*, Section 21670
13. California Department of Transportation, *California Land Use Planning Handbook* (Sacramento, CA: Division of Aeronautics, 2002), 1–3.
14. Ibid.
15. Ibid., Table 7C

Smart Growth in Relation to Airport Land Use and Transportation Planning

16. Smart Growth Network.
17. Richard W. Lee, et al., "Direct Ridership Estimation for Sacramento LRT," in *Institution of Transportation Engineers District 6 Annual Meeting*, Sacramento, CA, CD-ROM, 2004.
18. Gregory J. Saur, Richard W. Lee, and Christopher Gray, "New Method for Transit Ridership Forecasting," in *Institute of Transportation Engineers 2004 Annual Meeting and Exhibit* (Washington DC: Institute of Transportation Engineers Annual Meeting, Irvine, CA, March 28–31, 2004), CD-ROM.
19. Lee, 2004.
20. Criterion Planners & Engineers and Fehr & Peers Associates, *2000 Index® 3-D Method: A Quick-Response Method of Estimating Travel Impacts from Land Use Changes*, Technical Memorandum prepared for the United States Environmental Protection Agency, 2000.

Related Research on Airport Area Planning

21. Whit Blanton, American Planning Association Transportation Planning Chair, personal interview by Richard W. Lee, June 14, 2004.
22. This section is based on a presentation by K.L. (Dan) Wong, Chair of the APA Transportation Planning Division Airports Committee to the ACI-NA Environmental Affairs Committee Meeting in Toronto, September 18, 2005, as well as telephone and e-mail interviews with Richard Lee, October 24, 2005.
23. John Kasarda, "From Airport City to Aerotropolis," *Airport World* 6, no. 4 (August/September 2001): 42–45.
24. Ibid.
25. John Kasarda, interview by Richard Lee, June 17, 2004.
26. Chip Kaufman and Wendy Morris, Ecologically Sustainable Design Pty. Ltd, telephone interview by Richard Lee, August 2, 2005.

Literature Review Findings

27. Institute of Transportation Engineers, *Smart Growth Transportation Guidelines: An ITE Proposed Recommended Practice* (Washington DC: Institute of Transportation Engineers, 2003).
28. Brian S. Bochner, "Smart Growth Transportation Tools," in *Institute of Transportation Engineers 2000 Annual Meeting and Exhibit* (Washington DC: Institute of Transportation Engineers Annual Meeting, Nashville, TN, 6–9 August, 2000), CD-ROM.

-
29. Leora Waldner, "Regional Plans, Local Fates? The Influence of the 1976 and 1985 Atlanta Regional Development Plans on Local Government Policy," Ph.D. dissertation, University of California, Berkeley, 2003.
 30. Federal Aviation Administration, as quoted in Waldner.
 31. Ian Humphreys and Stephen Ison, "Planning for Sustainability: The Role of Airport Surface Access Strategies as a Means of Reducing the Dependency on the Private Car for Airport Access Trips," in *European Transport Conference Proceedings* (London: Association for European Transport, Cambridge, England, 9–11 September 2002).
 32. W.R. Black, "Sustainability of Transport," in *Modern Transport Geography*, eds. B.S. Hoyle and R.D. Knowles (Chichester, UK: Wiley, 1998).
 33. Brian J. Graham, "The Role of Airports and Airline in an Integrated UK Transport Policy," *Geography* 85, no. 366 (January 2000): 75–78.
 34. Arthur C. Nelson, "How Do We Know Smart Growth When We See It?" in *Smart Growth: Form and Consequences*, eds. Terry S. Szold and Armando Carbonell (Cambridge, MA: MIT Press and Lincoln Institute of Land Policy, 2002): 82–101.
 35. Vince Papsidero, *Airport Noise Regulations, Planning Advisory Service Report 437* (Chicago, IL: American Planning Association, 1992).
 36. California Department of Transportation, Division of Aeronautics, *California Land Use Planning Handbook* (Santa Rosa, CA: Shutt Moen Associates, January 2002), available from www.dot.ca.gov/hq/planning/aeronaut/htmlfile/landuse.html.
 37. Transportation Research Board, *Aircraft Noise Modeling*, Transportation Research Circular No. 473, Washington DC, 1997.
 38. Dean Uyeno, Stanley W. Hamilton and Andrew J.G. Biggs, "Density of Residential Land Use and the Impact of Airport Noise," *Journal of Transport Economics and Policy* 27, no. 1 (January 1993): 3–18.
 39. David W. Gillen and Terrence J. Levesque, "A Socio-Economic Assessment of Complaints about Airport Noise," *Transportation Planning and Technology* 18, no. 1 (1994): 45–55.
 40. Eran I. Feitelson, Robert E. Hurd and Richard R. Mudge, "The Impact of Airport Noise on Willingness to Pay for Residences," *Transportation Research* 1D, no. 1 (September 1996): 1–14.
 41. Luis G. Zambrano, "Balancing the Rights of Landowners with the Needs of Airports: The Continuing Battle over Noise," *Journal of Air Law and Commerce* 66, no. 1 (Winter 2000): 445–97.

42. Douglas L. Cooper and T. Chira-Chavala, *The Development of an Accident Database to Structure Land Use Regulations in Airport Approach Zones, Part II*, Research Report UCB-ITS-RR-98-1 (Berkeley, CA: Institute of Transportation Studies, University of California, 1997).
43. Jennifer Stenzel, et al., *Flying Off Course: Environmental Impacts of America's Airports* (Washington DC: Natural Resources Defense Council, 1996).
44. Milan Janic, "Aviation and Externalities: The Accomplishments and Problems," *Transportation Research*, 4D, no. 3 (May 1999): 159-180.
45. Geoffrey D. Gosling, *2001: An Airspace Odyssey, Summary Proceedings of the 2001 Airport Noise Symposium and Airport Air Quality Symposium*, Proceedings UCB-ITS-P-2001-1 (Berkeley, CA: Institute of Transportation Studies, University of California, December 2001).
46. California Department of Transportation, Division of Aeronautics, 2002.
47. Washington State Department of Transportation, Aviation Division, *Airports and Compatible Land Use, Volume One: An Introduction and Overview for Decision-Makers* (Seattle, WA: State Department of Transportation, February 1999).
48. Grant Boyken, *Growing Pains: Airport Expansion and Land Use Compatibility Planning in California* (Sacramento, CA: California Research Bureau, September 2006), www.library.ca.gov/crb/06/10/06-010.pdf.

Case Study Analysis

49. "Controversial Housing Plan to Face Panel Review," *The Sacramento Bee*, May 16, 1999.
50. Mary Lynne Vellinga, "Conflicts Grow Over Mather Use," *The Sacramento Bee*, June 23, 2002.
51. Ibid.
52. Maiha-Liisa Young, "Mather Noise Issue Gets Airing by County," *The Sacramento Bee*, January 19, 2003.
53. Gregory Chew, ALUC Planner for SACOG, interviews by Richard Lee, March 30 and October 3, 2005; Monica Newhouse, Airport Noise Program Manager SCAS, interview by Richard Lee, October 4, 2005.
54. Molly Dugan, "FAA Drops Mather Night Flight Test," *The Sacramento Bee*, May 30, 2004.
55. This section of the act provides for the FAA to issue grants under the Airport Improvement Program (AIP) to states and units of local government for compatible land use planning and projects around large and medium hub airports, as described in *FAA AIP Program Guidance* letter 05-5, dated June 1, 2005, www.faa.gov/airports_airtraffic/airports/aip/guidance_letters.

-
56. Matthew Self, "Mather Trumpets Noise Abatement: Officials Not Impressed With Procedure," *The El Dorado Hills Telegraph*, November 30, 2004.
 57. Waldner.
 58. Elise Ackerman, "Airport Landings to Rise," *San Jose Mercury News*, October 27, 2004.
 59. Rachel Gordon, "New SFO System Helps Track Jets Responsible for Noise," *San Francisco Chronicle*, March 10, 2006.
 60. "SFO Now Less Noisy, Airport Officials Say," *San Francisco Chronicle*, August 7, 2002.
 61. Gordon.
 62. "New Runways Would Reduce Noise Problem, Officials Say," *San Jose Mercury News*, October 5, 2002.
 63. Bob Cuddy, "Dalidio Ranch Would Jam SLO Roads, Agency Warns," *The Tribune* (San Luis Obispo), August 2, 2006.
 64. "RRM Stands Behind Project's Design: The New Dalidio Ranch," *The Tribune* (San Luis Obispo), March 17, 2006.
 65. Klaasje Nairne, San Luis Obispo Regional Airport Manager, interview by Richard Lee, October 7, 2004.
 66. Lou Hirsch, "Valley Could Be in for Building Boom," *The Desert Sun* (Palm Springs, CA), April 1, 2006.
 67. Christine Mahr, "\$250 Million Bond Measures Headed to Polls Tuesday," *The Desert Sun* (Palm Springs, CA), June 4, 2005.
 68. City of Coachella, *Development Status Report*, May 2006, www.coachella.org/pdf%20files/DEVPRPT-%202006%20May.pdf, accessed September 1, 2006.
 69. Mahr.
 70. Erica Solvig, "East Airport Flying into Valley Focus," *The Desert Sun* (Palm Springs, CA), August 13, 2005.
 71. Steve Clute, "Valley Voice," *The Desert Sun* (Palm Springs, CA), January 8, 2005.

Conclusions and Recommendations

72. Boyken, Grant. *Growing Pains: Airport Expansion and Land Use Compatibility Planning in California*. Sacramento, CA: California Research Bureau, September 2006, www.library.ca.gov/crb/06/10/06-010.pdf.

Appendix A: Case Study Sacramento International Airport

73. Greg Rowe, Senior Environmental Planner, SCAS, "The Green Airport Initiative," presented August 24, 2005, U.S EPA 2005 Air Innovations Conference, Chicago.

74. Gilbert Chan, "Sacramento International Airport is Set to Become the Area's... Economic Hub," *The Sacramento Bee*, April 7, 2002.
75. Walt Wiley, "Parking Garage Project Takes Flight at Airport after a Delay," *The Sacramento Bee*, June 27, 2003.
76. Gilbert Chan, "\$2.4 Billion in Local Economic Impacts by Sacramento County Airport System," Sacramento County Airport System press release, January 28, 2004, <http://airports.saccounty.net/common/news/releases/EconImpactRelease1.pdf>, accessed September 30, 2005.
77. Tony Bizjak, "Third Runway at Sacramento Airport Backed," *The Sacramento Bee*, October 23, 2003.
78. Sacramento County Airport System, "Master Plan Documents," www.sacairports.org/int/planning/master_plan.html, accessed September 23, 2005.
79. Tony Bizjak, "Airport Frets about Growth," *The Sacramento Bee*, July 30, 2001.
80. California Department of Transportation, Division of Aeronautics, *California Airport Land Use Planning Handbook* (Santa Rosa, CA: Shutt Moen Associates, January 2002), www.dot.ca.gov/hq/planning/aeronaut/htmlfile/landuse.html.
81. Sacramento Area Council of Governments, *Sacramento International Airport Comprehensive Land Use Plan* (October 1984, as amended January 1994): 23.
82. Tony Bizjak, "Coming Home," *The Sacramento Bee*, May 20, 2002.
83. Monica R. Newhouse, Sacramento County Airport System Airport Noise Program Manager, personal communication with Richard Lee, April 3, 2006.
84. Sacramento Area Council of Governments, 4.
85. Robert B. Leonard, Assistant Director of Airports, Administration and Planning, Sacramento County Airport System, interview by Richard Lee and Geoffrey Gosling, September 10, 2004.
86. Monica R. Newhouse, Sacramento County Airport System Airport Noise Program Manager, "Building Relationships with Local Communities," presented March 17, 2005, Sacramento Airport System.
87. Newhouse, 2006.
88. Mary Lynne Vellinga, "Sacramento City and County Reach a Tentative—and Disputed—Agreement on...." *The Sacramento Bee*, December 11, 2002.
89. Robert D. Davila, "County Junks Map for North-End Growth," *The Sacramento Bee*, December 11, 2002.
90. Ibid.
91. Ibid.

-
92. Jim McDonald, City of Sacramento Senior Planer, interview by Richard Lee, September 9, 2004.
 93. City of Sacramento, Planning and Building Department, *Notice of Preparation of a Draft Environmental Impact Report for the Sacramento City-County Natomas Vision General Plan Amendment Project (Project # M03-009)* (October 7, 2003), www.cityofsacramento.org/dsd/planning/projects/jointvision/nop100703.pdf, accessed June 29, 2004.
 94. Dirk Werkman, "N. Natomas Comes into Its Own," *The Sacramento Bee*, April 27, 2006.
 95. City of Sacramento, 5
 96. *Ibid.*, 4–5.
 97. *Ibid.*, 6.
 98. Steve Peterson, City of Sacramento Principal Planner, telephone interview by Richard Lee, December 14, 2005..
 99. Dirk Werkman, "Hopes High as Air Park Underway," *The Sacramento Bee*, April 1, 2004.
 100. Bob Walter, "Airport Business Park Near," *The Sacramento Bee*, March 1, 2002.
 101. Mike McCarthy, "Big Build-Out Planned for Metro Air Park," *Sacramento Business Journal*, April 9, 2004.
 102. Denny Walsh, "Big Win for Proposed Business Park near Airport," *The Sacramento Bee*, February 4, 2004.
 103. Kelly Johnson, "China's Hot Economy Lures Locals," *Sacramento Business Journal*, September 19, 2005.
 104. Mike McCarthy, "Chinese Buyers in Talks with Metro Air Park," *Sacramento Business Journal*, April 15, 2005.
 105. "Asia Trade Center Plan for Metro Air Park Look Dead," *Sacramento Business Journal*, July 14, 2006.
 106. Mike McCarthy, "Growth Ballot Adds AKT's Sutter Land," *Sacramento Business Journal*, August 6, 2004.
 107. Tony Bizjak, "Another Try at Plan for Natomas," *The Sacramento Bee*, May 15, 2003.
 108. McCarthy, August 6, 2004.
 109. *Ibid.*
 110. Mary Anne Vellinga, "Airport Area Growth Goes onto Ballot," *The Sacramento Bee*, July 29, 2004.
 111. Sutter County, "Sutter County Planning Services—Measure M," www.co.sutter.ca.us/doc/government/depts/cs/ps/measurerm/cs_measure_m, accessed September 9, 2005.
-

-
112. Doug Libby, interview by Richard Lee, September 26, 2005.
113. Sutter County, “Sutter County Planning Services—Measure M,” www.co.sutter.ca.us/doc/government/depts/cs/ps/measur/m/cs_measure_m, accessed October 2, 2007.
114. “Bridging the Airport’s Transit Gap,” *The Sacramento Bee*, July 29, 1997.
115. “Taking the Bus to the Airport,” *The Sacramento Bee*, February 11, 1998.
116. “Leaders Set to Back Light Rail for Airport,” *The Sacramento Bee*, July 20, 2000.
117. David Whitney, “House Transit Bill Would Aid Light-Rail Expansion,” *The Sacramento Bee*, April 1, 2004.
118. Ibid.
119. Sacramento Regional Transit District, *Downtown-Natomas-Airport Transit Alternatives Analysis/Draft Environmental Impact Statement and Report*, www.dnart.org, accessed September 17, 2005.
120. Tony Bizjak, “Ballot Plan Won’t Provide Enough Funds to Operate a Pair of New Light-Rail Lines,” *The Sacramento Bee*, April 3, 2004.
121. Jock O’Connell, “Sacramento: A No-fly Zone for International Trade,” *The Sacramento Bee*, September 18, 2005.

Appendix B: Case Study—Mather Airport

122. “Anniversary of Airfield Transfer Nears,” *The Sacramento Bee*, April 27, 2000.
123. “Tower at Airfield to Aid in Noise Control Efforts,” *The Sacramento Bee*, June 4, 2000.
124. Sacramento County, “Mather Airport,” www.sacairports.org/mather/planning/matherchronology.htm, accessed September 24, 2005.
125. “Controversial Housing Plan to Face Panel Review,” *The Sacramento Bee*, May 16, 1999.
126. Vellinga, June 23, 2002.
127. “Anniversary of...”
128. Vellinga, June 23, 2002.
129. Molly Dugan, “Mather Runway Growth Protested; Draft Plan OK’d.” *The Sacramento Bee*, February 18, 2004.
130. Interview with Gregory Chew, ALUC Planner for SACOG, March 30, 2005; interview with Monica Newhouse, Airport Noise Program Manager, SCAS, October 4, 2005.
131. Molly Dugan, “Mather Runway Growth Protested; Draft Plan Ok’d,” *The Sacramento Bee*, February 18, 2004.
132. Molly Dugan, “Its Own Identity is City’s Quest,” *The Sacramento Bee*, May 2, 2004.
133. “Business Booming at Mather Center,” *The Sacramento Bee*, November 18, 2002.

-
134. Bob Walter, "Sutter Health Signs New Lease at Mather," *The Sacramento Bee*, August 29, 2002.
 135. Bob Shallit, "Construction Projects at Mather Field about to Take Off," *The Sacramento Bee*, August 6, 2003.
 136. Molly Dugan, "Tower Brightens VA Medical Site," *The Sacramento Bee*, October 30, 2003.
 137. "New Life for Old Base," *The Sacramento Bee*, October 13, 2000.
 138. Newhouse, interview October 4, 2005.
 139. Vellinga, June 23, 2002.
 140. Sekhar Padmanabhan, "Flight Paths Stymie School Construction," *The Sacramento Bee*, July 5, 2001.
 141. "New Homes OK'd Near Mather," *The Sacramento Bee*, April 27, 2000.
 142. Newhouse, interview October 4, 2005.
 143. Robert D. Davila, "School Plan Gains Ground," *The Sacramento Bee*, January 22, 2003.
 144. Shelly Blanchard, "Navigator Elementary on Course," *The Grapevine*, Summer 2005, www.cordovacouncil.com/content/view/74/44, accessed October 1, 2005.
 145. Mary Lynne Vellinga, "Mather Plan would Save Vernal Pools," *The Sacramento Bee*, June 17, 2004.
 146. Ibid.
 147. "Pollution Troubles CCPAC." *The Sacramento Bee*, May 30, 1999.
 148. "Advisory Panel to Examine Housing Proposal," *The Sacramento Bee*, March 18, 1999.
 149. "School Trustees to Mull Campus Site," *The Sacramento Bee*, December 13, 2001.
 150. Rob Leonard, interview September 10, 2004.
 151. Newhouse, "Building Relationships with Local Communities," March 17, 2005; e-mail communications, September 20–22, 2005.
 152. Maija-Liisa Young, "Mather Noise Issue Gets Airing by County," *The Sacramento Bee*, January 19, 2003.
 153. Maija-Liisa Young, "Residents Sound Off on Mather Test," *The Sacramento Bee*, May 22, 2003.
 154. Newhouse, interview October 4, 2005.
 155. "Losing Sleep over Jet Noise: Mather Residential Growth, Cargo Flights Clash," *The Sacramento Bee*, March 18, 2001.
 156. Dugan, May 30, 2004.

-
157. Loretta Kalb, "Mather Flight Increases Are on the Radar," *The Sacramento Bee*, January 29, 2006.
158. Ibid.
159. County of Sacramento Board of Supervisors, "Media Tip Sheet" (Item #68), www.ceo.saccounty.net/pio/press-releases/docs/2006/05/Media-Tip-Sheet-5-8-06.pdf#search=%22mather%20airport%20master%20plan%20eir%22, accessed May 8, 2006.
160. City of Folsom, "Mayor's *State of the City* Report," www.folsom.org, accessed January 25, 2005.
161. Self, November 30, 2004.
162. Newhouse, interview October 4, 2005.
163. Jamie Francisco, "Residents: Forum Won't Stop Noise from Mather," *The Sacramento Bee*, September 23, 2004.
164. Judy Lin, "Customs Plan Hits Turbulence," *The Sacramento Bee*, December 5, 2005.
165. County of Sacramento, *County of Sacramento General Plan, Circulation Element* (December 1993): 79–80.
166. County of Sacramento, *County of Sacramento General Plan, Noise Element*, Chapter 8 (1993).
167. Maija-Liisa Young, "Rancho Cordova, County on Same Page," *The Sacramento Bee*, June 30, 2003.
168. Maija-Liisa Young, "Off and Running." *The Sacramento Bee*, July 2, 2003.
169. Robert D. Davila, "New City Backers Capture Key Vote," *The Sacramento Bee*, May 2, 2002.
170. Dugan, May 2, 2004.
171. Ibid.
172. Hilary Anderson, City of Rancho Cordova Planning Department Environmental Coordinator, telephone interviews by Richard Lee, August 31 and September 6, 2005.
173. City of Rancho Cordova, *City of Rancho Cordova General Plan*, www.cityofranhocordova.org/city_departments/planning_general_plan.html, accessed June 29, 2005.
174. Sacramento Area Council of Governments, "Sacramento Region Blueprint," www.sacregionblueprint.org/sacregionblueprint/the_project/discussion_draft_preferred_scenario.cfm, accessed April 23, 2006.
175. "New Bus Route Established to Serve Mather Field," *The Sacramento Bee*, July 1, 2001.
176. Mary Lynne Vellinga, "A Rough Ride to Revitalization," *The Sacramento Bee*, January 17, 2003.

-
177. Sacramento Regional Transit District, "Sacramento Regional Transit District," www.sacrt.com, accessed November 2, 2005.

Appendix C: Case Study—Contra Costa Airports (Buchanan Field and Byron)

178. City of Concord, "City of Concord Demographics," 2005, www.ci.concord.ca.us/about/demogrph.htm, accessed October 18, 2005.
179. City of Pleasant Hill, *City of Pleasant Hill General Plan 2003*, www.pleasanthill.ca.gov/CommunityDevelopment/general_plan/gp_2003.pdf, accessed July 21, 2003; MyAFD.com, "More about Buchanan Field (CCR) Airport....," www.myafd.com/Airport/CCR, accessed October 8, 2005.
180. Contra Costa County Airports, "Buchanan Field Master Plan Process Nears Completion," *The Diablo Aviator* 5, no. 3 (Summer 2007).
181. Contra Costa County Airports, "Master Plan Update," *The Diablo Aviator* 4, no. 2 (Spring 2006): 2, www.co.contra-costa.ca.us/depart/pw/airport/ccrMPupdates/Spring_Newsletter_2006.pdf.
182. Contra Costa County, *Contra Costa County General Plan* (January 2005), 5-25.
183. Peter Felsenfeld, "Air Cargo Proposal Must Wait for Growth," *Contra Costa Times*, May 21, 2003, A03.
184. Sarah Rohrs, "Byron Airport Waits to Take Off," *Ledger Dispatch*, March 25, 2001, A27.
185. Contra Costa County Airports, "Questions about the Airport Land Use Commission Answered," *The Diablo Aviator* 1, no. 3 (Third Quarter 2003), p 1, www.co.contra-costa.ca.us/depart/pw/airport/tailwinds.htm, accessed October 23, 2005.
186. Contra Costa County Airports, "Aviation Advisory Committee," *The Diablo Aviator* 2, no. 1 (First Quarter 2004): 1.
187. *Ibid.*,
188. Beth Lee, Contra Costa County Airports, personal communication with Richard Lee, March 30, 2006.
189. Contra Costa County, *General Plan*, 5–23.
190. *Ibid.*, 5–28.
191. Contra Costa County, *Contra Costa County Airport Land Use Compatibility Plan*, (December 13, 2000), www.co.contra-costa.ca.us/depart/cd/current/ALUCPlan/ALUCPlan.htm.
192. City of Pleasant Hill, *City of Pleasant Hill General Plan 2003* (July 2, 2003), 60.
193. Contra Costa County, *General Plan*, 5–28.
194. Rohrs, March 25, 2001.

-
195. Contra Costa County Community Development Department, "Community Development Mapping Archives, Modifications to the Urban Limit Line," www.co.contra-costa.ca.us/depart/cd/transportation/mapbin/#ull, accessed September 23, 2005.
 196. Lisa Vorderbrueggen, "Supervisor Proposes Closing Buchanan Field," *Contra Costa Times*, June 28, 2003, A01.
 197. Peter Felsenfeld, "County's Airfield Prospects Proceed," *Contra Costa Times*, May 26, 2004, A03.
 198. "Backers of Airport Closure Score Win," *Contra Costa Times*, April 28, 2004, A01.
 199. Nathaniel Hoffman, "Developers Clash over Airfield," *Contra Costa Times*, December 8, 2003, a03; "Backers of Airport Closure Score Win," *Contra Costa Times*, April 28, 2004, A01.
 200. Contra Costa County Airports, "Concord Chamber of Commerce Airport Forum Attracts a Crowd," *The Diablo Aviator* 1, no. 3 (Third Quarter 2003): 4.
 201. "Airport Study Up for Review," *Contra Costa Times*, September 7, 2003, A31.
 202. "Concord Airport Housing Plan Fights to Take Flight," *The San Francisco Chronicle*, March 8, 2004, B1.
 203. "Visions Collide over Buchanan," *Contra Costa Times*, August 14, 2003, A03.
 204. Peter Felsenfeld, "Officials Ask FAA to Keep Airport," *Contra Costa Times*, 24 January 2004, a01.
 205. "Concord Airport Should Stay Open, Council Says," *Contra Costa Times*, March 4, 2004, A05.
 206. Contra Costa County Board of Supervisors, *Request For Proposals—Development of a Replacement Airport and the Reuse and Development of Buchanan Field Airport...* (July 12, 2004): 24.
 207. Peter Felsenfeld, "July 12 Due Date for Bids on Field," *Contra Costa Times*, June 9, 2004, A03.
 208. "Backers of Airport Closure Score Win," *Contra Costa Times*, April 28, 2004, A01.
 209. Dana Guzzetti, "Buchanan Field, Which Plan Will Fly?," *The Valley Sentinel*, June 2004.
 210. Buchanan Field Partners, *Response to RFP* (November 9, 2004): 23.
 211. *Ibid.*, 25.
 212. Erin Hallissy, "Developer Dumps Buchanan Field Plan," *The San Francisco Chronicle*, August 25, 2005, B5.
 213. Nathaniel Hoffman, "Cities Clash Over Noise Notification," *Contra Costa Times*, December 8, 2003, A03.

-
214. Ibid.
215. Bruce Gerstman, "City Council Studies Airport Disclosure Zone," *Concord Transcript*, September 25, 2003, C01.
216. Hal Yeager, interview by Richard Lee, November 5, 2005.
217. Contra Costa County Airports, "Environment, Noise & Community Relations," *Contra Costa County Airports Newsletter* 1, no. 1 (First Quarter 2003): 2, www.co.contra-costa.ca.us/depart/pw/airport/tailwinds.htm, accessed November 5, 2005.
218. Contra Costa County Airports, "Fact Sheets, Buchanan Field Airport (CCR) Master Plan Update," www.buchananfield-byronairports.org/ccrMPupdates/factsheets.htm, accessed October 8, 2005.
219. People Over Planes, Inc., "People Over Planes," December 7, 2003, www.geocities.com/peopleplanes/, accessed August 18, 2004.
220. Contra Costa County Airports, "Buchanan Field Airport Master Plan / FAR Part 150 Noise Study Issue," *The Diablo Aviator* 4, no. 2 (Spring 2006).
221. Denis Cuff, "Concord Plans for Navy Land," *Contra Costa Times*, April 4, 2004, A27.
222. "Grand Jury: Byron Airport to Stay Financial Drain," *Brentwood News*, June 23, 2000, 16.
223. Sarah Rohrs, "Flying into the 21st Century," *Ledger Dispatch*, August 23, 2000, 1.
224. Ibid.
225. Contra Costa County Airports, "Byron Master Plan Beginning," *The Diablo Aviator* 1, no. 4 (Fourth Quarter 2003): 3.
226. Contra Costa County Airports, "Byron Master Plan Update," *Contra Costa County Airports Newsletter* 1, no. 2 (Second Quarter 2003): 2.
227. Contra Costa County Airports, "Byron Master Plan Is Winding Down," *The Diablo Aviator* 2, no. 2 (Second Quarter 2004): 2.
228. Peter Felsenfeld, "Air Cargo Proposal Must Wait for Growth," *Contra Costa Times*, May 21, 2003, A03.
229. Rohrs, March 25, 2001.
230. Contra Costa County Airports, "Byron Master Plan..."
231. Rohrs, March 25, 2001.
232. Melissa Moy, "Byron Leaders Busy with Growth Issues," *Brentwood News*, February 6, 2004, 14.
233. "Byron's Grand Planning Document May Be Exercise in Futility," *Brentwood News*, September 4, 1998, 1.
234. "Area Attracts Developers, Businesses," *Contra Costa Times*, August 2, 2003, SP13.

-
235. Rohrs, March 25, 2001.
236. Sarah Jane Tribble, "Hot Springs Project Could Set Precedent," *Contra Costa Times*, December 19, 2005.
237. Kiley Russell, "A Diamond in the Rough: Officials Hope to Cash In on Byron Airport's Potential," *Contra Costa Times*, July 26, 2005.
238. Rohrs, March 21, 2001.
239. Sarah Rohrs, "Plan Aims to Avoid Expansion Conflict at Byron Airport," *Ledger Dispatch*, November 12, 2000, A33.
240. Patrick Roche, Contra Costa County Principal Planner, interview by Richard Lee, December 30, 2004.
241. Sarah Rohrs, "Locals Contest Byron Airport Land Use Plan," *Ledger Dispatch*, November 15, 2000, 6.
242. Mountain House, "Mountain House—Community Planning," 2005, www.mountainhouse.net/town/community_planning.php, accessed November 6, 2005.
243. Kiley Russell, "Mountain House Gains a Foothold," *Contra Costa Times*, June 12, 2006.
244. "BART Decides Population Density Key to Building New Extensions," *The San Francisco Chronicle*, December 6, 2002, A24.
245. "Election 2004: 8 Transit Projects to Start Rolling Next Year," *The San Francisco Chronicle*, March 4, 2004, 1.
246. Shaping Our Future, "Contra Costa Shaping Our Future," August 25, 2003, www.shapingourfuture.org/, accessed November 5, 2005.
247. Yeager, interview November 5, 2005.

Appendix D: Case Study—Oakland International Airport

248. Port of Oakland, "OAK Backgrounder: A History of Aviation Excellence and Importance to the Community," November 2004, www.oaklandairport.com/media_backgrounder.shtml, accessed June 1, 2008; Port of Oakland, "Year-end Airport Statistics Summary, February 2008," www.oaklandairport.com/airport_stats_yearend_stats.shtml, accessed June 1, 2008.
249. Oakland International Airport, "Seventh Consecutive Year of Record Passenger Traffic Growth at OAK in 2004," Press Release, January 27, 2005, www.oaklandairport.com/press_releases_detail.cfm?ID=338, accessed July 6, 2005.
250. "Noisy FedEx Planes Draw Flak at Oakland, Calif. Airport Hub," *High Point Enterprise* (North Carolina), February 12, 2001, www.californiaaviation.org, accessed July 29, 2004.

-
251. Oakland International Airport, "Airport Development Program," www.oaklandairport.com/airport_construction_airport_dev_program.shtml, accessed May 31, 2005.
 252. Sean Holstege, "Port OKs Research on Airport Expansion," *The Oakland Tribune*, December 19, 2003.
 253. Lisa Vorderbrueggen, "Airport Plans Finally Get Off the Ground," *Contra Costa Times*, September 30, 2003.
 254. Sean Holstege, "Airport Expansion Passes Environment Test," *The Argus (Fremont)*, October 20, 2003.
 255. Holstege, December 19, 2003.
 256. Sean Holstege, "Oakland Airport Expansion Begins," *The Tri-Valley Herald*, April 23 2004, www.californiaaviation.org, accessed July 29, 2004.
 257. Tasha Bartholomew, "Airport Panel Selections Upset Three," *The Oakland Tribune*, June 11, 2004.
 258. Debbie Pollart, interview by Katja Irvin, June 13, 2005.
 259. Port of Oakland, *Strategic Plan Summary FY 2003-2007 Update* (August 2002).
 260. City of Oakland, *Oakland General Plan Noise Element* (June 2005): 11.
 261. *Ibid.*, 15.
 262. Debbie Pollart, "Win-Win Resolutions for Airports and Communities," presented at the American Planning Association Conference, March 22, 2005, San Francisco, CA.
 263. Tasha Bartholomew, "Noise Insulation Program Under Way," *The Oakland Tribune*, May 24, 2004.
 264. Tasha Bartholomew, "Port Plans to Noiseproof Some Houses Near Airport May Soon Get Insulation," *The Argus (Fremont)*, December 19, 2002.
 265. Port of Oakland, "Oakland International Airport Set to Begin Third Phase of Sound Insulation Program in Alameda," Press Release, April 21, 2003, www.oaklandairport.com/press_releases_detail.cfm?ID=219, accessed September 10, 2005.
 266. Port of Oakland, *Strategic Plan Summary FY 2003-2007 Update* (August 2002), 17.
 267. Pamela Kershaw, interview by Richard Lee, June 21, 2005.
 268. "Port Selling Off Property," *Oakland Post* 35, no. 76 (24 February 1999): 1.
 269. Jessica Materna, "Port of Oakland Sells Last of Airport Business Park Land," *San Francisco Business Times*, December 12, 2000.
 270. Kershaw, interview June 21, 2005.

271. Larry Gallegos, telephone interview by Katja Irvin, July 13, 2005.
272. Susan McDonough, "Developer to Expand Alameda Business Park," *The Oakland Tribune*, February 23, 2003.
273. Kristin Bender, "Airport Panel OKs Alameda School/Church," *Alameda Times-Star*, February 16, 2002.
274. Cindy Horvath, telephone interview by Katja Irvin, January 19, 2005.
275. County of Alameda General Services Agency, *RFP No. 005-1-0808 For Alameda County Airport Land Use Commission Comprehensive Land Use Plan Update* (June 12, 2002).
276. Natalie Fay, telephone interview by Katja Irvin, July 11, 2005.
277. City of Alameda, *City of Alameda General Plan, Airport Environs Element* (1991), 88.
278. Horvath, interview January 19, 2005.
279. County of Alameda General Services Agency, *RFP No. 005-1-0808 For Alameda County Airport Land Use Commission Comprehensive Land Use Plan Update* (June 10, 2002).
280. Cindy Horvath, e-mail communication with Katja Irvin, August 14, 2006.
281. Pollart, interview June 13, 2005.
282. Andrew Thomas, telephone interview by Katja Irvin, June 27, 2005.
283. City of Alameda, *Airport Environs Element*, 89.
284. *Ibid.*, 89.
285. *Ibid.*, 90.
286. *Ibid.*, 92–93.
287. *Ibid.*, 93–95.
288. City of Alameda, *City Of Alameda General Plan, Health and Safety Element* (1991), 109.
289. *Ibid.*, 110.
290. City of Oakland, *Oakland General Plan Noise Element* (June 2005), 24–25.
291. City of Oakland, *Envision Oakland City of Oakland General Plan, Land Use and Transportation Element* (March 1998), 42.
292. *Ibid.*, 50.
293. *Ibid.*, 77–78.
294. *Ibid.*, 87–88.
295. *Ibid.*, 88.
296. City of Oakland and Port of Oakland, *Estuary Policy Plan* (June 1999), www.portofoakland.com/realesta/reso_05 (accessed December 16, 2007).

-
297. City of San Leandro, *San Leandro General Plan, Land Use Element* (May 2002), 3-97.
298. Ibid., 3-98.
299. Ibid., 3-38.
300. Ibid., 3-59.
301. Ibid., 3-62.
302. City of San Leandro, *San Leandro General Plan, Environmental Hazards Element* (May 2002), 6-26.
303. Ibid., 6-20.
304. Ibid., 6-48; 6-51.
305. Kasarda, 2001.
306. City of Alameda, *City of Alameda General Plan* (1991): 3.
307. City of Alameda, *City of Alameda Bicycle Master Plan, Final Report* (July 10, 1999).
308. Pollart, interview June 13, 2005.
309. Fay, interview July 11, 2005.
310. City of Oakland, *Bicycle Master Plan* (July 20, 1999).
311. City of Oakland Community and Economic Development Agency and Bay Area Rapid Transit District, *Coliseum/Oakland Airport BART Station Area Concept Plan* (April 12, 2001).
312. "Oakland Receives Smart Growth Grant from Angelides," *San Francisco Business Times*, May 14, 2003.
313. Gallegos, interview July 13, 2005.
314. Paul T. Rosynsky, "BART Monorail Back on Track," *Oakland Tribune*, April 17, 2006.
315. Gallegos, interview July 13, 2005.
316. Michael Cabanatuan, "New Train Station Caters to Sports Fans," *San Francisco Chronicle*, May 27, 2005.
317. Justin Jouvenal, "High-speed Rail Closes in on Reality," *The Argus* (Fremont), September 26, 2002.
318. Port of Oakland, Board of Commissioners Regular Meeting, *Authorization to approve an agreement between the Port of Oakland and Harbor Bay Isle... Item A-2 Agenda Report* (November 1, 2005), www.portofoakland.com/pdf/boar_shee_051101.pdf.

-
319. City of Alameda, *Recommendation to Allow the City Manager to Enter into a Contract ... for Preparation of an Environmental Impact Report*, Memorandum to Mayor and Council Members (May 16, 2006), www.ci.alameda.ca.us/city_clerk/2006/attachments/4d_1078.pdf.
320. Kershaw, interview June 21, 2005.
321. Pollart, interview June 13, 2005.
322. Gallegos, interview July 13, 2005.
323. Pollart, interview June 13, 2005.
324. Doug Mansel, telephone interview by Richard Lee, July 22, 2005.
325. Pollart, interview June 13, 2005.
326. Mansel, interview July 22, 2005.
327. Oakland International Airport, "Pilot Information," www.oaklandairport.com/noise/pilot.shtml, accessed September 24, 2005.
328. Thomas, interview June 27, 2005.
329. Fay, interview July 11, 2005.

Appendix E: Case Study—Livermore Municipal Airport

330. United States Department of Transportation, Federal Aviation Administration, *National Plan of Integrated Airport Systems (NPIAS) (2007–2011)* (Washington DC: September 29, 2006).
331. "Livermore Airport's Neighbors Leery of Possible Expansion," *Valley Times* (Pleasanton), November 29, 1999, 3(A).
332. City of Livermore, *Livermore Municipal Airport Master Plan Update, Public Review Draft* (March 2004).
333. Leander Hauri, Livermore Airport General Manager, e-mail communication, April 3, 2006.
334. City of Livermore, "Master Plan Update Frequently Asked Questions," www.ci.livermore.ca.us/airport/faqs.html, accessed November 27, 2004.
335. City of Livermore, *City of Livermore General Plan* (February 2004): 10-29.
336. City of Livermore, *Livermore Municipal Airport Master Plan Update, Public Review Draft*, 1–12.
337. The City of Pleasanton, *Livermore Municipal Airport Altitude and Noise Study* (May 2003), 6–7.
338. *Ibid.*, 2–4.

-
339. Ibid, 4.
340. “Pleasanton, Dublin Denied a Voice on Livermore Panel,” *Valley Times* (Pleasanton), July 16, 2003.
341. “Noise Irks Neighbors of Livermore Airport,” *Contra Costa Times*, January 25, 2004.
342. Eddie Peabody, telephone interview by Katja Irvin, February 25, 2005.
343. Leander Hauri, telephone interview by Katja Irvin, February 18, 2005.
344. Ibid.
345. Lorraine Dietrich, telephone interview by Katja Irvin, March 4, 2005.
346. Mike White, “Critics Try to Ground California’s Livermore Airport Plan,” *The Tri-Valley Herald*, April 1, 2004.
347. Bonita Brewer, “Airport Expansion Plan Hits Turbulence,” *Valley Times* (Pleasanton), May 6, 2004.
348. Mike White, “Livermore Airport Meeting to Air Plans,” *The Tri-Valley Herald*, June 30, 2004.
349. City of Livermore, *City Council Agenda Report* (January 31, 2005).
350. Bonita Brewer, “Airport Noise Tops Agenda in Livermore,” *Valley Times* (Pleasanton), February 26, 2005.
351. City of Livermore, “City Council Agenda Report,” June 26, 2006.
352. Meera Pal, “Noise-Monitoring Plan Delayed until September,” *Contra Costa Times*, July 26, 2006.
353. Hauri, interview February 18, 2005.
354. City of Livermore, *Livermore Municipal Airport Master Plan Update, Public Review Draft, Appendix D. Airport Business Plan* (March 2004): D-36.
355. Ibid., D-16–D-17.
356. Kiley Russell, “Dublin, Livermore Agree to Border Greenbelt,” *Valley Times* (Pleasanton), May 2, 2002.
357. Sophia Kazmi, “New Skepticism over Development—Expansion of Offer, Land Use Concerns Spur Doubts about Dublin Site,” *Valley Times* (Pleasanton), April 7, 2005.
358. City of Livermore, “City Council Meeting Minutes,” June 25, 2001, www.ci.livermore.ca.us/minutes/06_25_01ccminutes.htm, accessed April 16, 2005.
359. Jennifer Criven, telephone interview by Katja Irvin, February 16, 2005.
360. Bonita Brewer, “New Plant for Water Treatment in District,” *Valley Times* (Pleasanton), February 19, 2005.

361. Greenbelt Alliance, "Press Release: Livermore City Council Passes Urban Growth Boundary," December 17, 2002, www.greenbelt.org/resources/press/releases/release_2002Dec17.html, accessed April 16, 2005.
362. City of Pleasanton, *The Pleasanton General Plan* (August 1996): II-7.
363. Bonita Brewer, "Pardee Proposal Compounds Already Contentious Election," *Valley Times* (Pleasanton), March 14, 2005.
364. City of Alameda, *City of Alameda General Plan Airport Environs Element* (1991): 87–90.
365. City of Livermore, *City of Livermore General Plan*, 10-29.
366. City of Alameda, *City of Alameda General Plan Airport Environs Element* (1991): 89–90.
367. County of Alameda General Services Agency, *RFP No. 005-1-0808 For Alameda County Airport Land Use Commission Comprehensive Land Use Plan Update*, June 12, 2002, www.acgov.org/gsa/purchasing/bidContent_ftp/rfpDocs/Airport%20RFP.pdf, accessed April 13, 2005.
368. Horvath, interview January 19, 2005.
369. County of Alameda General Services Agency, *RFP No. 005-1-0808*.
370. Cindy Horvath, e-mail communication, August 10, 2006.
371. Horvath, interview January 19, 2005.
372. City of Livermore, *City of Livermore General Plan*, 3-45.
373. *Ibid.*, 5-30, 5-31.
374. *Ibid.*, 10-29.
375. *Ibid.*, 10-29.
376. Criven, interview February 16, 2005.
377. Dietrich, interview March 4, 2005.
378. City of Pleasanton, *The Pleasanton General Plan* (August 1996), V-10.
379. *Ibid.*, V-18–V-19.
380. *Ibid.*, VIII-10.
381. *Ibid.*, XII-14.
382. Pleasanton Department of Planning and Community Development, *Stoneridge Drive Specific Plan* (October 1989), 18.
383. *Ibid.*, 18.
384. *Ibid.*, 35.

-
385. Bonita Brewer, "Staples Ranch Sale No Longer an Issue," *San Ramon Valley Times*, June 14, 2001, 10(A).
386. Jeb Bing, "Council Votes to OK Auto Mall, Staples Ranch Plan," *Pleasanton Weekly*, April 21, 2006.
387. City of Dublin, *City of Dublin General Plan* (February 1985), 17.
388. *Ibid.*, 16.
389. Peabody, interview February 25, 2005.
390. Sophia Kazmi, "Council OKs Initial Fallon Village Plans," *Contra Costa Times*, December 7, 2005.
391. City of Livermore, *City of Livermore General Plan*, 8–35.
392. *Ibid.*, 5-18–5-19.
393. Criven, interview February 16, 2005.
394. City of Pleasanton, *The Pleasanton General Plan*, II-18.
395. City of Dublin, *City of Dublin General Plan*, 3.
396. *Ibid.*, 4.
397. Alan Zibel, "With Construction Under Way, Dublin Planning 12,000 Units," *The Oakland Tribune*, July 11, 2004.
398. Peabody, interview February 25, 2005.
399. City of Dublin, *City of Dublin—Commercial and Residential Project List*, January 11, 2005, www.ci.dublin.ca.us/pdf/development-projects-list-2004-12.pdf, accessed January 19, 2005.
400. City of Dublin, *Eastern Dublin Specific Plan* (January 7, 1994, updated to March 4, 2008).
401. "Noise Irks Neighbors of Livermore Airport," *Contra Costa Times*, January 25, 2004, 34(A).
402. Mike White, "Pardee Project Heads to Ballot," *Tri-Valley Herald*, March 29, 2005.
403. City of Livermore Economic Development, "Doing Business," www.ci.livermore.ca.us/business.html, accessed April 16, 2005.
404. Criven, interview February 16, 2005.
405. Hauri, interview February 18, 2005.
406. Hauri, interview February 18, 2005.
407. Dietrich, interview March 4, 2005.
408. Criven, interview February 16, 2005.

409. Horvath, interview January 19, 2005.

410. Peabody, interview February 25, 2005.

411. City of Dublin, “City of Dublin—Commercial and Residential Project List.”

412. Horvath, interview January 19, 2005.

413. Waldner.

Appendix F: Case Study—San Francisco International Airport

414. “More Houses Near SFO to Get Noise Insulation,” *San Francisco Chronicle*, February 25, 2000.

415. “Making Noise Over Air Traffic,” *West County Times*, January 23, 2000.

416. Ibid.

417. “More Houses near SFO...”

418. “SFO Will Require Jets to Fly Higher to Reduce Noise,” *San Francisco Chronicle*, April 26, 2000.

419. “Noisy Nighttime Jet Route Grounded,” *The Press Democrat*, April 16, 2001.

420. “SFO Now Less Noisy, Airport Officials Say,” *San Francisco Chronicle*, August 7, 2002.

421. Ibid.

422. Todd R. Brown, “Noise Plan Still Flying,” *San Mateo County Times*, May 10, 2006.

423. San Francisco International Airport, “Aircraft Noise Abatement Office—Accomplishments and History,” www.flyquietsfo.com/FactSheets.htm, accessed October 15, 2006.

424. San Francisco International Airport, Aircraft Noise Abatement Office, Aircraft Noise Monitoring System, www.flyquietsfo.com/NoiseMonitoring.htm, accessed October 15, 2006.

425. San Francisco International Airport, Aircraft Noise Abatement Office, *Fly Quiet Program*, www.flyquietsfo.com/FlyQuiet.htm, accessed October 15, 2006.

426. City/County Association of Governments of San Mateo County, *San Mateo County Comprehensive Airport Land Use Plan* (December 1996).

427. At www.ccag.ca.gov/aluc.html, accessed October 15, 2006.

428. City/County Association of Governments of San Mateo County, *Notice of Regular Meeting—C/CAG Airport Land Use Committee (ALUC), Thursday, May 24, 2007, Agenda Packet, 35–42*, www.ccag.ca.gov/aluc.html, accessed December 26, 2007.

-
429. San Francisco International Airport/Community Roundtable, *Regular Meeting Announcement—Meeting No. 256, Wednesday, December 5, 2007*, Agenda Packet, 28–37, www.SFOroundtable.org, accessed December 26, 2007.
430. San Francisco International Airport, Aircraft Noise Abatement Office, “San Francisco Airport/Community Roundtable,” www.flyquietsfo.com/Roundtable.htm, accessed October 15, 2006.
431. San Francisco International Airport/Community Roundtable, *Regular Meeting Announcement—Meeting No. 248, Wednesday, September 6, 2006*, Agenda Packet, 59–62, www.SFOroundtable.org, accessed October 15, 2006.
432. California High-Speed Rail Authority, “What’s New?” www.cahighspeedrail.ca.gov/whats_new/, accessed December 26, 2007.
433. City/County Association of Governments of San Mateo County, *San Mateo County Comprehensive Airport Land Use Plan*, Table V-II.

Appendix G: Case Study—South County Airport

434. County of Santa Clara, Airport Land Use Commission, *Draft Reid-Hillview Airport CLUP Revisions* (March 2004).
435. County of Santa Clara, Airports Department, *Airport Roles and Forecasts, Revised Public Review Draft* (November 2002).
436. County of Santa Clara, Airports Department, “Airport Updates,” *The Newsletter*, Summer 2004, www.countyairports.org/Newsletter/newslettermedia/summer04newsletter.pdf, accessed March 13, 2005.
437. Jonathan Jeisel, “Hung Up on Airport Hangars,” *The Dispatch* (Gilroy), May 9, 2003.
438. Sarah Ruby, “Airport Deal OKed,” *The Pinnacle News* (Hollister), September 12, 2003.
439. Eric Leins, “SM airport fight—is it over?” *The Dispatch* (Gilroy), September 11, 2003.
440. Carl Honaker, telephone interview by Katja Irvin, December 1, 2004.
441. Jonathan Jeisel, “Airport Growth Go-Ahead,” *The Dispatch* (Gilroy), November 20, 2002.
442. Ibid.
443. “Planes Southbound?” *The San Jose Mercury News*, November 18, 2002.
444. Jonathan Jeisel, “Collision Course on Airport,” *The Dispatch* (Gilroy), November 15, 2002.
445. Sarah Ruby, “County Wants Longer Runway,” *The Pinnacle News* (Hollister), September 10, 2004.
446. Katie Niekerk, “Airport Plans Take Off,” *The Dispatch* (Gilroy), September 3, 2004.
447. County of Santa Clara Board of Supervisors, *Summary of Proceedings*, March 22, 2005, “Summary of Board of Supervisors’ Meetings,” www.sccgov.org.

-
448. County of Santa Clara, *South County Airport Master Plan*, Appendix C: Land Use Compatibility (July 2005).
449. Honaker, interview December 1, 2004.
450. Edwin Chan, telephone interview by Katja Irvin, December 21, 2004. County of Santa Clara, *South County Airport Master Plan*, Appendix C.
451. Honaker, interview December 1, 2004.
452. Sylvia Hamilton, telephone interview by Katja Irvin, December 28, 2004.
453. Honaker, interview December 1, 2004.
454. Jim Rowe, telephone interview by Katja Irvin, December 17, 2004.
455. Bill Shoe, interview by Katja Irvin, November 23, 2004.
456. "Seeking a Voice," *The San Jose Mercury News*, August 25, 2003.
457. Ibid.
458. "Grassroots San Martin Group Launches Web Site," *The Dispatch* (Gilroy), May 1, 2002.
459. Ed Tewes, telephone interview by Katja Irvin, December 17, 2004.
460. County of Santa Clara, "Williamson Act Updates," www.sccgov.org/channel/0,4770,ccid%253D632758%2526sid%253D12867,00.html, accessed October 14, 2005.
461. John Woolfolk, "Tax Break May Cease For Some—Farmland Contract Abused, Auditors Say," *The San Jose Mercury News*, October 1, 2005.
462. Rachael Gibson, telephone interview by Katja Irvin, December 22, 2004.
463. County of Santa Clara, "Airport Land Use Commission," www.sccgov.org/channel/0,4770,ccid%253D632128,00.html, accessed December 17, 2004.
464. Walter Windus, interview by Katja Irvin, Santa Clara, CA., November 17, 2004.
465. County of Santa Clara, *Draft Reid-Hillview Airport CLUP Revisions*.
466. Windus, interview November 17, 2004.
467. Dana Peak, telephone interview by Katja Irvin, December 23, 2004.
468. Windus, interview November 17, 2004.
469. Ibid.
470. Shoe, interview November 23, 2004.
471. Ibid.
472. County of Santa Clara Planning Office, *Santa Clara County General Plan Book A* (1994), F-28.

-
473. Ibid., F-30 – F-31.
474. County of Santa Clara Planning Office, *Santa Clara County General Plan Book B* (1994), M-10.
475. Ibid.
476. *Santa Clara County General Plan Book A*, I-33.
477. Ibid., I-37–I-38.
478. Ibid. J-9.
479. *Santa Clara County General Plan Book B*, Q-22.
480. City of Gilroy, County of Santa Clara, and City of Morgan Hill, *South County Joint Area Plan* (1991).
481. Gibson, interview December 22, 2004.
482. City of Gilroy, County of Santa Clara, and City of Morgan Hill, *South County Joint Area Plan* (1991), T-14.
483. William Faus, telephone interview by Katja Irvin, December 16, 2004.
484. Tewes, interview December 17, 2004.
485. Gibson, interview December 22, 2004.
486. Hamilton, interview December 28, 2004.
487. Gibson, interview December 22, 2004.
488. Faus, interview December 16, 2004.
489. City of Morgan Hill, *Morgan Hill General Plan* (July 2004).
490. Shoe, interview November 23, 2004.
491. *Santa Clara County General Plan Book A*, B-1.
492. Ibid., B-3.
493. Ibid., B-19.
494. Ibid., B-24.
495. Faus, interview December 16, 2004.
496. City of Gilroy, *Gilroy General Plan* (June 2002), 4–8.
497. Eric Leins, “Cityhood in cards for SM,” *The Dispatch* (Gilroy), July 18, 2003.
498. Hamilton, interview December 28, 2004.
499. Tewes, interview December 28, 2004.

-
500. Carol Holzgrafe, "Growth-Control Extension Passes by Wide Margin," *The Morgan Hill Times*, March 5, 2004.
501. Carol Holzgrafe, "Growth-Control Measure on Ballot," *The Morgan Hill Times*, February 10, 2004.
502. Caltrain, "History: Caltrain Milestones," 2002, www.caltrain.com/caltrain_history.html, accessed March 14, 2005.
503. "Protection Came Too Late for Many Cities," *The San Jose Mercury News*, January 27, 1986.

Appendix H: Case Study—San Luis Obispo County Regional Airport

504. San Luis Obispo County Regional Airport, "Airport History," 2001, <http://www.sloairport.com/history.htm>, accessed October 2004.
505. "Liftoff Under Her Wing," *The Tribune* (San Luis Obispo), May 12, 2004.
506. Federal Aviation Administration, *CY 2004 Passenger Boarding and All-Cargo Data*, November 8, 2005, www.faa.gov/arp/planning/stats/2004/cy04_primary_boardings.pdf, accessed November 19, 2005.
507. San Luis Obispo County Regional Airport, "Airport History," 2001 (October 2004).
508. "Flying High Again," *The Tribune* (San Luis Obispo), June 6, 2004.
509. Ibid.
510. Ibid.
511. Jamie Hurly, "Airport's Expansion Plan Worries Neighbors," *The Telegram-Tribune* (San Luis Obispo), October 5, 1998.
512. "Airport to Be Topic at Public Workshop," *The Tribune* (San Luis Obispo), June 3, 2004.
513. San Luis Obispo County Regional Airport, *Airport Master Plan Executive Summary* (2005).
514. "Not A Runway But a 'Runaway' Ramp," *The Tribune* (San Luis Obispo), May 4, 2004.
515. Nairne, interview October 7, 2004.
516. Freddie Yap, "Regional Airport Still in Line for Money," *The Tribune* (San Luis Obispo), September 10, 2003.
517. "Liftoff Under Her Wing."
518. Melanie Cleveland, "SLO County's Airport Spreads Its Wings," *The Tribune* (San Luis Obispo), December 21, 2007.
519. Mike Boswell, City of San Luis Obispo Planning Commissioner, interview by Richard Lee, October 8, 2004; David Dubbink, Principal of the Noise Management Institute in San Luis Obispo, interview by Richard Lee, October 7, 2004.

-
520. Anne Quinn, "Airport Land Use Still Up in the Air," *New Times* (San Luis Obispo), January 11, 2001.
521. Nairne, interview October 7, 2004.
522. Tracy Idell Hamilton, "The Battle over Sprawl Rages On," *New Times* (San Luis Obispo), March 22, 2000.
523. Ibid.
524. Silas Lyons, "The Airport's Sphere of Influence," *The Tribune* (San Luis Obispo), August 11, 2002.
525. "Grand Plan Grounded?" *The Tribune* (San Luis Obispo), August 26, 2001.
526. Ibid.
527. Ibid.
528. Airport Land Use Commission of San Luis Obispo County, *Airport Land Use Plan for the San Luis Obispo County Regional Airport* (amended May 18, 2005), 3.
529. Quinn, January 11, 2001.
530. Ibid.
531. Julie Lynem, "Margarita Vision Is Becoming a Reality," *The Tribune* (San Luis Obispo), March 21, 2004.
532. Ibid.
533. "Margarita Plan Moves Forward," *The Tribune* (San Luis Obispo), December 9, 2003.
534. Bill Robeson, interview by Richard Lee, October 3, 2005.
535. "Proposal Presents Division of Values," *The Tribune* (San Luis Obispo), January 14, 2004.
536. Ibid.
537. Bob Cuddy, "Dalidio Ranch Would Jam SLO Roads, Agency Warns," *The Tribune* (San Luis Obispo), August 2, 2006.
538. "RRM Stands behind Project's Design, The New Dalidio Ranch," *The Tribune* (San Luis Obispo), March 17, 2006.
539. San Luis Obispo Chamber of Commerce, "Airport Area Annexation: Today's Action for Tomorrow's Options," www.slochamber.org/ecm/Business/airport.html, accessed October 6, 2004.
540. Sierra Club Santa Lucia Chapter, "Conservation Groups and Activities," <http://santalucia.sierraclub.org/conserv.html>, accessed September 24, 2004.
541. "San Luis Obispo Makes Plans to Expand," *The Tribune* (San Luis Obispo), February 27, 2002.

-
542. “Big Choices Ahead for SLO Projects,” *The Tribune* (San Luis Obispo), December 15, 2003.
543. City of San Luis Obispo, *Airport Area Specific Plan, Public Review Draft* (January 2002), www.ci.san-luis-obispo.ca.us/communitydevelopment/download/aaspweb.pdf, accessed November 1, 2004.
544. “San Luis Obispo Makes Plans to Expand.”
545. “Big Choices Ahead for SLO Projects.”
546. City of San Luis Obispo, *Airport Area Specific Plan News* (January 2005).
547. Bill Robeson, *ALUC Staff Report* (August 17, 2005); interview by Richard Lee, October 3, 2005.
548. Leslie E. Stevens, “SLO Airport Business Park Lands New Tenants,” *The Tribune* (San Luis Obispo), April 2, 2002.
549. “Landing Zone for High Tech,” *The Tribune* (San Luis Obispo), January 13, 2001.
550. “Big Buzz: Flurry of Projects in SLO Set to Finish in ‘09.” *The Tribune* (San Luis Obispo), December 28, 2007.
551. Stephanie Finucane, “Airport Area Bursting with Projects,” *The Tribune* (San Luis Obispo), July 20, 2003.
552. Ibid.
553. Robeson, *ALUC Staff Report*; interview October 3, 2005.
554. San Luis Obispo County Regional Airport, “Airport Information: Alternate Ground Transportation,” 2001, www.sloairport.com/groundtrans.html, accessed November 15, 2004.
555. “Community: 2050,” *The Coordinator, Newsletter of the San Luis Obispo Council Governments XI*, issue 5 (December 2004).
556. California Department of Transportation, Division of Transportation Planning, “California Regional Blueprint Planning Program,” <http://calblueprint.dot.ca.gov>, accessed December 30, 2007.
557. San Luis Obispo Region—Community: 2005, *Progress Update*, Special Report (February 2007), www.slocog.org/ecm/Community2005/2005/News/Newsletters.html, accessed December 30, 2007.
558. Dubbink, interview October 7, 2004.

Appendix I: Case Study—Long Beach Municipal Airport

559. “America West Asks Airport for Flight Slots,” *Long Beach Press-Telegram*, February 4, 2005.
560. Harry Saltzgaver, “Firm Seeks Space to Fly at Long Beach,” *The Grunion Gazette* (Long Beach), August 4, 2005.

-
561. Felix Sanchez, "L.B. to Utah Flights Added," *Long Beach Press-Telegram*, January 4, 2005.
562. Felix Sanchez, "Last 22 Airport Slots Allotted," *Long Beach Press-Telegram*, September 3, 2005.
563. LBReport.com, "ExpressJet (Regional Carrier) Announces Destinations For Its Six Daily Commuter Flights From LB," October 8, 2007, www.lbreport.com/airport/airport.htm, accessed January 1, 2008.
564. "Airport a Test for New Council," *Long Beach Press-Telegram*, June 13, 2004.
565. "Vote On Airport Upgrades Delayed," *Long Beach Press-Telegram*, July 16, 2004.
566. Felix Sanchez, "L.B. Airport Expansion Debated," *Long Beach Press-Telegram*, November 10, 2004.
567. "Business as Usual," *Long Beach Press-Telegram*, January 19, 2002.
568. "Input On Airport Changes Accepted Aviation: Public May Comment on Terminal Plans Through Oct. 22," *Long Beach Press-Telegram*, September 24, 2003.
569. "L.B. Looking to the Sky for Money," *Long Beach Press-Telegram*, September 30, 1998.
570. "Long Beach Airport Catches Noise Makers," *Long Beach Press-Telegram*, July 23, 2001.
571. Jason Gewirtz, "No Room for More Flights," *Long Beach Press-Telegram*, October 13, 2004.
572. "JetBlue Tackles Curfew Breaches," *Long Beach Press-Telegram*, November 15, 2003.
573. "Curbing Airport Noise," Editorial, *Long Beach Press-Telegram*, October 23, 2003.
574. "Flight Limits Still Backed," *Long Beach Press-Telegram*, May 15, 2002.
575. "L.B. Officials Lobby Washington," *Long Beach Press-Telegram*, May 18, 2002.
576. "Noise Counts Filed Against 3 Airlines," *Long Beach Press-Telegram*, December 21, 2002.
577. City of Long Beach, "2003 Airline Flight Allocation Agreement—Agreement Overview," February 5, 2003, www.longbeach.gov/airport/noise_abatement/airline_settlement_agreement.asp, accessed September 12, 2006.
578. "FAA Leaves Long Beach Limits Intact," *Los Angeles Times*, May 3, 2003.
579. Gerwitz, October 13, 2004.
580. "Airport Neighbors Want Peace, Quiet," *Long Beach Press-Telegram*, August 10, 2002.
581. "Airport May Grow in Phases," *Long Beach Press-Telegram*, June 18, 2004.
582. "Airport Health Study Approved," *Long Beach Press-Telegram*, October 1, 2004.
583. "How Will Airport Plans Affect Public Health?" *Long Beach Press-Telegram*, October 10, 2004.
584. Sanchez, November 10, 2004.

585. Felix Sanchez, "Smaller Airport Plan OK'd," *Long Beach Press-Telegram*, February 9, 2005.
586. Felix Sanchez, "JetBlue Chief Blasts Away over Airport," *Long Beach Press-Telegram*, February 25, 2005.
587. Felix Sanchez, "Airport Rhetoric Already Flying," *Long Beach Press-Telegram*, April 19, 2005.
588. Harry Saltzgaver, "Alliance Touts Airport Improvement," *The Grunion Gazette*, April 21, 2005.
589. Harry Saltzgaver, "Airport Terminal EIR Supports Expansion," *The Grunion Gazette*, November 10, 2005.
590. Felix Sanchez, "L.B, Residents Get Chance to Comment on Airport Plans," *Long Beach Press-Telegram*, April 29, 2005.
591. Salzgaver, November 10, 2005.
592. Felix Sanchez, "Voices Will Be Heard on Airport," *Long Beach Press-Telegram*, November 14, 2005.
593. Harry Saltzgaver, "Airport EIR Fight Takes Off," *The Grunion Gazette*, November 24, 2005.
594. Felix Sanchez, "More Airport Comment," *Long Beach Press-Telegram*, December 15, 2005.
595. Felix Sanchez, "Commission Certifies Airport EIR," *Long Beach Press-Telegram*, May 12, 2005.
596. Harry Saltzgaver, "Airport Project EIR Appeals Plentiful," *The Grunion Gazette*, May 25, 2006.
597. Harry Saltzgaver, "Airport Terminal Costs Top \$158 Million," *The Grunion Gazette*, May 25, 2006.
598. LBReport.com, "Council Makes Major Airport Decisions: Certifies EIR for Expansion of Permanent Terminal Area Facilities," June 20, 2006, www.lbreport.com/reference/reflgb.htm, accessed October 14, 2006.
599. LBReport.com, "July 11 City Council Airport votes...", July 11, 2006, www.lbreport.com/reference/reflgb.htm, accessed October 14, 2006.
600. LBReport.com, "LB Unified School District Files Legal Action Against City Hall Alleging Flawed EIR...", www.lbreport.com/reference/reflgb.htm, accessed October 14, 2006.
601. LBReport.com, "City Mgm't Asks Council for Approx. 60 Days More in Ongoing Talks with Airport EIR-Appellants with Goal of Avoiding Litigation," September 15, 2006, www.lbreport.com/airport/airport.htm, accessed October 14, 2006.

-
602. LBReport.com, "LB PTA Files Suit Challenging Environmental Impact Report Re Expansion Of Airport's Permanent Terminal Area Facilities," March 16, 2007, www.lbreport.com/airport/airport.htm, accessed January 1, 2008.
603. LBReport.com, "Council Votes 5-3 To Expand LB Airport's Permanent Terminal Area Facilities...", April 25, 2007, www.lbreport.com/airport/airport.htm, accessed January 1, 2008.
604. City of Long Beach, Department of Planning and Building, *Long Beach General Plan*, April 1997, www.ci.long-beach.ca.us/plan/default.asp, accessed October 14, 2006.
605. "Boeing Plans to Develop Part of Long Beach Site," *Los Angeles Times*, February 16, 2000.
606. "Boeing Goes 'Green'," *Long Beach Press-Telegram*, October 1, 2001.
607. "PacifiCenter Taking Shape," *Long Beach Press-Telegram*, February 16, 2004.
608. Ibid.
609. "Boeing Realty Scales Down Project," *Long Beach Press-Telegram*, May 5, 2004.
610. "Panel OKs Project Sans Homes," *Long Beach Press-Telegram*, August 20, 2004.
611. "Douglas Park Gets OK," *Long Beach Press-Telegram*, October 8, 2004.
612. "Douglas Park's Rocky Road," *Long Beach Press-Telegram*, October 18, 2004.
613. Ibid.
614. Felix Sanchez, "Douglas Park OK'd by FAA," *Long Beach Press-Telegram*, December 14, 2004.
615. Felix Sanchez, "Douglas Park Project OK'd," *Long Beach Press-Telegram*, December 15, 2004.
616. Felix Sanchez, "90 Acres of Prospects," *Long Beach Press-Telegram*, January 23, 2005.
617. Gary Gentile, "Airplane Production in Tailspin," *San Jose Mercury News*, April 24, 2006.
618. Boeing Realty Corporation, "About Douglas Park: Project Development Timeline," 2005, www.douglaspark.org/about_timeline.html, accessed May 31, 2006.
619. Felix Sanchez, "Group Battles Douglas Park," *Long Beach Press-Telegram*, June 18, 2005.
620. Felix Sanchez, "No Houses at Douglas Park," *Long Beach Press-Telegram*, May 17, 2006.
621. Kurt Helin, "Douglas Park Single Family Homes Gone," *The Grunion Gazette*, May 25, 2006.
622. Kurt Helin, "Douglas Park Improvement Tax Passes," *The Grunion Gazette*, February 22, 2007.
623. CB Richard Ellis, "Douglas Park, Long Beach," <http://marketing.cbre.com/NewportBeach/DouglasPark/index.html>, accessed January 1, 2008.

-
624. "Agency Speaks For Airport Firms," *Long Beach Press-Telegram*, July 30, 2001.
625. "Construction Takes Off," *Long Beach Press-Telegram*, January 24, 2000.
626. "Airport Project Now Under Way," *Long Beach Press-Telegram*, September 24, 2002.
627. "Long Beach's Vacancy Rate Still Lower Than South Bay," *Long Beach Press-Telegram*, June 17, 2003.
628. "PacifiCenter Work Begins Despite Pinch," *Long Beach Press-Telegram*, May 26, 2003.
629. Ibid.

Appendix J: Case Study—Jacqueline Cochran Regional Airport

630. "Trade Zone Pursued for Airport in Thermal," *The Desert Sun*, September 13, 1999.
631. "Enterprise Zone Continues to Attract Business, Jobs to Valley," *The Desert Sun*, March 8, 2003.
632. Ibid.
633. Jake Henshaw Gannett, "Enterprise Zone Bill Begins its Path Through Legislature," *The Desert Sun*, April 9, 2003.
634. Riverside County Economic Development Agency, "Coachella Valley Wins Enterprise Zone Renewal," www.rivcoeda.org/Default.aspx?tabid=474&mid=990&ctl=ArticleView&articleid=27, January 2, 2008, accessed January 6, 2008.
635. "Developers Hold Keys to Valley's Future." *The Desert Sun*, August 8, 1999.
636. Ibid.
637. "La Quinta Annexation Proposal Stalls," *The Desert Sun*, December 8, 1999.
638. Vista Santa Rosa, "Welcome to Vista Santa Rosa," www.vistasantarosa.com/index.html, accessed October 16, 2006.
639. Vista Santa Rosa, "Where We Are Located," www.vistasantarosa.com/where.html, accessed October 16, 2006
640. Kimberly Trone, "Growth is a Freight Train," *The Desert Sun*, November 14, 2003.
641. Ibid.
642. Riverside County Local Agency Formation Commission, *Revised Draft Initial Study/Negative Declaration for Sphere of Influence Updates for the Cities of Coachella and La Quinta* (April 2006), http://appsweb.co.riverside.ca.us/lafco/opencms/monthly_hearings/agenda/pdf/2006/April/4m.n.o-2005-20-21-22SOI.pdf, accessed October 16, 2006.
643. Erica Solvig, "Coachella Wins Big in Land Grab," *The Desert Sun*, April 28, 2006.

-
644. Mead & Hunt, *Jacqueline Cochran Regional Airport Master Plan*, Prepared for the County of Riverside Economic Development Agency, Riverside, California (December 14, 2004), www.rivcoeda.org/Default.aspx?tabid=536, accessed October 16, 2006.
645. Riverside County Planning Department, *Countywide Approved Specific Plan Map* (May 2005), www.tlma.co.riverside.ca.us/planning/content/splans/sp_database.html, accessed October 16, 2006.

Appendix K: Case Study—French Valley Airport

646. Riverside County Economic Development Agency, “French Valley Airport—Location and Amenities,” www.rivcoeda.org/Default.aspx?tabid=522, accessed October 16, 2006.
647. Coffman Associates, Inc., *Airport Master Plan for French Valley Airport, Riverside County, California*, prepared for Riverside County (November 1995).

Appendix L: Case Study—McClellan-Palomar Airport

648. Floyd Best, Airport Manager, McClellan-Palomar Airport, interview by Geoffrey Gosling, October 26, 2004.
649. County of San Diego, Department of Public Works, “Part 150 Noise Study for Palomar Airport,” www.co.san-diego.ca.us/dpw/airports/150noise.html, accessed January 1, 2006.
650. Barbara Henry, “Carlsbad Airport Meeting Draws a Crowd,” *San Diego North County Times*, January 11, 2006.
651. URS Corporation, *McClellan-Palomar Airport FAR Part 150 Study Update: Noise Compatibility Program—Version 6, Volumes 1 and 2*, prepared for McClellan-Palomar Airport, Carlsbad, CA, (San Diego: March 2006), approved by the Federal Aviation Administration December 5, 2006, www.sdcounty.ca.gov/dpw/airports/150noise.html, accessed January 6, 2008.
652. Federal Aviation Administration, *Record of Approval, 14 CFR Part 150 Noise Compatibility Program—McClellan-Palomar Airport*, Carlsbad, CA, (Los Angeles: December 5, 2006), www.sdcounty.ca.gov/dpw/airports/150noise.html, January 6, 2008.
653. Agnes Roletti, “Carlsbad Airport’s Noise has Locals Hot—New Homes Clashing with Increased Flights.” *San Diego Union-Tribune*, February 6, 2000.
654. “Grant Sought for Airport Noise Study,” *San Diego Union-Tribune*, March 16, 2000.
655. Mike Freeman, “Panel Airs Study on Palomar Plane Noise—Homeowners Are Disappointed Report’s Stance Wasn’t Stronger,” *San Diego Union-Tribune*, February 17, 2001.
656. “The Study Subject Is Aircraft Noise,” *San Diego Union-Tribune*, March 29, 2003.
657. Elena Gaona, “Residents Want Noise Reduction Near Airport,” *San Diego Union-Tribune*, November 20, 2004.

658. City of Carlsbad, *Guidebook to the Carlsbad General Plan* (August 2004): 5.
659. Lennar Communities, “Bressi Ranch Q & A,” www.bressiranch.com/facts.php, accessed February 3, 2006.

Appendix M: Case Study—San Diego International Airport

660. Jeff Ristine, “Quieter Over the Home Front,” *San Diego Union-Tribune*, August 29, 2004.
661. “Quieter Flight Rules Being Enforced Now at Lindbergh,” *San Diego Union-Tribune*, January 1, 1999.
662. Anthony Millican, “Lindbergh Field Expansion Foes Strategize,” *San Diego Union-Tribune*, July 2, 1999.
663. San Diego County Regional Airport Authority, Airport Noise Mitigation Office, *Quarterly Noise Report for the Period October 1, 2004 through December 31, 2004, San Diego International Airport* (March 2005).
664. “Port District’s Airport Noise Data Correct, Audit Finds,” *San Diego Union-Tribune*, November 2, 2000.
665. “New Deal to Soundproof Homes near S.D. Airport,” *San Diego Union-Tribune*, 20 June 2001.
666. Ristine, August 29, 2004.
667. “Debate Centers on How San Diego Airport Can Spread Out Its Wings,” *San Diego Union-Tribune*, April 17, 1994.
668. San Diego County Regional Airport Authority, “Board and Airport Land Use Commission—Minutes of Meeting on Thursday, July 8, 2004,” www.san.org/authority, accessed October 7, 2005.
669. E-mail communication from Linda Johnson, Aviation Planner, San Diego County Regional Airport Authority, October 6, 2005.
670. Jeff Ristine, “Airport Authority Opposes Condo Plan,” *San Diego Union-Tribune*, September 10, 2004.
671. San Diego County Regional Airport Authority, *Airport Land Use Commission: Consistency Determination—San Diego International Airport Comprehensive Land Use Plan—Community Plan Amendment, Site Development Permit, Rezone and Tentative Map to Construct 128 Condominium Units, 222 Laurel Street, City of San Diego, County of San Diego*, Staff Report, September 9, 2004.
672. San Diego County Regional Airport Authority, *Consistency Determination—San Diego International Airport—Airport Land Use Compatibility Plan—Site Development Permit, Rezone and Tentative Map to Construct 69 New Residential Units at 222 Laurel Street, City of San Diego*, Staff Report, July 6, 2006.

-
673. San Diego County Regional Airport Authority, *Final Environmental Impact Report No. 01-04: Annual Amendments to the Comprehensive Land Use Plans for San Diego County Airports*, State Clearinghouse No. 2004011078, Volumes 1 (October 2004), 1-1-1-2.
674. *Ibid.*, Table 1-1.
675. San Diego County Regional Airport Authority, “Minutes of Strategic Planning Committee/ Special Board Meeting on Monday, September 8, 2003,” September 2003, www.san.org/authority, accessed October 16, 2005.
676. San Diego County Regional Airport Authority Board, “Minutes of Meeting on Monday, November 24, 2003,” November 2003, www.san.org/authority, accessed 16 October, 2005.
677. San Diego County Regional Airport Authority, *Final Environmental Impact Report No. 01-04: Annual Amendments to the Comprehensive Land Use Plans for San Diego County Airports* (October 2004), Appendix A: Notice of Preparation and Initial Study.
678. San Diego County Regional Airport Authority Board and Airport Land Use Commission, “Minutes of Meeting on Thursday, September 9, 2004,” September 2004, www.san.org/authority, accessed October 16, 2005.
679. San Diego County Regional Airport Authority, “Minutes of Strategic Planning Committee/ Special Board Meeting on Monday, September 13, 2004,” September 2004, www.san.org/authority, accessed October 16, 2005.
680. Letter dated April 15, 2005, from S. Gail Goldberg, Planning Director, City of San Diego, to Sunil Harman, Director, Airport System Planning, San Diego County Regional Airport Authority, concerning City of San Diego Review and Comments to the *Draft San Diego County Airport Land Use Compatibility Plan*.
681. San Diego County Regional Airport Authority Airport Land Use Commission, “Minutes of Meeting on Thursday, September 8, 2005,” September 2005, Attachment 1, Revised Timeline for the 2005 Airport Land Use Compatibility Plans (ALUCPs) Project, Presentation by Angela Shafer-Payne, VP, Strategic Planning, www.san.org/authority/aluc/alucp_adoption_schedule.asp [ALUCP Timeline Presentation.ppt], accessed September 14, 2005.
682. San Diego County Regional Airport Authority, “Minutes of Strategic Planning Committee/ Special Board Meeting on Monday, September 26, 2005,” September 2005 Revised Timeline for the 2005 Airport Land Use Compatibility Plans (ALUCPs) Project, Presentation by Angela Shafer-Payne, VP, Strategic Planning, www.san.org/authority/aluc/alucp_adoption_schedule.asp [ALUCP Timeline Presentation.ppt], accessed November 25, 2005.
683. San Diego County Regional Airport Authority Airport Land Use Commission, “Minutes of Meeting on Monday, October 3, 2005,” October 2005, www.san.org/authority, accessed November 25, 2005.
-

-
684. San Diego County Regional Airport Authority Airport Land Use Commission, “Minutes of Special Meeting on Wednesday, November 9, 2005,” November 2005, www.san.org/authority, accessed March 28, 2006.
685. For details of ATAG meeting discussions, see the summary notes of each meeting at http://www.san.org/airport_authority/land_use_compatibility/atag.asp.
686. City of San Diego, Development Services Department, “Official Zoning Map,” www.sandiego.gov/development-services/zoning/zoning.shtml, accessed July 29, 2006.
687. City of San Diego, Planning Department, *What is Planning? A Guide to Planning in the City of San Diego*, second printing (September 2005).
688. City of San Diego, *General Plan* (March 2008), www.sandiego.gov/planning/genpln/index.shtml, accessed May 21, 2008.
689. City of San Diego, Development Services Department, *Guide to the Base Zones of the DRAFT Official Zoning Map* (undated), www.sandiego.gov/development-services/zoning/zoninggripmap.shtml, accessed July 29, 2006.
690. City of San Diego, *San Diego Municipal Code*, Chapter 10, Article 3, Section 103.1910 (May 2002).
691. City of San Diego, *San Diego Municipal Code*, Chapter 13, Article 2, Division 2: Airport Environs Overlay Zone (April 2006).
692. City of San Diego, *San Diego Municipal Code*, Chapter 13, Article 2, Division 3: Airport Approach Overlay Zone (April 2006).
693. San Diego Association of Governments, “Smart Growth Incentive Program,” www.sandag.org/index.asp?projectid=264&fuseaction=projects.detail, accessed November 13, 2005.
694. San Diego Association of Governments, *Comprehensive Land Use Plan—Lindbergh Field, San Diego* (February 1992, amended April 1994).
695. San Diego County Regional Airport Authority, *Final Environmental Impact Report No. 01-04: Annual Amendments to the Comprehensive Land Use Plans for San Diego County Airports*, State Clearinghouse No. 2004011078, Volumes 1–3 (October 2004).
696. However, it should be noted that the 1990 noise contours were prepared in March 1991 (as noted on the noise contour map included in Volume 2 of the FEIR) based on 1990 traffic and fleet mix conditions. Therefore, they can hardly be claimed to represent “assumptions and forecasts for projected noise contours” for future conditions.
697. City of San Diego, “Naval Training Center,” www.sandiego.gov/ntc/, accessed March 8, 2005.

ABBREVIATIONS AND ACRONYMS

AAAE	American Association of Airport Executives
AABC	Airport Area Business Council
AAC	Aviation Advisory Committee
AAOZ	Airport Approach Overlay Zone
ACE	Altamont Commuter Express
ACI-NA	Airports Council International—North America
ADP	Airport Development Program
AEOZ	Airport Environs Overlay Zone
AGL	Above ground level
AIA	Airport Influence Area
AIP	Airport Improvement Program
ALPA	Air Line Pilots Association
ALUC	Airport Land Use Commission
ALUCP	Airport Land Use Compatibility Plan
ALUP	Airport Land Use Plan or Airport Land Use Planning
ALUPP	Airport Land Use Policy Plan
AMP	Airport Master Plan
ANOMS8	Aircraft Noise and Operations Monitoring System Version 8
ANOMS-GIS	Airport Noise and Operations Monitoring System—Geographical Information System
APA	American Planning Association or Airport Protection Area
APPA	Airport Planning Policy Area
ASCE	American Society of Civil Engineers
ASSP	Airport Site Selection Program
BART	Bay Area Rapid Transit
BRT	Bus rapid transit
Caltrans	California Department of Transportation
C/CAG	City/County Association of Governments (San Mateo County)
CCDC	Centre City Development Corporation
CCPD	Centre City Planned District
CEQA	California Environmental Quality Act
CLASS	Citizens League for Airport Safety & Serenity
CLUP	Comprehensive Land Use Plan
CNEL	Community Noise Equivalent Level
CRE	Commercial Real Estate (Port of Oakland Division)
dB	Decibel
DEIR	Draft Environmental Impact Report
DNA	Downtown-Natomas-Airport (Sacramento Light Rail line)
DNL	Day-Night Average Sound Level
DU/AC	Dwelling units per acre
EIR	Environmental Impact Report
EMAS	Engineered Material Arresting System

ESI/R	Environmental Impact Statement and Report
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FBO	Fixed base operator
FEIR	Final Environmental Impact Report
FTA	Federal Transit Administration
GIS	Geographic information system
HBIA	Harbor Bay Isle Associates
HLUET	Housing, Land Use, Environment, and Transportation Committee (Santa Clara County)
HOV	High-occupancy vehicle
HUSH	Homes Under Stress and Hazards (Long Beach)
IS	Initial Study
IT	Information technology
JCRA	Jacqueline Cochran Regional Airport
JIT	Just-in-time
JPAC	Joint Planning Advisory Committee
LAFCO	Local Agency Formation Commission
LAN	Local area network
LAX	Los Angeles International Airport (airport code)
LBHUSH(2)	Long Beach Homes Under Stress and Hazards
Ldn	Day-Night Average Sound Level
LGB	Long Beach Airport (airport code)
LPA	Locally preferred alternative
LRT	Light rail transit
LUD	Land Use Districts
LVK	Livermore Municipal Airport (airport code)
MAC	Municipal Advisory Council
MAP	Million annual passengers
MAPA	Mather Airport Planning Area
MOIA	Metropolitan Oakland International Airport
MOU	Memorandum of understanding
MPO	Metropolitan Planning Organizations
MTC	Metropolitan Transportation Commission
MTI	Mineta Transportation Institute
NCP	Noise Compatibility Program
NMS	Noise monitoring system
NPIAS	National Plan of Integrated Airport Systems
NOP	Notice of Preparation
NOP/IS	Notice of Preparation and Initial Study
NTC	Naval Training Center (San Diego)
OAK	Oakland International Airport (airport code)
OPR	Office of Planning Research
R&D	Research and development
RAA	Regional Airport Authority
RAPOC	Research Associates Policy Oversight Committee

RFP	Request for Proposal
ROW	Right-of-way
RTD	Regional Transit District (Sacramento)
SACOG	Sacramento Area Council of Governments
SANDAG	San Diego Association of Governments
SCAS	Sacramento County Airport System
SCJAP	South County Joint Area Plan
SDIA	San Diego International Airport
SENEL	Single Event Noise Exposure Level
SFO	San Francisco International Airport
SHRA	Sacramento Housing and Redevelopment Agency
SMNA	San Martin Neighborhood Alliance
SMPAC	San Martin Planning Advisory Committee
SOI	Sphere of Influence
TOD	Transit-oriented development
TSA	Transportation Security Administration
UGB	Urban Growth Boundary
UPS	United Parcel Service
UK	United Kingdom
VMT	Vehicle miles of travel
VOR	VHF Omni Range (a type of radio beacon used in aircraft navigation)
VTA	Valley Transportation Authority

BIBLIOGRAPHY

- ABAG—Association of Bay Area Governments. *Making Better Communities by Linking Land Use and Transportation*. April 1997. Available from www.abag.ca.gov/planning/lut/.
- _____. *Smart Growth Strategy Regional Livability Footprint Project Final Report*. October 2002. Available from www.abag.ca.gov/planning/smartgrowth/Publications/FinalReport/SmartGrowthRpt_final.pdf.
- _____. *Theory in Action: Smart Growth Case Studies in the San Francisco Bay Area and around the Nation*. 2000. Available from www.abag.ca.gov/planning/theoryia/.
- Ackerman, Elise. “Airport Landings to Rise.” *San Jose Mercury News*. October 27, 2004.
- “Advisory Panel to Examine Housing Proposal.” *The Sacramento Bee*. March 18, 1999.
- “Agency Speaks for Airport Firms.” *Long Beach Press-Telegram*. July 30, 2001.
- “Airport a Test for New Council.” *Long Beach Press-Telegram*. June 13, 2004.
- AirportIQ 5010. “Metropolitan Oakland International.” Available from www.gcr1.com/5010web/airport.cfm?Site=OAK. Accessed June 1, 2008.
- Airport Land Use Commission of San Luis Obispo County. *Airport Land Use Plan for the San Luis Obispo County Regional Airport* (amended May 18, 2005).
- “Airport Project Now Under Way.” *Long Beach Press-Telegram*. September 24, 2002.
- “Airport Study Up for Review.” *Contra Costa Times*. September 7, 2003: a31.
- “Airport to Be Topic at Public Workshop.” *The Tribune* (San Luis Obispo). June 3, 2004.
- “America West Asks Airport for Flight Slots.” *Long Beach Press-Telegram*. February 4, 2005.
- “Anniversary of Airfield Transfer Nears.” *The Sacramento Bee*. April 27, 2000.
- “Area Attracts Developers, Businesses.” *Contra Costa Times*. August 2, 2003: sp13.
- Aries Consultants LTD. *Regional Airport System Plan General Aviation Element: Final Report*. Prepared for the Regional Airport Planning Committee, June 2003. Available from www.mtc.dst.ca.us/projects/air_plan/RASP-GAE.pdf.
- “Asia Trade Center Plan for Metro Air Park Looks Dead.” *Sacramento Business Journal*. July 14, 2006.
- Audirac, Ivonne. *Information Technology and Urban Form: Challenges to Smart Growth*. Tallahassee: Florida State University, 2002. Available from www.smartgrowth.umd.edu/events/pdf/IT-UrbanForm&SmartGrowth.pdf.
- “Backers of Airport Closure Score Win.” *Contra Costa Times*. April 28, 2004: A01.

- “BART Decides Population Density Key to Building New Extensions.” *The San Francisco Chronicle*. December 6, 2002: A24.
- Bartholomew, Tasha. “Airport Panel Selections Upset Three.” *The Oakland Tribune*. June 11, 2004.
- . “Noise Insulation Program Under Way.” *The Oakland Tribune*. May 24, 2004.
- . “Port Plans to Noiseproof Some Houses Near Airport May Soon Get Insulation.” *The Argus* (Fremont). December 19, 2002.
- Benedict, Mark A., and Edward T. McMahon. *The Conservation Fund Green Infrastructure: Smart Conservation for the 21st Century*. Washington DC: Sprawl Watch Clearinghouse, May 2001. Available from www.sprawlwatch.org/greeninfrastructure.pdf.
- Bender, Kristin. “Airport Panel OKs Alameda School/Church.” *Alameda Times-Star*. February 16, 2002.
- “Big Choices Ahead for SLO Projects.” *The Tribune* (San Luis Obispo). December 15, 2003.
- Bing, Jeb. “Council Votes to OK Auto Mall, Staples Ranch Plan.” *Pleasanton Weekly*. April 21, 2006.
- Binger, Gary, and Paul Sedway. “Partnering for Smart Growth Success.” *Urban Land* (September 2003): 96-99, 139-140. Available from smartgrowthcalifornia.uli.org/download/binger.pdf.
- Bizjak, Tony. “Airport Frets about Growth.” *The Sacramento Bee*. July 30, 2001.
- . “Another Try at Plan for Natomas.” *The Sacramento Bee*. May 30, 2003.
- . “Ballot Plan Won’t Provide Enough Funds to Operate a Pair of New Light-rail Lines.” *The Sacramento Bee*. April 3, 2004.
- . “Coming Home.” *The Sacramento Bee*. May 20, 2002.
- . “Third Runway at Sacramento Airport Backed.” *The Sacramento Bee*. October 23, 2003.
- “Biz Buzz: Flurry of Projects in SLO Set to Finish in ’09.” *The Tribune* (San Luis Obispo). December 28, 2007.
- Black, W.R. “Sustainability of Transport.” In *Modern Transport Geography*, eds. B.S. Hoyle and R.D. Knowles. Chinchester, UK: Wiley, 1998.
- Blanchard, Shelly. “Navigator Elementary on Course.” *The Grapevine*, Summer 2005. Available www.cordovacouncil.com/content/view/74/44. Accessed October 1, 2005.
- Blanton, Whit. “On the Airfront.” *Planning* 70, no. 5 (May 2004): 34–35.
- Bochner, Brian S. “Smart Growth Transportation Tools.” In *Institute of Transportation Engineers 2000 Annual Meeting and Exhibit*, Nashville, Tennessee, August 6–9, 2000, CD-ROM.

-
- “Boeing Goes ‘Green’.” *Long Beach Press-Telegram*. October 1 , 2001.
- “Boeing Plans to Develop Part of Long Beach Site.” *Los Angeles Times*. February 16, 2000.
- Boeing Realty Corporation. “Project Development Timeline, Douglas Park, 2005.” Available www.douglaspark.org/about_timeline.html.
- “Boeing Realty Scales Down Project.” *Long Beach Press-Telegram*. May 5, 2004.
- Bossard, Earl, et al. *Envisioning Neighborhoods With Transit-Oriented Development Potential*. San José, CA: Mineta Transportation Institute, 2002.
- Boyken, Grant. *Growing Pains: Airport Expansion and Land Use Compatibility Planning in California*. Sacramento, CA: California Research Bureau, September 2006. Available from www.library.ca.gov/crb/06/10/06-010.pdf.
- Brewer, Bonita. “Airport Expansion Plan Hits Turbulence.” *Valley Times* (Pleasanton). May 6 , 2004.
- . “Airport Noise Tops Agenda in Livermore.” *Valley Times*. February 26, 2005.
- . “New Plant for Water Treatment in District.” *Valley Times*. February 19, 2005.
- . “Pardee Proposal Compounds Already Contentious Election.” *Valley Times*. March 14, 2005.
- . “Staples Ranch Sale No Longer an Issue.” *San Ramon Valley Times*. June 14, 2001: 10(A).
- “Bridging the Airport’s Transit Gap.” *The Sacramento Bee*. July 29, 1997.
- Bronzaft, Arline L. “United States Aviation Transportation Policies Ignore the Hazards of Airport-Related Noise.” *World Transport Policy & Practice* 9, no. 1 (2003): 37–40. Available from www.eco-logica.co.uk/wtpp09.1.pdf.
- Brown, Todd R. “Noise Plan Still Flying.” *San Mateo County Times*. May 10, 2006.
- “Business as Usual.” *Long Beach Press-Telegram*. January 19, 2002.
- “Business Booming at Mather Center.” *The Sacramento Bee*. November 18, 2002.
- “Byron’s Grand Planning Document May Be Exercise in Futility.” *Brentwood News*. September 4, 1998: 1.
- Cabanatuan, Michael. “New Train Station Caters to Sports Fans.” *San Francisco Chronicle*. May 27, 2005.
- California Department of Transportation. *Aviation in California: Fact Sheet*. Sacramento, CA: Division of Aeronautics, 2005.
- . “California Regional Blueprint Planning Program.” Division of Transportation Planning, Sacramento, California, 2007. Available from <http://calblueprint.dot.ca.gov>.

- . *The California Aviation System Plan Policy Element*. January 2001. Available from www.dot.ca.gov/hq/planning/aeronaut/documents/pol-element02.pdf.
- . *The Ground Access to Airport Study: Executive Summary*. December 2001. Available from [www.dot.ca.gov/hq/planning/aeronaut/documents/GroundAccessStudyExecutive Sum.pdf](http://www.dot.ca.gov/hq/planning/aeronaut/documents/GroundAccessStudyExecutiveSum.pdf)
- California Department of Transportation, Division of Aeronautics. *California Airport Land Use Planning Handbook*. Santa Rosa: Shutt Moen Associates, January 2002. Available from www.dot.ca.gov/hq/planning/aeronaut/htmlfile/landuse.html.
- Calthorpe, Peter, and William Fulton. *The Regional City: Planning for the End of Sprawl*. Washington, DC: Island Press, 2001.
- Caltrain. “History: Caltrain Milestones” (2002). Available www.caltrain.com/caltrain_history.html.
- Caves, Robert E., and Geoff D. Gosling. *Strategic Airport Planning*. Oxford: Elsevier Science, Limited, 1999.
- CB Richard Ellis. “Douglas Park, Long Beach.” Available <http://marketing.cbre.com/NewportBeach/DouglasPark/index.html>, accessed January 1, 2008.
- Chan, Gilbert. “Sacramento International Airport is Set to Become the Area’s... Economic Hub.” *The Sacramento Bee*. April 7, 2002
- Cidell, Julie L. *Scales of Airport Expansion: Globalization, Regionalization, and Local Land Use*. Center for Transportation Studies, University of Minnesota, 2004. Available from www.cts.umn.edu/pdf/CTS-04-01.pdf.
- Cidell, Julie L., and John S. Adams. *The Groundside Effects of Air Transportation*. Minneapolis: University of Minnesota Center for Transportation Studies, August 2001. Available from www.cts.umn.edu/pdf/CTS-01-02.pdf.
- City/County Association of Governments of San Mateo County. *Notice of Regular Meeting—C/CAG Airport Land Use Committee (ALUC), Thursday, May 24, 2007, Agenda Packet, 35-42*. Available from www.ccag.ca.gov/aluc.html.
- City/County Association of Governments of San Mateo County. *San Mateo County Comprehensive Airport Land Use Plan*. December 1996.
- City of Alameda, *Airport Environs Element*, 89.
- . *City of Alameda Bicycle Master Plan, Final Report*. July 10, 1999.
- . *City Of Alameda General Plan* (1991): 3.
- . *City Of Alameda General Plan Airport Environs Element* (1991): 87–90.
- . *City Of Alameda General Plan, Health and Safety Element* (1991): 109.

-
- . *Memorandum*. 16 May 2006. Available www.ci.alameda.ca.us/city_clerk/2006/attachments/4d_1078.pdf.
- City of Carlsbad. *Guidebook to the Carlsbad General Plan*. August 2004: 5.
- City of Dublin. *City of Dublin General Plan*. February 1985.
- . “City of Dublin—Commercial and Residential Project List.” January 11, 2005.
- City of Gilroy. *Gilroy General Plan* (June 2002).
- City of Gilroy, County of Santa Clara, and City of Morgan Hill. *South County Joint Area Plan* (1991).
- City of Livermore. *City Council Agenda Report*. January 31, 2005.
- . *City Council Agenda Report*. June 26, 2006.
- . “City Council Meeting Minutes.” June 25, 2001
- . *City of Livermore General Plan*: 10–29.
- . *Livermore Municipal Airport Master Plan Update, Public Review Draft*. 1–12.
- City of Livermore Economic Development. “Doing Business.” Available www.ci.livermore.ca.us/business.html.
- City of Long Beach, Department of Planning and Building. *Land Use Element of the Long Beach General Plan*, April 1997. Available www.ci.long-beach.ca.us/plan/default.asp.
- City of Morgan Hill. *Morgan Hill General Plan* (July 2004).
- City of Oakland. *Bicycle Master Plan*. July 20, 1999.
- . *Envision Oakland City of Oakland General Plan, Land Use and Transportation Element* (March 1998): 42.
- . *Oakland General Plan Noise Element* (June 2005): 24–25.
- City of Oakland and Port of Oakland. *Estuary Policy Plan*. Oakland, CA: June 1999. Available from www.portofoakland.com/realesta/reso_05.asp.
- City of Oakland Community and Economic Development Agency and Bay Area Rapid Transit. *Coliseum/Oakland Airport BART Station Area Concept Plan*. April 12, 2001.
- City of Pleasanton. *Livermore Municipal Airport Altitude and Noise Study*. May 2003: 6–7.
- . *The Pleasanton General Plan*. August 1996: II-7.
- City of Sacramento, Planning and Building Department. *Notice of Preparation of a Draft Environmental Impact Report for the Sacramento City–County Natomas Vision General Plan Amendment Project (Project # M03-009)*. October 7, 2003. Available www.cityofsacramento.org/dsd/planning/projects/jointvision/nop100703.pdf.
-

- City of San Diego, Development Services Department. *Official Zoning Map*. Available www.sandiego.gov/development-services/zoning/zoning.shtml.
- City of San Diego. *Guide to the Base Zones of the DRAFT Official Zoning Map*. Available www.sandiego.gov/development-services/zoning/zoninggripmap.shtml.
- . “Naval Training Center.” Available www.sandiego.gov/ntc/.
- . *San Diego Municipal Code, Chapter 10, Article 3, Section 103.1910* (May 2002).
- . *San Diego Municipal Code, Chapter 13, Article 2, Division 2: Airport Environs Overlay Zone* (June 2001).
- . *San Diego Municipal Code, Chapter 13, Article 2, Division 3: Airport Approach Overlay Zone* (June 2001).
- City of San Diego, Planning Department. *What is Planning? A Guide to Planning in the City of San Diego*, second printing. September 2005.
- City of San Leandro. *San Leandro General Plan, Environmental Hazards Element* (May 2002): 6-26.
- . *San Leandro General Plan, Land Use Element* (May 2002): 3-97.
- City of San Luis Obispo. *Airport Area Specific Plan, Public Review Draft*. January 2002.
- . *Airport Area Specific Plan News*. January 2005.
- Clute, Steve. “Valley Voice.” *The Desert Sun* (Palm Springs, CA). January 8, 2005.
- Cleveland, Melanie. “SLO County’s Airport Spreads its Wings,” *The Tribune* (San Luis Obispo). December 21, 2007.
- Coffman Associates, Inc. *Airport Master Plan for French Valley Airport, Riverside County, California* (prepared for Riverside County). November 1995.
- Commission of the European Communities. *Air Transport and the Environment: Towards Meeting the Challenges of Sustainable Development*. Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee, and the Committee of the Regions. Brussels, Belgium, December 1999. Available from eur-lex.europa.eu/LexUriServ/site/en/com/1999/com1999_0640en01.pdf.
- “Community: 2050.” *The Coordinator, Newsletter of the San Luis Obispo Council of Governments XI*, issue 5. December 2004.
- “Concord Airport Housing Plan Fights to Take Flight.” *The San Francisco Chronicle*. March 8, 2004: B1.
- “Construction Takes Off.” *Long Beach Press-Telegram*. January 24, 2000.
- Contra Costa County Airports. “Buchanan Field Airport Master Plan/FAR Part 150 Noise Study Issue.” *The Diablo Aviator* 4, no. 2. Spring 2006.

-
- . “Buchanan Field Master Plan Process Nears Completion.” *The Diablo Aviator* 5, no. 3, (Summer 2007): 3.
- . “Byron Master Plan Beginning.” *The Diablo Aviator* 1, no. 4, Fourth Quarter 2003: 3.
- . “Byron Master Plan Is Winding Down.” *The Diablo Aviator* 2, no. 2, Second Quarter 2004: 2.
- . “Byron Master Plan Update.” *Contra Costa County Airports Newsletter* 1, no. 2, Second Quarter 2003: 2.
- . “Concord Chamber of Commerce Airport Forum Attracts a Crowd.” *The Diablo Aviator* 1, no. 3, Third Quarter 2003: 4.
- “Controversial Housing Plan to Face Panel Review.” *The Sacramento Bee*. May 16, 1999.
- Cooper, Douglas L., and T. Chira-Chavala, The Development of an Accident Database to Structure Land Use Regulations in Airport Approach Zones, Part II, Research Report UCB-ITS-RR-98-1, Institute of Transportation Studies, University of California, Berkeley, 1997.
- County of Alameda General Services Agency. “RFP No. 005-1-0808 For Alameda County Airport Land Use Commission Comprehensive Land Use Plan Update.” June 12, 2002.
- County of San Diego, Department of Public Works. *Part 150 Noise Study for Palomar Airport*. Available www.co.san-diego.ca.us/dpw/airports/150noise.html.
- County of Santa Clara. “Williamson Act Updates.” Available www.sccgov.org/channel/0,4770,ccid%253D632758%2526sid%253D12867,00.html.
- County of Santa Clara, Airports Department. *Airport Roles and Forecasts, Revised Public Review Draft* (November 2002).
- . “Airport Updates,” *The Newsletter*, Summer 2004.
- County of Santa Clara, Airport Land Use Commission. *Draft Reid-Hillview Airport CLUP Revisions* (March 2004).
- . *South County Airport Master Plan*, Appendix C, Land Use Compatibility. July 2005.
- County of Santa Clara Board of Supervisors. “Summary of Proceedings.” March 22, 2005.
- County of Santa Clara Planning Office. *Santa Clara County General Plan Book A* (1994).
- . *Santa Clara County General Plan Book B* (1994).
- Criterion Planners & Engineers and Fehr & Peers Associates. *2000 Index® 3-D Method: A Quick-Response Method of Estimating Travel Impacts from Land Use Changes*. Technical Memorandum prepared for the United States Environmental Protection Agency, 2000.
- Cuddy, Bob. “Dalidio Ranch Would Jam SLO Roads, Agency Warns.” *The Tribune* (San Luis Obispo). August 2, 2006.
-

- Cuff, Denis. "Concord Plans for Navy Land." *Contra Costa Times*. April 4, 2004: a27.
- "Curbing Airport Noise" (Editorial). *Long Beach Press-Telegram*. October 23, 2003.
- Davila, Robert D. "County Junks Map for North-End Growth." *The Sacramento Bee*. December 11, 2002.
- . "New City Backers Capture Key Vote." *The Sacramento Bee*. May 2, 2002.
- . "School Plan Gains Ground." *The Sacramento Bee*. January 22, 2003.
- "Debate Centers on How San Diego Airport Can Spread Out Its Wings." *The San Diego Union-Tribune*. April 17, 1994.
- "Developers Hold Keys to Valley's Future." *The Desert Sun*. August 8, 1999.
- "Douglas Park Gets OK." *Long Beach Press-Telegram*. October 8, 2004.
- "Douglas Park's Rocky Road." *Long Beach Press-Telegram*. October 18, 2004.
- Dugan, Molly. "FAA Drops Mather Night Flight Test." *The Sacramento Bee*. May 30, 2004.
- . "Its Own Identity is City's Quest," *The Sacramento Bee*, May 2, 2004.
- . "Mather Runway Growth Protested; Draft Plan OK'd." *The Sacramento Bee*. February 18, 2004.
- . "Tower Brightens VA Medical Site." *The Sacramento Bee*. October 30, 2003.
- "Election 2004: 8 Transit Projects to Start Rolling Next Year." *The San Francisco Chronicle*. March 4, 2004: 1.
- Ellis, CB Richard. "Douglas Park, Long Beach." <http://marketing.cbre.com/NewportBeach/DouglasPark/index.html>, accessed January 1, 2008.
- "Enterprise Zone Continues to Attract Business, Jobs to Valley." *The Desert Sun*. March 8, 2003.
- Esler, David. "How to Save Your Airport." *Business and Commercial Aviation* 96, no. 3 (March 2005): 69–79. Available from Factiva. Accessed September 23, 2006.
- Ewing, Reid. *Pedestrian- and Transit-Friendly Design: A Primer for Smart Growth*. Washington DC: Smart Growth Network, 1999. Available from epa.gov/smartgrowth/pdf/ptfd_primer.pdf.
- Federal Aviation Administration. "CY 2004 Passenger Boarding and All-Cargo Data." 8 November 2005. Available www.faa.gov/arp/planning/stats/2004/cy04_primary_boardings.pdf
- . *FAA Aerospace Forecasts—Fiscal Years 2003–2014*, FAA-APO-03-1. Washington, DC: Federal Aviation Administration, 2003.

-
- . *Record of Approval, 14 CFR Part 150 Noise Compatibility Program—McClellan-Palomar Airport, Carlsbad, California, Los Angeles, California*, December 5, 2006. www.sdcounty.ca.gov/dpw/airports/150noise.html.
- Fehr & Peers Associates: Smart Growth Planning, The Transportation Perspective. Available www.smartgrowthplanning.org/.
- Feitelson, Eran I., Robert E. Hurd, and Richard R. Mudge. “The Impact of Airport Noise on Willingness to Pay for Residences.” *Transportation Research* 1D, no. 1 (September 1996): 1–14.
- Felsenfeld, Peter. “Air Cargo Proposal Must Wait for Growth.” *Contra Costa Times*. May 21, 2003: A03.
- . “County’s Airfield Prospects Proceed.” *Contra Costa Times*. May 26, 2004: A03.
- . “Officials Ask FAA to Keep Airport.” *Contra Costa Times*. January 24, 2004: a01.
- Fields, J.M. “Effect of Personal and Situational Variables on Noise Annoyance in Residential Areas.” *Journal of the Acoustical Society of America* 93, no. 5 (1993): 2753–2763.
- Finucane, Stephanie. “Airport Area Bursting with Projects.” *The Tribune* (San Luis Obispo). July 20, 2003
- “Flying High Again.” *The Tribune* (San Luis Obispo). June 6, 2004.
- Francisco, Jamie. “Residents: Forum Won’t Stop Noise from Mather.” *The Sacramento Bee*. September 23, 2004.
- Freeman, Mike. “Panel Airs Study on Palomar Plane Noise—Homeowners Are Disappointed Report’s Stance Wasn’t Stronger.” *San Diego Union-Tribune*. February 17, 2001.
- Gannett, Jake Henshaw. “Enterprise Zone Bill Begins Its Path Through Legislature.” *The Desert Sun*. April 9, 2003.
- Gaona, Elena. “Residents Want Noise Reduction Near Airport.” *San Diego Union-Tribune*. November 20, 2004.
- Gentile, Gary. “Airplane Production in Tailspin.” *San Jose Mercury News*. April 24, 2006.
- Gerstman, Bruce. “City Council Studies Airport Disclosure Zone.” *Concord Transcript*. September 25, 2003: c01.
- Gewirtz, Jason. “No Room for More Flights.” *Long Beach Press-Telegram*. October 13, 2004.
- Gillen, David W., and Terrence J. Levesque, “A Socio-Economic Assessment of Complaints about Airport Noise,” *Transportation Planning and Technology* 18, no. 1 (1994): 45–55.
- Gordon, Rachel. “New SFO System Helps Track Jets Responsible for Noise.” *San Francisco Chronicle*. March 10, 2006.

- Gosling, Geoffrey D., *2001: An Airspace Odyssey*. Summary Proceedings of the 2001 Airport Noise Symposium and Airport Air Quality Symposium, Proceedings UCB-ITS-P-2001-1. Institute of Transportation Studies, University of California, Berkeley, December 2001.
- “Grand Jury: Byron Airport to Stay Financial Drain.” *Brentwood News*. June 23, 2000: 16.
- “Grant Sought for Airport Noise Study.” *San Diego Union-Tribune*. March 16, 2000.
- Graham, Brian, and Claire Guyer. “Environmental Sustainability, Airport Capacity, and European Air Transport Liberalization: Irreconcilable Goals?” *Journal of Transport Geography* 7, no. 3 (September 1999): 165–180. Available from ScienceDirect, Elsevier. Accessed April 3, 2004.
- Graham, Brian J. “The Role of Airports and Airline in an Integrated UK Transport Policy.” *Geography* 85, no. 366, (January 2000): 75–78.
- “Grand Plan Grounded?” *The Tribune* (San Luis Obispo). August 26, 2001.
- “Grassroots San Martin Group Launches Web Site” *The Dispatch* (Gilroy). May 1, 2002.
- Greenbelt Alliance. “Press Release: Livermore City Council Passes Urban Growth Boundary.” December 17, 2002
- Guzzetti, Dana. “Buchanan Field, Which Plan Will Fly?” *The Valley Sentinel*. June 2004.
- Hallissy, Erin. “Developer Dumps Buchanan Field Plan.” *The San Francisco Chronicle*. August 25, 2005: B5.
- Hamilton, Tracy Idell. “The Battle Over Sprawl Rages On.” *New Times* (San Luis Obispo). March 22, 2000.
- Helin, Kurt. “Douglas Park Improvement Tax Passes,” *The Grunion Gazette*, February 22, 2007.
- . “Douglas Park Single Family Homes Gone.” *The Grunion Gazette*. May 25, 2006.
- Henry, Barbara. “Carlsbad Airport Meeting Draws a Crowd.” *San Diego North County Times*. January 11, 2006
- Hirsch, Lou. “Valley Could Be in for Building Boom.” *The Desert Sun* (Palm Springs, CA). April 1, 2006.
- Hoffman, Nathaniel. “Cities Clash Over Noise Notification.” *Contra Costa Times*. December 8, 2003: A3.
- . “Developers Clash over Airfield.” *Contra Costa Times*. December 8, 2003: a03.
- Holstege, Sean. “Airport Expansion Passes Environment Test.” *The Argus* (Fremont). October 20, 2003.
- . “Oakland Airport Expansion Begins.” *The Tri-Valley Herald*. April 23, 2004.

-
- . “Port OKs Research on Airport Expansion.” *The Oakland Tribune*. December 19, 2003.
- Holzgrafe, Carol. “Growth-Control Extension Passes by Wide Margin.” *The Morgan Hill Times*. March 5, 2004.
- . “Growth-Control Measure on Ballot.” *The Morgan Hill Times*. February 10, 2004.
- Humphreys, Ian, and Stephen Ison. “Planning for Sustainability: The Role of Airport Surface Access Strategies as a Means of Reducing the Dependency on the Private Car for Airport Access Trips.” In *European Transport Conference Proceedings*. London: Association for European Transport, Cambridge, England, September 9–11, 2002.
- Hurly, Jamie. “Airport’s Expansion Plan Worries Neighbors.” *The Telegram-Tribune* (San Luis Obispo). October 5, 1998.
- “Input On Airport Changes Accepted Aviation: Public May Comment on Terminal Plans Through Oct. 22.” *Long Beach Press-Telegram*. September 24, 2003.
- Institute of Transportation Engineers. *Smart Growth Transportation Guidelines: An ITE Proposed Recommended Practice*. Washington DC: Institute of Transportation Engineers, 2003.
- Institute of Transportation Engineers Smart Growth Task Force. *Smart Growth Transportation Guidelines. An ITE Proposed Recommended Practice*. Institute of Transportation Engineers, 2003.
- Janic, Milan, “Aviation and Externalities: The Accomplishments and Problems,” *Transportation Research*, 4D, no. 3 (May 1999): 159–180.
- Jeisel, Jonathan. “Airport Growth Go-Ahead.” *The Dispatch* (Gilroy). November 20, 2002.
- . “Collision Course on Airport,” *The Dispatch*. November 15, 2002.
- . “Hung Up on Airport Hangars.” *The Dispatch*. May 9, 2003.
- “JetBlue Tackles Curfew Breaches.” *Long Beach Press-Telegram*. November 15, 2003.
- Johnson, Kelly. “China’s Hot Economy Lures Locals.” *Sacramento Business Journal*. September 19, 2005.
- Jouvenal, Justin. “High-Speed Rail Closes In on Reality.” *The Argus* (Fremont). September 26, 2002.
- Kalb, Loretta. “Mather Flight Increases Are on the Radar.” *The Sacramento Bee*. 29 January 2006.
- Kasarda, John. “From Airport City to Aerotropolis.” *Airport World* 6, no. 4. August/September, 2001: 42–45.
- Katz, Bruce. *Smart Growth: The Future of the American Metropolis?* London: Centre for Analysis of Social Exclusion, November 2002.
- . “Council OKs Initial Fallon Village Plans.” *Contra Costa Times*. December 7, 2005.
-

- Kazmi, Sophia. "New Skepticism over Development—Expansion of Offer, Land-Use Concerns Spur Doubts about Dublin Site." *Valley Times* (Pleasanton). April 7, 2005.
- "Landing Zone for High Tech." *The Tribune* (San Luis Obispo). January 13, 2001.
- "La Quinta Annexation Proposal Stalls." *The Desert Sun*, December 8, 1999.
- "L.B. Looking to the Sky for Money." *Long Beach Press-Telegram*. September 30, 1998.
- LBReport.com. *City Mgmt Asks Council for Approx. 60 Days More in Ongoing Talks with Airport EIR-Appellants with Goal of Avoiding Litigation*. Available <http://www.lbreport.com>.
- . *Council Makes Major Airport Decisions: Certifies EIR for Expansion of Permanent Terminal Area Facilities*. Available <http://www.lbreport.com/reference/reflgb.htm>
- . "Council Votes 5-3 To Expand LB Airport's Permanent Terminal Area Facilities, ..." Available <http://www.lbreport.com/airport/airport.htm>. Accessed January 1, 2008.
- . "ExpressJet (Regional Carrier) Announces Destinations For Its Six Daily Commuter Flights From LB." Available www.lbreport.com/airport/airport.htm. Accessed January 1, 2008.
- . "LB PTA Files Suit Challenging Environmental Impact Report Re Expansion Of Airport's Permanent Terminal Area Facilities." Available www.lbreport.com/airport/airport.htm, accessed January 1, 2008.
- . *LB Unified School District Files Legal Action Against City Hall Alleging Flawed EIR...* Available <http://www.lbreport.com/reference/reflgb.htm>
- . "Summary of July 11 Council Meeting." Available www.lbreport.com/reference/reflgb.htm.
- "Leaders Set to Back Light Rail for Airport." *The Sacramento Bee*. July 20, 2000.
- Lee, Richard W., et al. *The California General Plan Process and Sustainable Transportation Planning*. San Jose, CA: Mineta Transportation Institute, May 2002. Available from www.transweb.sjsu.edu/publications/01-18MTI.pdf.
- Lee, Richard W., et al. "Direct Ridership Estimation for Sacramento LRT." In *Institution of Transportation Engineers District 6 Annual Meeting*. Sacramento, CA. CD-ROM, 2004.
- Leins, Eric. "Cityhood in Cards for SM." *The Dispatch* (Gilroy). July 18, 2003.
- . "SM Airport Fight—Is It Over?" *The Dispatch*. September 11, 2003.
- Lennar Communities. *Bressi Ranch Q & A*. Available <http://www.bressiranch.com/facts.php>.
- Lidskog, Rolf, and Linda Soneryd. "Transport Infrastructure Investment and Environmental Impact Assessment in Sweden: Public Involvement or Exclusion?" *Environment & Planning* 32, no. 8 (August 2000): 1465–1479.
- "Liftoff Under Her Wing." *The Tribune* (San Luis Obispo). May 12, 2004.

-
- Lin, Judy. "Customs Plan Hits Turbulence." *The Sacramento Bee*. December 5, 2005.
- "Livermore Airport's Neighbors Leery of Possible Expansion." *Valley Times* (Pleasanton). November 29, 1999: 3(A).
- "Long Beach Airport Catches Noise Makers." *Long Beach Press-Telegram*. July 23, 2001.
- "Long Beach's Vacancy Rate Still Lower Than South Bay." *Long Beach Press-Telegram*. June 17, 2003.
- "Losing Sleep over Jet Noise: Mather Residential Growth, Cargo Flights Clash." *The Sacramento Bee*. March 18, 2001.
- Lynem, Julie. "Margarita Vision Is Becoming a Reality." *The Tribune* (San Luis Obispo). March 21, 2004.
- Lyons, Silas. "The Airport's Sphere of Influence." *The Tribune* (San Luis Obispo). August 11, 2002.
- McCarthy, Mike. "Big Build-Out Planned for Metro Air Park." *Sacramento Business Journal*. April 9, 2004.
- . "Chinese Buyers in Talks with Metro Air Park." *Sacramento Business Journal*. April 15, 2005.
- . "Growth Ballot Adds AKT's Sutter Land." *Sacramento Business Journal*. August 6, 2004.
- McDonough, Susan. "Developer to Expand Alameda Business Park." *The Oakland Tribune*. February 23, 2003.
- McElfish Jr., James M., and Susan Casey-Lefkowitz. *Smart Growth and the Clean Water Act*. Washington D.C.: Northeast-Midwest Institute, 2000. Available from www.nemw.org/SGCleanWater.pdf.
- Mahr, Christine. "\$250 Million Bond Measures Headed to Polls Tuesday." *The Desert Sun* (Palm Springs, CA). June 4, 2005.
- "Making Noise Over Air Traffic." *West County Times*. January 23, 2000.
- "Margarita Plan Moves Forward." *The Tribune* (San Luis Obispo). December 9, 2003.
- Materna, Jessica. "Port of Oakland Sells Last of Airport Business Park Land." *San Francisco Business Times*. December 12, 2000.
- Mead & Hunt. *Jacqueline Cochran Regional Airport Master Plan* (Prepared for the County of Riverside Economic Development Agency, Riverside, California). December 14, 2004. Available <http://www.rivcoeda.org/Default.aspx?tabid=536>.

- Metropolitan Transportation Commission, Association of Bay Area Governments, Regional Airport Planning Committee, San Francisco Bay Conservation and Development Commission. *Protecting the Bay Area's Aviation Resources: The Land-Use Connection*. Oakland, CA: Metropolitan Transportation Commission, April 2005. Available www.mtc.ca.gov/planning/air_plan/Aviation_Resource_Guide.pdf.
- Millican, Anthony. "Lindbergh Field Expansion Foes Strategize." *The San Diego Union-Tribune*. July 2, 1999.
- Moore, Curtis. *Smart Growth and the Clean Air Act*. Washington DC: Northeast-Midwest Institute, 2001. Available from www.nemw.org/SGCleanAir.pdf.
- "More Houses Near SFO to Get Noise Insulation." *San Francisco Chronicle*. February 25, 2000.
- Morrell, Peter, and Cherie H.-Y. Lu. "Aircraft Noise Social Cost and Charge Mechanisms—A Case Study of Amsterdam Airport Schiphol." *Transportation Research, Part D, Transport and Environment* 5, no. 4 (July 2000): 305–320. Available from ScienceDirect, Elsevier (accessed April 3, 2004).
- Nelson, Arthur C. "How Do We Know Smart Growth When We See It?" In *Smart Growth: Form and Consequences*. Eds. Terry S. Szold and Armando Carbonell. Cambridge, MA: MIT Press and Lincoln Institute of Land Policy, 2002: 82–101.
- "New Bus Route Established to Serve Mather Field." *The Sacramento Bee*. July 1, 2001.
- "New Deal to Soundproof Homes near S.D. Airport." *The San Diego Union-Tribune*. June 20, 2001.
- "New Homes OK'd Near Mather." *The Sacramento Bee*. April 27, 2000.
- "New Life for Old Base." *The Sacramento Bee*. October 13, 2000.
- "New Runways Would Reduce Noise Problem, Officials Say." *San Jose Mercury News*. October 5, 2002.
- Niekerk, Katie. "Airport Plans Take Off." *The Dispatch* (Gilroy). September 3, 2004.
- "Noise Control: Airport Master Plans to Take Increasing Note of Limited Manoeuvring/Building Space." *Airports International* 35, no.2, March 2002: 28.
- "Noise Irks Neighbors of Livermore Airport." *Contra Costa Times*. January 25, 2004.
- "Noisy FedEx Planes Draw Flak at Oakland, Calif. Airport Hub." *High Point Enterprise* (North Carolina). 12 February 2001. Available www.californiaaviation.org. Accessed July 29, 2004.
- "Noisy Nighttime Jet Route Grounded." *The Press Democrat*. April 16, 2001.
- "Not A Runway But a 'Runaway' Ramp." *The Tribune* (San Luis Obispo). May 4, 2004.
- Oakland International Airport. "Airport Development Program." Available www.oaklandairport.com/airport_construction_airport_dev_program.shtml.

-
- . “Seventh Consecutive Year of Record Passenger Traffic Growth at OAK in 2004.” *OaklandInternational*. 27 January 2005. Available www.oaklandairport.com/press_releases_detail.cfm?ID=338. Accessed July 6, 2005.
- . “Pilot Information.” Available www.oaklandairport.com/noise/pilot.shtml. Accessed 24 September, 2005.
- “Oakland International Airport.” Available <http://www.flyoakland.com>. Accessed June 1, 2008.
- “Oakland Receives Smart Growth Grant from Angelides.” *San Francisco Business Times*. May 14, 2003.
- O’Connell, Jock. “Sacramento: A No-fly Zone for International Trade.” *The Sacramento Bee*. September 18, 2005.
- “PacifiCenter Taking Shape.” *Long Beach Press-Telegram*. February 16, 2004.
- “PacifiCenter Work Begins Despite Pinch.” *Long Beach Press-Telegram*. May 26, 2003.
- Padmanabhan, Sekhar. “Flight Paths Stymie School Construction.” *The Sacramento Bee*. July 5, 2001.
- “Panel OKs Project Sans Homes.” *Long Beach Press-Telegram*. August 20, 2004.
- Papsidero, Vince. *Airport Noise Regulations, Planning Advisory Service Report 437*. Chicago, IL: American Planning Association, 1992.
- Pendall, Rolf, Jonathan Martin, and William Fulton. *Holding the Line: Urban Containment in the United States*. Washington DC: The Brookings Institution, August 2002. Available from www.brook.edu/dybdocroot/es/urban/publications/pendallfultoncontainment.pdf.
- People Over Planes, Inc. “People Over Planes.” December 7, 2003. Available <http://www.geocities.com/peopleplanes/>. Accessed August 18, 2004.
- “Planes Southbound?” *The San Jose Mercury News*. November 18, 2002.
- Pleasanton Department of Planning and Community Development. *Stoneridge Drive Specific Plan*. October 1989.
- “Pleasanton, Dublin Denied a Voice on Livermore Panel.” *Valley Times* (Pleasanton). July 16, 2003.
- Pollart, Debbie. “Win-Win Resolutions for Airports and Communities.” presented at the American Planning Association Conference, March 22, 2005, San Francisco, CA.
- “Pollution Troubles CCPAC.” *The Sacramento Bee*. May 30, 1999.
- “Port District’s Airport Noise Data Correct, Audit Finds.” *The San Diego Union-Tribune*. November 2, 2000.
- Port of Oakland, Item A-2 Agenda Report, 1 November 2005. Available www.portofoakland.com/pdf/boar_shee_051101.pdf. Accessed May 27, 2008.
-

- “Port Selling Off Property.” *Oakland Post* 35, no. 76. February 24, 1999: 1.
- “Proposal Presents Division of Values.” *The Tribune* (San Luis Obispo). January 14, 2004.
- “Protection Came Too Late for Many Cities.” *The San Jose Mercury News*. January 27, 1986.
- “Quieter Flight Rules Being Enforced Now at Lindbergh.” *The San Diego Union-Tribune*. January 1, 1999.
- Quinn, Anne. “Airport Land Use Still Up in the Air.” *New Times* (San Luis Obispo). January 11, 2001.
- RBB Policy Research and Planning. *Smart Growth Strategies to Accommodate Orange County’s Future*. Santa Ana, CA: Southern California Association of Governments. Available from www.scag.ca.gov/livable/publications/smartgrowthoc.pdf. Accessed May 27, 2008.
- Ristine, Jeff. “Airport Authority Opposes Condo Plan.” *The San Diego Union-Tribune*. September 10, 2004.
- . “Quieter Over the Home Front.” *The San Diego Union-Tribune*. August 29, 2004.
- Riverside County Economic Development Agency, “Coachella Valley Wins Enterprise Zone Renewal.” Available www.rivcoeda.org/Default.aspx?tabid=474&mid=990&ctl=ArticleView&articleid=27. Accessed January 6, 2008.
- . *French Valley Airport—Location and Amenities*. Available <http://www.rivcoeda.org/Default.aspx?tabid=522>. Accessed May 27, 2008.
- Riverside County Local Agency Formation Commission. *Revised Draft Initial Study/Negative Declaration for Sphere of Influence Updates for the Cities of Coachella and La Quinta*. April 2006. Available http://appsweb.co.riverside.ca.us/lafco/opencms/monthly_hearings/agenda/pdf/2006/April/4m.n.o-2005-20-21-22SOI.pdf. Accessed May 27, 2008.
- Riverside County Planning Department. *Countywide Approved Specific Plan Map*. May 2005. Available http://www.tlma.co.riverside.ca.us/planning/content/splans/sp_database.html.
- Robeson, Bill. *ALUC Staff Report*. August 17, 2005.
- Rohrs, Sarah. “Byron Airport Waits to Take Off.” *Ledger Dispatch*. March 25, 2001: A27.
- . “Flying into the 21st Century,” *Ledger Dispatch*, August 23, 2000: 1.
- . “Locals Contest Byron Airport Land-Use Plan.” *Ledger Dispatch*. November 15, 2000: 6.
- . “Plan Aims to Avoid Expansion Conflict at Byron Airport.” *Ledger Dispatch*. November 12, 2000: A33.
- Roletti, Agnes. “Carlsbad Airport’s Noise has Locals Hot—New Homes Clashing with Increased Flights.” *San Diego Union-Tribune*, February 6, 2000.
- Rosynsky, Paul T. “BART Monorail Back on Track.” *Oakland Tribune*. April 17, 2006.

-
- Rowe, Greg. "The Green Airport Initiative," presented August 24, 2005, Chicago, IL.
- "RRM Stands Behind Project's Design: The New Dalidio Ranch." *The Tribune* (San Luis Obispo). March 17, 2006.
- Ruby, Sarah. "Airport Deal Oked." *The Pinnacle News* (Hollister). September 12, 2003.
- . "County Wants Longer Runway," *The Pinnacle News*. September 10, 2004.
- Russell, Kiley. "A Diamond in the Rough: Officials Hope to Cash In on Byron Airport's Potential." *Contra Costa Times*. July 26, 2005.
- . "Dublin, Livermore Agree to Border Greenbelt." *Valley Times* (Pleasanton). May 2, 2002.
- . "Mountain House Gains a Foothold." *Contra Costa Times*. June 12, 2006.
- Sacramento Area Council of Governments. *Sacramento International Airport Comprehensive Land Use Plan* (October 1984, as Amended January 1994), 4.
- Sacramento County Airport System. "Master Plan Documents." September 23, 2005.
Available http://www.sacairports.org/int/planning/master_plan.html. Accessed May 27, 2008.
- Sacramento Regional Transit District. *Downtown-Natomas-Airport Transit Alternatives Analysis/Draft Environmental Impact Statement and Study*. Available <http://www.dnart.org>. Accessed September 17, 2005.
- Saltzgaver, Harry. "Airport EIR Fight Takes Off," *The Grunion Gazette*. November 24, 2005
- . "Airport Project EIR Appeals Plentiful," *The Grunion Gazette*. May 25, 2006.
- . "Airport Terminal Costs Top \$158 Million," *The Grunion Gazette*, May 25, 2006.
- . "Airport Terminal EIR Supports Expansion," *The Grunion Gazette*. November 10, 2005.
- . "Alliance Touts Airport Improvement," *The Grunion Gazette*, April 21, 2005.
- . "Firm Seek Space to Fly at Long Beach." *The Grunion Gazette*. August 4, 2005.
- Sanchez, Felix. "90 Acres of Prospects." *Long Beach Press-Telegram*. January 23, 2005.
- . "Douglas Park Project OK'd," *Long Beach Press-Telegram*, December 15, 2004.
- . "Douglas Park OK'd by FAA," *Long Beach Press-Telegram*, December 14, 2004.
- . "Group Battles Douglas Park," *Long Beach Press-Telegram*, June 18, 2005.
- . "Last 22 Airport Slots Allotted." *Long Beach Press-Telegram*. September 3, 2005.
- . "L.B. Airport Expansion Debated." *Long Beach Press-Telegram*. November 10, 2004.
- . "L.B. to Utah Flights Added." *Long Beach Press-Telegram*. January 4, 2005.
-

- . “No Houses at Douglas Park,” *Long Beach Press-Telegram*, May 17, 2006.
- San Diego Association of Governments. *Comprehensive Land Use Plan— Lindbergh Field, San Diego* (February 1992, amended April 1994).
- San Diego Association of Governments, “Smart Growth Incentive Program.” Available www.sandag.org/index.asp?projectid=264&fuseaction=projects.detail. Accessed May 27, 2008.
- San Diego County Regional Airport Authority Airport Land Use Commission. “Minutes of Meeting on Thursday, September 8, 2005,” September Attachment 1, Revised Timeline for the 2005 Airport Land Use Compatibility Plans (ALUCPs) Project, Presentation by Angela Shafer-Payne, VP, Strategic Planning. Available www.san.org/authority/aluc/alucp_adoption_schedule.asp.
- . “Minutes of Meeting on Monday, October 3, 2005.” Available www.san.org/authority.
- . “Minutes of Special Meeting on Wednesday, November 9, 2005.” Available www.san.org/authority.
- San Diego County Regional Airport Authority, Airport Noise Mitigation Office. *Quarterly Noise Report for the Period October 1, 2004 through December 31, 2004, San Diego International Airport* (March 2005).
- San Diego County Regional Airport Authority. “Airport Land Use Commission: Consistency Determination—San Diego International Airport Comprehensive Land Use Plan—Community Plan Amendment, Site Development Permit, Rezone and Tentative Map to Construct 128 Condominium Units, 222 Laurel Street, City of San Diego, County of San Diego” (Staff Report). September 9, 2004.
- . “Board and Airport Land Use Commission—Minutes of Meeting on Thursday, July 8, 2004.” Available www.san.org/authority
- . “Consistency Determination—San Diego International Airport—Airport Land Use Compatibility Plan—Site Development Permit, Rezone and Tentative Map to Construct 69 New Residential Units at 222 Laurel Street, City of San Diego” (Staff Report). July 6, 2006.
- . *Final Environmental Impact Report No. 01-04: Annual Amendments to the Comprehensive Land Use Plans for San Diego County Airports, State Clearinghouse No. 2004011078, Volumes 1–3* (October 2004).
- . “Minutes of Strategic Planning Committee/Special Board Meeting on Monday, September 13, 2004.” Available www.san.org/authority.

- . “Minutes of Strategic Planning Committee/Special Board Meeting on Monday, September 26, 2005.” September 2005 Revised Timeline for the 2005 Airport Land Use Compatibility Plans (ALUCPs) Project, Presentation by Angela Shafer-Payne, VP, Strategic Planning. Available www.san.org/authority/aluc/alucp_adoption_schedule.asp [ALUCP Timeline Presentation.ppt].
- San Diego County Regional Airport Authority Board and Airport Land Use Commission. “Minutes of Meeting on Thursday, September 9, 2004.” Available www.san.org/authority.
- San Francisco International Airport. *Aircraft Noise Abatement Office—Accomplishments and History*. Available <http://www.flyquietsfo.com/FactSheets.htm>.
- San Francisco International Airport, Aircraft Noise Abatement Office. *Aircraft Noise Monitoring System*. Available <http://www.flyquietsfo.com/NoiseMonitoring.htm>.
- . *San Francisco Airport/Community Roundtable*. Available <http://www.flyquietsfo.com/Roundtable.htm>.
- San Francisco International Airport/Community Roundtable. *Regular Meeting Announcement—Meeting No. 248, Wednesday, September 6, 2006*. Available from www.SFOroundtable.org.
- San Francisco International Airport/Community Roundtable. *Regular Meeting Announcement—Meeting No. 256, Wednesday, December 5, 2007, Agenda Packet, 28-37*. Available from www.SFOroundtable.org.
- San Luis Obispo Chamber of Commerce. “Airport Area Annexation: Today’s Action for Tomorrow’s Options.” Available <http://www.slochamber.org/ecm/Business/airport.html>.
- San Luis Obispo County Regional Airport. “Airport History” (2001). Available <http://www.sloairport.com/history.htm>.
- . “Airport Information: Alternate Ground Transportation” (2001). Available <http://www.sloairport.com/groundtrans.html>.
- . *Airport Master Plan Executive Summary* (2005).
- “San Luis Obispo Makes Plans to Expand.” *The Tribune* (San Luis Obispo). February 27, 2002.
- San Luis Obispo Region—Community 2050. *Progress Update, Special Report*. February 2007. Available from www.slocog.org/ecm/Community2050/News/Newsletters.html.
- Santa Clara County Airports. *Santa Clara Airports News*. Spring/Summer 2005. Available www.countyairports.org/Newsletter.
- Saur, Gregory J., Richard W. Lee, and Christopher Gray. “New Method for Transit Ridership Forecasting.” In *Institute of Transportation Engineers 2004 Annual Meeting and Exhibit*. Washington DC: Institute of Transportation Engineers Annual Meeting, Irvine, CA, March 28–31, 2004. CD-ROM.
- “School Trustees to Mull Campus Site.” *The Sacramento Bee*. December 13, 2001.

- “Seeking a Voice.” *The San Jose Mercury News*. August 23, 2003.
- Self, Matthew. “Mather Trumpets Noise Abatement: Officials Not Impressed With Procedure.” *The El Dorado Hills Telegraph*. November 30, 2004.
- “SFO Now Less Noisy, Airport Officials Say.” *San Francisco Chronicle*. August 7, 2002.
- “SFO Will Require Jets to Fly Higher to Reduce Noise.” *San Francisco Chronicle*. April 26, 2000.
- Shallit, Bob. “Construction Projects at Mather Field about to Take Off.” *The Sacramento Bee*. August 6, 2003.
- Sierra Club Santa Lucia Chapter. “Conservation Groups and Activities.” Available <http://santalucia.sierraclub.org/conserv.html>. Accessed May 27, 2008.
- Smart Growth Network. *Getting to Smart Growth: 100 Policies for Implementation*; and *Getting to Smart Growth II: 100 More Policies for Implementation*. Washington DC: Smart Growth Network, November 2003. Available from www.smartgrowth.org/pdf/gettosg2.pdf. Accessed May 27, 2008.
- Solvig, Erica. “Coachella Wins Big in Land Grab.” *The Desert Sun*. April 28, 2006.
- . “East Airport Flying into Valley Focus.” *The Desert Sun* (Palm Springs, CA). August 13, 2005.
- Stenzel, Jennifer, Jonathan Trutt, Carolyn Cunningham, and Richard Kassel. *Flying Off Course: Environmental Impacts of America’s Airports*. Washington DC: Natural Resources Defense Council, October 1996. Available from www.nrdc.org/air/transportation/foc/aairinx.asp.
- Stevens, Leslie E. “SLO Airport Business Park Lands New Tenants.” *The Tribune* (San Luis Obispo). April 2, 2002.
- “The Study Subject is Aircraft Noise.” *San Diego Union-Tribune*. March 29, 2003.
- Sutter County. “Sutter County Planning Services—Measure M.” Available http://www.co.sutter.ca.us/doc/government/depts/cs/ps/measurment/cs_measure_m. Accessed May 27, 2008.
- Szold, Terry S., and Armando Carbonell, eds. *Smart Growth: Form and Consequences*. Cambridge, MA: Lincoln Institute of Land Policy, 2002.
- “Taking the Bus to the Airport.” *The Sacramento Bee*. February 11, 1998.
- “Tower at Airfield to Aid in Noise Control Efforts.” *The Sacramento Bee*. June 4, 2000.
- “Trade Zone Pursued for Airport in Thermal.” *The Desert Sun*. September 13, 1999.
- Transportation Research Board, *Aircraft Noise Modeling*. Transportation Research Circular No. 473, Washington DC, 1997.
- Tribble, Sarah Jane. “Hot Springs Project Could Set Precedent.” *Contra Costa Times*. December 19, 2005.

- Trone, Kimberly. "Growth Is a Freight Train." *The Desert Sun*. November 14, 2003.
- United States Department of Transportation, Federal Aviation Administration. "Compatible Land Use Planning Initiative." *Federal Register* 63, no. 98 (May 21, 1998): 27,876–27,877. Available www.faa.gov/arp/environmental/5054a/lupi.pdf.
- _____. "Aviation Noise Abatement Policy 2000." *Federal Register* 65, no. 136 (July 14, 2000): 43,802–43,824. Available www.faa.gov/arp/environmental/5054a/AvNoiAbP.pdf.
- _____. *Airport Noise Compatibility Planning (ANCP) Toolkit*. Washington DC, May 1999. Available www.aee.faa.gov/noise/LUPItoolkit.htm.
- _____. National Plan of Integrated Airport Systems (NPIAS) (2007-2011). Washington, D.C., September 29, 2006.
- United States Department of Transportation, Federal Aviation Administration. *Record of Approval, 14 CFR Part 150 Noise Compatibility Program—McClellan-Palomar Airport, Carlsbad, California*. Los Angeles, California. December 5, 2006. Available from www.sdcountry.ca.gov/dpw/airports/150noise.html.
- United States Environmental Protection Agency. *EPA Guidance: Improving Air Quality Through Land Use Activities*. Washington DC, January 2001. Available www.epa.gov/otaq/transp/trancont/r01001.pdf.
- United States Environmental Protection Agency: Smart Growth. Available <http://www.epa.gov/piedpage/>
- United States General Accounting Office. *Aviation and the Environment: Airport Operations and Future Growth Present Environmental Challenges*. Washington DC, August 2000. Available www.gao.gov/archive/2000/rc00153.pdf.
- _____. *Aviation and the Environment: FAA's Role in Major Noise Programs*, GAO/RCED-00-98. Washington DC, April 2000. Available www.gao.gov/archive/2000/rc00098.pdf.
- ULI—The Urban Land Institute. *Putting the Pieces Together: State Actions to Encourage Smart Growth Practices in California*. Washington DC, 2002. Available www.smartgrowthcalifornia.uli.org/download/CASGInitiative.pdf.
- _____. "ULI California Smart Growth Initiative, Program of Work, July 2003–June 2004." Washington DC, April 21, 2003. Available smartgrowthcalifornia.uli.org/download/FinalYear4Workplan.doc.
- Upham, Paul, Callum Thomas, David Gillingware, and David Raper. "Environmental Capacity and Airport Operations: Current Issues and Future Prospects." *Journal of Air Transport Management* 9, no. 3 (May 2003): 145–151.

- URS Corporation. *McClellan-Palomar Airport FAR Part 150 Study Update: Noise Compatibility Program—Version 6, Volumes 1 and 2*. Prepared for McClellan-Palomar Airport, Carlsbad, California. Approved by the Federal Aviation Administration December 5, 2006. Available www.sdcounty.ca.gov/dpw/airports/150noise.html.
- Uyeno, Dean, Stanley W. Hamilton and Andrew J.G. Biggs, “Density of Residential Land Use and the Impact of Airport Noise,” *Journal of Transport Economics and Policy*, 27, no. 1 (January 1993): 3–18.
- Vellinga, Mary Lynne. “Airport-Area Growth Goes onto Ballot.” *The Sacramento Bee*. July 29, 2004.
- . “A Rough Ride to Revitalization.” *The Sacramento Bee*. January 17, 2003.
- . “Conflicts Grow Over Mather Use.” *The Sacramento Bee*. June 23, 2002.
- . “Mather Plan Would Save Vernal Pools,” *The Sacramento Bee*, June 17, 2004.
- . “Sacramento City and County Reach a Tentative—and Disputed—Agreement on...” *The Sacramento Bee*. July 27, 2002.
- “Visions Collide over Buchanan.” *Contra Costa Times*. August 14, 2003: a03.
- Vista Santa Rosa. *Welcome to Vista Santa Rosa*. Available <http://www.vistasantarosa.com/index.html>.
- . *Where We Are Located*. Available <http://www.vistasantarosa.com/where.html>.
- Vorderbrueggen, Lisa . “Airport Plans Finally Get Off the Ground.” *Contra Costa Times*. September 30, 2003.
- . “Supervisor Proposes Closing Buchanan Field.” *Contra Costa Times*. June 28, 2003: A-01.
- “Vote On Airport Upgrades Delayed.” *Long Beach Press-Telegram*. July 16, 2004.
- Waldner, Leora. “Regional Plans, Local Fates? The Influence of the 1976 and 1985 Atlanta Regional Development Plans on Local Government Policy.” Ph.D. dissertation, University of California at Berkeley, 2003.
- Walsh, Denny. “Big Win for Proposed Business Park Near Airport.” *The Sacramento Bee*. February 4, 2004.
- Walter, Bob. “Airport Business Park Near.” *The Sacramento Bee*. March 1, 2002.
- . “Sutter Health Signs New Lease at Mather.” *The Sacramento Bee*. August 29, 2002.
- Washington State Department of Transportation, Aviation Division. *Airports and Compatible Land Use. Volume One: An Introduction and Overview for Decision-Makers*. Seattle, February 1999. Available www.wsdot.wa.gov/aviation/Planning/AirportsLandUse.pdf.
- Werkman, Dirk. “Hopes High as Air Park under Way.” *The Sacramento Bee*. April 1, 2004.

-
- . “N. Natomas Comes into Its Own.” *The Sacramento Bee*. April 27, 2006.
- White, Mike. “Critics Try to Ground California’s Livermore Airport Plan.” *The Tri-Valley Herald*. April 1, 2004.
- . “Livermore Airport Meeting to Air Plans.” *The Tri-Valley Herald*. June 30, 2004.
- . “Pardee Project Heads to Ballot.” *Tri-Valley Herald*. March 29, 2005.
- Whitney, David. “House Transit Bill Would Aid Light-rail Expansion.” *The Sacramento Bee*. April 1, 2004.
- Wiley, Walt. “Parking Garage Project Takes Flight at Airport After a Delay.” *The Sacramento Bee*. June 27, 2003.
- Woolfolk, John. “Tax Break May Cease for Some—Farmland Contract Abused Auditors Say.” *San Jose Mercury News*. October 1, 2005.
- Yap, Freddie. “Regional Airport Still in Line for Money.” *The Tribune* (San Luis Obispo). September 10, 2003.
- Young, Maiha-Liisa. “Mather Noise Issue Gets Airing by County.” *The Sacramento Bee*. January 19, 2003.
- . “Off and Running.” *The Sacramento Bee*. July 2, 2003.
- . “Rancho Cordova, County on Same Page.” *The Sacramento Bee*. June 30, 2003.
- . “Residents Sound Off on Mather Test.” *The Sacramento Bee*. May 22, 2003.
- Zambrano, Luis G., “Balancing the Rights of Landowners with the Needs of Airports: The Continuing Battle over Noise,” *Journal of Air Law and Commerce* 66, no. 1 (Winter 2000): 445–497.
- Zibel, Alan. “With Construction Under Way, Dublin Planning 12,000 Units.” *The Oakland Tribune*. July 11, 2004.

ANNOTATED BIBLIOGRAPHY—AIRPORT LAND USE PLANNING

Aries Consultants Ltd. *Regional Airport System Plan General Aviation Element: Final Report*. Prepared for the Regional Airport Planning Committee, June 2003. Available from www.mtc.dst.ca.us/projects/air_plan/RASP-GAE.pdf.

This report updates the General Aviation Element of the *Regional Airport System Plan* for the San Francisco Bay Area, and addresses the 19 publicly owned and operated general aviation airports in the region as well as general aviation activity at the four commercial service airports and two military/federal airfields. The report reviews general aviation trends and issues, including land use compatibility and the role and operation of the ALUCs in the region, environmental issues at each of the airports, and community perceptions about general aviation. The report provides an inventory of based aircraft and operations at each airport, and a table (Table 4-1) that summarizes a variety of information for each airport, including plans for future improvements; environmental, land use compatibility, and noise issues; runway approach protection considerations; and the status of updates to airport master plans or land use plans. A second table (Table 4-2) provides more detailed information on the most recent airport land use plan covering each airport, as well as selected environmental documentation and any FAR Part 150 Airport Noise Compatibility Plans. The report includes a number of recommendations, including seven that address land use compatibility issues and identify ways to increase the effectiveness of the ALUCs in the region. A separate Appendix report contains more detailed information assembled in the course of the study on a variety of aspects, including land use compatibility.

Boyken, Grant. *Growing Pains: Airport Expansion and Land Use Compatibility Planning in California*. Sacramento, CA: California Research Bureau, September 2006. Available from www.library.ca.gov/crb/06/10/06-010.pdf.

Senator Christine Kehoe requested this review of airport land use planning and airport governance in California, which examines issues relating to land development near airports and airport expansion. The report evaluates the state of airport land use regulation, airport land use commissions (ALUCs), and airport expansion in California. The key findings are:

- the benefits of airports are regional while the impacts are localized
- for the most part, airport land use compatibility planning and review is under local control;
- despite the efforts of ALUCs, conflicts over airport noise and other impacts have affected the operation and development of airports in California;

- ALUCs effectiveness is limited because only new development is subject to review, compatibility plans are out of date, and local conflicts or litigation can override compatibility plans;
- regional airport planning bodies are more effective for airports that play an important regional or national role;
- regional strategies to distribute air traffic have not been implemented in California, but interest in the idea has increased.

A survey examined ALUC characteristics, planning activities, and approaches to compatibility planning (the survey is contained in Appendix D). The survey was sent to all ALUC contacts on a list maintained by the Division of Aeronautics. From 52 potential respondents, 23 responses were generated. The survey found that 12 plans were updated between 2002 and 2005, three had not been updated since 1993, and another three since 1989. The most frequent reason given for not updating a plan was lack of funding and staffing. This is not surprising given that 10 of the 23 ALUCs had less than one full-time staff to support their efforts, and five ALUCs did their last update with no outside funding. On the other hand, seven ALUCs acquired state, federal, and/or local funding. The survey also found that noise criteria vary widely. The highest noise contours in which residential uses are considered compatible ranged from 55 dB CNEL or less to 70 dB CNEL or less, and compatibility for retail and commercial uses ranged from 60 dB CNEL or less to 75 dB CNEL and even above 75 dB in one case. Additional issues discussed include local general and specific plan consistency, CEQA compliance, defining Airport Influence Areas, and litigation.

The report also describes different airport governance structures and current conflicts related to airport operations and development, including community opposition to airport development projects, curfews and other operating restrictions, and existing development and natural features of the terrain. Appendix A discusses governance in more depth. Airport profiles are included in Appendix and tables in Appendix B summarize facts such as operator type, land use jurisdiction, and governing boards.

Bronzaft, Arline L. "United States Aviation Transportation Policies Ignore the Hazards of Airport-Related Noise." *World Transport Policy & Practice* 9, no. 1 (2003): 37–40. Available from www.eco-logica.co.uk/wtpp09.1.pdf.

This article reviews recent literature on the adverse health effects of aircraft noise and argues that greater efforts are needed to reduce the number of people exposed to harmful levels of aircraft noise. However, the article is silent on what levels of noise exposure are likely to result in the harmful effects identified in the article, beyond noting that many agencies involved in setting noise standards have adopted a threshold criterion of 55 dB for defining noise impacts in urban residential areas, whereas the Federal Aviation Administration and the Department of Defense have adopted a criterion of 65 dB. The article suggests that growth in aviation activity is increasing the number of people exposed to aircraft noise, although no data are presented to quantify this assertion. The

article makes no mention of land use planning strategies as a way to reduce the exposure of residential areas to aircraft noise, nor how these strategies might interact with urban growth patterns. Many of the points made in the article are self-evident to anyone who has studied airport noise issues, but the article fails to acknowledge or address the inherent trade-offs involved in reducing the exposure to aircraft noise while meeting other social goals, such as achieving economic use of land around airports or keeping the cost of air transportation as low as possible.

California Department of Transportation, Division of Aeronautics. *California Airport Land Use Planning Handbook*. Santa Rosa: Shutt Moen Associates, January 2002. Available from www.dot.ca.gov/hq/planning/aeronaut/htmlfile/landuse.html.

The handbook is divided into two parts. Part I, consisting of Chapters 1 through 5, describes Airport Land Use Commission (ALUC) procedures and plans. These five chapters discuss the establishment of ALUCs, the preparation and adoption of airport land use compatibility plans, formulation of airport land use compatibility policies, ALUC review of local actions, and responsibilities of local agencies. Part II, Chapters 6 through 9, discusses in more detail the two principal airport land use compatibility issues of aircraft noise and safety. These four chapters address measurement of airport noise, establishment of airport noise compatibility policies, aircraft accident characteristics and data, and the establishment of airport safety compatibility policies. The handbook also contains a 14-page summary and 10 appendices, including a summary of California laws related to airport land use planning, federal regulations governing obstructions in the vicinity of airports, sample implementation documents and guidance on performing supporting analysis, general aviation accident data, and a list of reference documents.

_____. *The California Aviation System Plan Policy Element*. January 2001. Available from www.dot.ca.gov/hq/planning/aeronaut/documents/pol-element02.pdf.

Four policies are specifically directed at issues relevant to airport land use planning: Policy 5—Regulatory and Safety; Policy 6—Noise; Policy 8—Environmental; and Policy 9—Land Use Compatibility. These policies identify 17 implementing actions related to airport land use planning. In addition, Policy 12—Funding, includes an implementing action to provide a long-term funding mechanism for ALUC/CLUP activities through state and federal funding, and Policy 14—Local Assistance, includes an implementing action to provide services, including land use planning expertise, to ALUCs.

_____. *The Ground Access to Airport Study: Executive Summary*. December 2001. Available from www.dot.ca.gov/hq/planning/aeronaut/documents/GroundAccessStudyExecutiveSum.pdf.

This report summarizes the findings and recommendations of a study of airport ground access needs, issues, and problems at 47 airports throughout California and one in Mexico close to the border. The policy recommendations focus on institutional roles and funding

issues in addressing airport ground access needs, and the report presents recommended criteria for selecting ground access projects. The report does not discuss the relationship between airport land use planning and ground access considerations.

In addition to the Executive Summary, there are three working papers prepared as part of the study. *Working Paper One: Roles and Responsibilities* contains a brief description of Airport Land Use Commissions in California. However, there is no discussion of the role of airport land use planning in airport ground access issues beyond noting that although the relevant legislation did not intend the commissions to address airport land use compatibility issues related to ground access traffic, there is no law excluding consideration of such matters.

Caves, Robert E., and Geoffrey D. Gosling. *Strategic Airport Planning*. Oxford: Elsevier Science, Limited, 1999.

The book provides an overview of airport systems planning from a global perspective and addresses how the concept of strategic system planning can be applied to planning airports and airport systems. The authors examine the evolving context of airport planning, including environmental concerns and economic considerations, as well as institutional issues. One chapter is devoted to community response to aircraft noise. The book describes both the regional and national airport system planning process, and presents a wide range of case studies from the United States, Canada, Europe, Brazil, and Japan. The chapter on the community response to aircraft noise provides a brief review of selected literature on the effect of aircraft noise on property values and discusses some of the implications for noise mitigation measures, including soundproofing homes and compensation. However, there is little discussion of the role of land use planning.

Cidell, Julie L. *Scales of Airport Expansion: Globalization, Regionalization, and Local Land Use*. Center for Transportation Studies, University of Minnesota, 2004. Available from www.cts.umn.edu/pdf/CTS-04-01.pdf.

Author abstract: This study examines two main issues surrounding the increasing demand for airport capacity: the effects of globalization and transportation on each other as expressed through local land use, and the politics of scale in struggles over airport expansion. The study centers around three case studies to illustrate how globalization, air transportation, and local land use are connected at the municipal, metropolitan, and regional levels. Each case study investigates a specific issue. The Minneapolis-St. Paul (MSP) case investigates the geographical distribution of economic impacts of the airport. The Chicago (ORD) case documents the changing land uses over time around O'Hare, as well as a detailed investigation of the current land use controversy in the vicinity of an expanding airport. The Boston (BOS) case study examines the regionally based solution to airport demand, specifically the attempts to encourage passengers to use smaller regional airports in the area instead of the crowded Logan Airport in Boston.

Cidell, Julie L., and John S. Adams. *The Groundside Effects of Air Transportation*. Minneapolis: University of Minnesota Center for Transportation Studies, August 2001. Available from www.cts.umn.edu/pdf/CTS-01-02.pdf.

This report documents the findings of a comprehensive study of the effects of airports on land uses in surrounding communities. It includes a fairly extensive review of relevant literature addressing airport land use planning, aircraft noise and property values, strategies for controlling aircraft noise, and economic development issues in areas around airports. The report discusses methodologies for studying the effect of airports on nearby land use and includes 12 case studies of major airports in the United States, with more detailed attention given to Minneapolis–St. Paul International Airport and Denver International Airport.

Commission of the European Communities. *Air Transport and the Environment: Towards Meeting the Challenges of Sustainable Development*. Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions. Brussels, Belgium, December 1999. Available from eur-lex.europa.eu/LexUriServ/site/en/com/1999/com1999_0640en01.pdf.

This Communication serves as the point of reference for the Commission's work program from 1999 to 2005 and beyond. The work program includes measures to be applied at the level of airports, and stresses the integration of environmental goals into airport policy, dealing in particular with CO₂ emissions and aircraft noise. Proposals include development of a common noise measurement and classification system for the EU and implementing noise monitoring, noise zoning, and land use rules around airports. Compatible land use planning is essential to ensure that the gains achieved by the reduction of noise at source are not offset by further residential and other incompatible developments around airports. However, since land use planning is under local control, the commission recommends a guidelines approach and the possibility of leveraging airport development funds to encourage proper land use.

Esler, David. "How to Save Your Airport." *Business and Commercial Aviation* 96, no. 3 (March 2005): 69–79.

The article reports that with large tracts of land becoming scarcer in urban areas, developers and politicians are turning their attention toward general aviation airports. Keith Freitas, director of airports for Contra Costa County, California, admitted that there was no precedent for the U.S. Federal Aviation Administration (FAA) allowing a federal land-grant or AIP-funded airport to be closed and replaced by another field, which cuts to the heart of the discussion: If development interests can convince the FAA that the alternate-airport concept is sound and the agency buys off on the Buchanan proposal, then CCR becomes the precedent, and the developers have found the instrument by which they can finally circumvent federal regulations obligating airport managements to keep these fields open. In the final analysis, the subcommittee chairman

said the proponents of the closure did not make a strong enough case for closing the airport.

Feitelson, Eran I., Robert E. Hurd, and Richard R. Mudge. "The Impact of Airport Noise on Willingness to Pay for Residences." *Transportation Research* 1D, no. 1 (September 1996): 1–14.

Author abstract: The effects of aircraft noise following airport expansion on the willingness to pay (WTP) for residences is examined, using a contingent valuation approach. WTP estimates are elicited for a standard residence whose noise settings are systematically changed. The results show that most current compensation programs are inadequate, as they do not fully compensate homeowners or renters for the loss associated with higher noise exposure. This analysis also shows that such valuations should analyze noise as a multiattribute externality, rather than by a single composite measure. Finally, the results indicate that household WTP structures are kinked, whereby, beyond a certain disturbance threshold, households are unwilling to pay anything for the residence; yet, different households have different thresholds. This kinked WTP structure helps explain the higher noise premiums obtained in CVM studies relative to hedonic price estimates.

Fields, J.M. "Effect of Personal and Situational Variables on Noise Annoyance in Residential Areas." *Journal of the Acoustical Society of America* 93, no. 5 (1993): 2753–2763.

Author abstract: This study uses methods that control for noise level and data quality to objectively evaluate the evidence on 22 personal and situational explanations for annoyance with environmental noise in residential areas. The balance of the evidence from 464 findings drawn from 136 surveys suggests that annoyance is not affected to an important extent by ambient noise levels, the amount of time residents are at home, the type of interviewing method, or any of the nine demographic variables (age, sex, social status, income, education, home ownership, type of dwelling, length of residence, or receipt of benefits from the noise source). Annoyance is related to the amount of isolation from sound at home and to five attitudes: fear of danger from the noise source, noise prevention beliefs, general noise sensitivity, beliefs about the importance of the noise source, and annoyance with nonnoise impacts of the noise source. The evidence is too evenly divided to indicate whether changes in noise environments cause residents to be annoyed more, less, or about the same as would be expected in long-established noise environments. The evidence shows that even at low noise levels (below DNL 55 dB) a small percentage are highly annoyed and that the extent of annoyance is related to noise exposure.

Graham, Brian, and Claire Guyer. "Environmental Sustainability, Airport Capacity and European Air Transport Liberalization: Irreconcilable Goals?" *Journal of Transport Geography* 7, no. 3 (September 1999): 165–180.

The authors discuss the following sustainable transport concepts in relation to airports: the relationship of airports to sustainability; the integration of air and ground

transportation; and the contribution of airports to regional and economic development. Sustainable transport is defined as satisfying “current transport and mobility needs without compromising the ability of future generation to meet these needs” (W. R. Black, “Sustainable Transportation,” in R. D. Knowles and B. S. Hoyle (eds.) *Modern Transport Geography*, 1998). The authors note that the relationship between airports and regional economic growth is not well understood. They propose a series of studies to determine the developmental role of UK airports, under the assumption that airports both compete with each other and complement each other, and cannot be viewed in isolation. A policy that more effectively integrates sustainability, modal integration, and regional growth is still needed. Airport land use compatibility is not addressed.

Lidskog, Rolf, and Linda Soneryd. “Transport Infrastructure Investment and Environmental Impact Assessment in Sweden: Public Involvement or Exclusion?” *Environment & Planning* 32, no. 8 (August 2000): 1465–1479.

This paper analyzes the Swedish EIA process to see if it results in effective sustainable development in the context of an airport expansion proposal. The impacts of the project were identified as increased air pollution, increased noise, and increased environmental risk (to birds). The process is confused by the fact that the municipality has a dual role as both promoter of economic growth and protector of the environment. The authors note the following problems:

- In cases where the public does attend, they have little impact on the decision. The local population does not attend public meetings.
- The EIA is done too late in the planning process.
- The descriptions of impacts are often technical and difficult for nonexperts to understand.
- The EIA is not objective and neutral, as it often includes arguments that the project will not lead to environmental risks.
- The EIA considers the environmental impact only of a single project.

In short, airport planning would be more effective if surrounding communities were included.

Metropolitan Transportation Commission, Association of Bay Area Governments, Regional Airport Planning Committee, San Francisco Bay Conservation and Development Commission. *Protecting the Bay Area’s Aviation Resources: The Land-Use Connection*. Oakland, CA: Metropolitan Transportation Commission, April 2005. Available from www.mtc.ca.gov/planning/air_plan/Aviation_Resource_Guide.pdf.

The resource guide aims to help local officials and the public address airport land-use compatibility issues. It includes policy information, recommends engaging all stakeholders in discussions, and provides several lists of questions to ask when reviewing land-use proposals around an airport. The guide encourages the following actions: “1) review General Plans, Specific Plans, and zoning regulations for consistency with

ALUC plans, and revise as necessary; 2) consider the checklist of key land use compatibility questions; 3) use available information resources to evaluate the compatibility issues; 4) engage stakeholders in a forthright and open dialogue about the future impacts of the potential new land use on the airport; 5) search for reasonable compromises when they are available; and 6) in the end, make a careful and informed decision that ensures that the interests of both the aviation community and the local community will be well served in the future.”

Morrell, Peter, and Cherie H.-Y. Lu. “Aircraft Noise Social Cost and Charge Mechanisms—A Case Study of Amsterdam Airport Schiphol.” *Transportation Research, Part D, Transport and Environment* 5, no. 4 (July 2000): 305–320.

Author abstract: The increasing trend of charging for aircraft noise nuisance to encourage the sustainable development of the air transport industry has resulted in a need to evaluate the real social costs of such externalities for the formulation of effective charge mechanisms. After comparing the current charge mechanisms at world airports as well as reviewing existing externality measurements, mathematical models are developed to calculate the noise social cost in monetary terms, and noise charge mechanisms are subsequently established. The hedonic price method is applied to calculate the annual social cost of aircraft noise during the landing and take-off stages of the flight. This is done by estimating the implicit costs of aircraft noise imposed through a decline in property values in the vicinity of the airport. The empirical results, using Amsterdam Airport Schiphol as the case study, show that the current noise charge level imposed by the Dutch Government is lower than the actual noise social cost resulting from aircraft movements. Several noise charge mechanism scenarios are derived according to the modelling results, as well as the environmental objectives of the airport-related authorities.

Stenzel, Jennifer, Jonathan Trutt, Carolyn Cunningham, and Richard Kassel. *Flying Off Course: Environmental Impacts of America’s Airports*. New York: Natural Resources Defense Council, October 1996. Available from www.nrdc.org/air/transportation/foc/aairinx.asp.

This report discusses the results of a study about the environmental impacts of airports. A questionnaire that addressed land use, water quality, air pollution, expansion plans, and basic geographical information was sent to the nation’s 125 busiest airports; 46 responded. In-depth research was conducted on the 50 busiest airports. The issues “found to be most significant [were] noise and land use, ground-level air emissions, water pollution, and, on a more global scale, climate change and energy efficiency.” Findings indicate that noise will increase, that average sound level measurements do not accurately reflect noise problems, that the Environmental Protection Agency (EPA) could play a greater role in addressing airport noise impacts, and that efforts focus on noise reduction and outreach rather than land-use planning. The report recommends that the FAA use 55 dB CNEL instead of 65 dB DNL contours for measuring noise impact and that single-event noise be taken into account. Further recommendations include site-specific noise

mitigation plans, disclosure of noise impacts, and more EPA research on the health effects of noise.

United States Department of Transportation, Federal Aviation Administration. “Compatible Land Use Planning Initiative.” *Federal Register* 63, no. 98 (May 21, 1998): 27876–27877. Available from www.faa.gov/arp/environmental/5054a/lupi.pdf.

This publication includes a request for comment on 14 CFR Parts 91 and 150. Comments are requested on concepts for maintaining land-use compatibility around airports, given that noise contours are shrinking. Background information includes a short history of the FAA’s land-use compatibility efforts.

_____. “Aviation Noise Abatement Policy 2000.” *Federal Register* 65, no. 136 (July 14, 2000): 43,802–43,824. Available from www.faa.gov/arp/environmental/5054a/AvNoiAbP.pdf.

This publication is a request for comments on the proposed Aviation Noise Abatement Policy 2000, a first step in the development of such a policy. The proposed policy document would include: a summary of current conditions; goals, policies, and strategies for addressing issues; and the foundations and methodologies for assessing aviation noise, implementing noise abatement procedures, and promoting compatible land use.

_____. *Airport Noise Compatibility Planning (ANCP) Toolkit*. Washington DC, May 1999. Available from www.aee.faa.gov/noise/LUPItoolkit.htm.

The Airport Noise Compatibility Planning Toolkit was designed for FAA regional offices to help them assist local jurisdictions interested in compatible land-use planning. The Toolkit provides information on federal legislation; FAA policy, regulations, programs, and funding; and sample state legislation and programs for addressing airport land-use compatibility. The roles and responsibilities of 12 stakeholder groups are discussed. The Toolkit encourages: “cooperative planning, zoning, subdivision regulations, disclosure and open communication”; working with all parties to develop a balanced airport noise compatibility plan; and mitigating existing incompatible uses through sound insulation, easements, and voluntary acquisitions.

United States General Accounting Office. *Aviation and the Environment: Airport Operations and Future Growth Present Environmental Challenges*. Washington DC, August 2000. Available from www.gao.gov/archive/2000/rc00153.pdf.

This report provides “information on (1) the key concerns and challenges associated with airports’ current operations and future growth—particularly concerns about noise, water pollution, and air pollutant emissions—and the actions being taken by the nation’s busiest airports to balance environmental concerns with such operations and growth and (2) the actions taken by FAA and other federal agencies to address environmental concerns associated with airports’ current operations and future growth.” Through a literature review and survey, the study found that noise is the primary environmental

concern and challenge for airports. The top concern was older aircraft, followed by incompatible local zoning, pressure for residential development, and increasing population. Appendix I cites the San Francisco Airport Roundtable as a model for community involvement in the airport development process and the identification of environmental effects and concerns. Appendix II discusses Europe's approach, which would link specific land-use criterion in noise impact zones to funding for airport expansion and improvements.

_____. *Aviation and the Environment: FAA's Role in Major Noise Programs*, GAO/RCED-00-98. Washington DC, April 2000. Available from www.flypdx.com/PDFPOP/Noise_Mgmt_GAO_FAA_Role.pdf.

The Subcommittee on Aviation, House Committee on Transportation and Infrastructure asked the GAO to determine the types of projects that are eligible for federal funding to reduce or mitigate airport-related noise, the differences in the major methods for measuring the impact of airport-related noise, FAA's current noise standards for turbojets, and the status of FAA's Land Use Planning Initiative. Most funds used for noise-related projects have been used to acquire land and to soundproof buildings. The Land Use Planning Initiative is intended to assist state and local governments to prevent future incompatible land uses near airports. Under this initiative, FAA announced in May 1999 five short-term actions it would undertake: develop an information package on land-use planning; develop an information package on land-use statutes; establish an information clearinghouse; develop procedures to rapidly respond to inquiries from local communities and airports; clarify the actions it will consider when noise levels begin to rise in certain areas. The initiative has highlighted some key questions about how best to address airport-related noise:

1. Should FAA's role in land-use planning be more proactive or should it focus its limited resources on activities over which it has direct jurisdiction?
2. Should the noise exposure level defining compatible land use be lowered or retained at 65 decibels using the Day-Night Sound Level method?
3. Should the use of supplemental information, such as single-event noise measures, be required when measuring noise impacts for environmental impact analyses of airport development projects?
4. How should federally authorized investment in the growth of airport capacity be directed in view of the noise and physical expansion constraints facing so many of the nation's airports?

Upham, Paul, Callum Thomas, David Gillingwater, and David Raper. "Environmental Capacity and Airport Operations: Current Issues and Future Prospects." *Journal of Air Transport Management* 9, no. 3 (May 2003): 145–151.

This paper defines the environmental capacity of an airport in terms of "aircraft noise, air quality, third-party risk, biodiversity, climate change, and community opposition to

growth.” Aircraft noise is the most important capacity issue. The positive effects of quieter aircraft have been offset by growth in air traffic. Impact can be mitigated in the short term through air traffic control procedures. Effective land-use planning is mentioned as a long-term measure. The recommendations for maximizing the environmental capacity of airport do not address land-use compatibility. Long-term airport planning, including planning for ground transportation infrastructure, is recommended.

Waldner, Leora. “Regional Plans, Local Fates? The Influence of the 1976 and 1985 Atlanta Regional Development Plans on Local Government Policy.” Ph.D. dissertation, University of California at Berkeley, 2003.

This research investigates the effectiveness of Regional Development Plans in the Atlanta region. Chapter 7 analyzes land-use planning around airports. Rapid growth in both air travel and population in this region resulted in a situation with huge land-use conflicts. Around two of the region’s airports, more than 3,000 homes were bought out and more than 10,000 were soundproofed. 1976 and 1985 regional plans urged local governments to restrict residential uses in airport noise zones. Waldner examines the following issues:

1. The effect of voluntary regional airport/land-use policies on local government comprehensive plans and ordinances;
2. The factors [that] inspire the adoption of—and failure to adopt—land-use measures near the airport;
3. The implementation challenges encountered by local governments that chose to adopt implementation measures.

Waldner found that airport land-use ordinances proved difficult to implement because of “property rights concerns, fear of lawsuits, developer power, homeowner opposition, and desire to increase the tax base.” Industrial zones established to protect airport uses were often eroded through later rezoning decisions. The problem is “misaligned incentives”—airports want to promote compatible land uses but have no authority over land use, and local governments that have authority over land use have little incentive to promote compatible uses. This is complicated by the fact that airport impacts almost always affect more than one jurisdiction, and collaborative planning efforts may be needed. Perhaps regional agencies could facilitate interjurisdictional communication and “help identify areas of mutual gain and joint incentives.”

In Atlanta, regional airports are struggling both to provide enough capacity and to deal with incompatible land uses. The region has been attempting to site a new airport for more than 10 years. The biggest conflict for airports is caused by residential neighbors who are vocal about noise impacts and airport expansion plans. In the long run, airports have a negative impact on nearby residents, just as nearby residential uses have a negative impact on airports. One way to approach the impacts of airports is through land-use regulations such as those required by Federal Aviation Regulation Part 150.

Communities that participate in this program must “develop noise exposure maps, use standard noise measurement techniques, and identify land uses that are compatible, possibly compatible with modifications, or incompatible with the airport.” In turn the jurisdiction is eligible for “federal funds for noise compatibility planning, home purchase, soundproofing, and other noise measures.” However, this program tends to be less beneficial for airports that are already surrounded by developed land.

Operational measures recommended by Part 150 “include changes in runways or flight track use, changes in flight track location, modifications to aircraft performance (e.g., altitude or airspeed), or changes to airport facilities (e.g., berms). Land-use measures recommended “include zoning changes, noise overlay zoning, transfer of development rights, subdivision regulation changes, building code changes, noise or aviation easements, disclosure regulations, comprehensive planning, [and] capital improvement programming measures.”

There are several reasons why local jurisdictions do not address land-use issues near airports “including desire to increase the tax base, loss of development potential, fear of the costs of soundproofing, neighborhood advocacy from residents near the airport, [and] lack or awareness of the economic benefits of airports.” FAA studies of communities attempting to regulate land use near airports through zoning and building code regulations identify the following 10 roadblocks to implementation:

1. noise zones that encompass more than one jurisdiction
2. absence of cooperative relationships between the jurisdictions
3. lack of local government awareness about the ill effects of airport noise and the benefits of compatible land uses
4. frequent changes in local government administration
5. small amounts of vacant or developable land around an airport
6. low market demand for residential construction near an airport
7. low priority of airport noise problems compared to the economic advantages of residential development
8. need for additional housing stock
9. organized opposition from property owners (claiming that the zoning is a threat to private property rights and/or that monetary compensation is needed to avoid property devaluation)
10. fear of takings lawsuits

(Federal Aviation Administration, undated)

Appendix D, “Practical Recommendations—Airports,” includes specific recommendations for local planners and officials, regional and federal government, researchers, the Georgia Legislature, and regional and state agencies in Georgia. One recommendation for researchers is for further research “on smart practices for promoting

compatible land uses, particularly for airports that are already surrounded by development.”

Washington State Department of Transportation, Aviation Division. *Airports and Compatible Land Use. Volume One: An Introduction and Overview for Decision-Makers*. Seattle, February 1999. Available from [www.wsdot.wa.gov/aviation/Planning/AirportsLandUse .pdf](http://www.wsdot.wa.gov/aviation/Planning/AirportsLandUse.pdf).

This volume is an introduction to airport land-use compatibility planning as applied in Washington State. Part I covers the state interest in aviation, including the legislation authorizing the Airport Compatibility Program. Part II covers the challenge of encroachment and the Airport Land Use Compatibility Program. The program includes general technical assistance, a best practices handbook, comprehensive plan review, and technical outreach workshops. Part III discusses the impact of the challenge: height hazards, safety, and noise. The description of noise attributes and issues is concise and complete, including a clear definition of Ldn (yearly day-night average sound level). Part IV discusses the dimensions of the challenge: understanding risk and liability. Risk is discussed in terms of probability, perception, comparing risk, risk acceptability, and communication about risk. A short discussion of liability and negligence with respect to airport planning is followed by material about taking responsibility on both the state and local level. Part V concludes that airports and local jurisdictions must be willing to work together on long-term solutions. Some methods for achieving airport land-use compatibility are highlighted: “overlaying noise contour maps on comprehensive plan maps, recognizing airports as essential public facilities, [and] fanning incompatible uses and high densities away from noise and safety affected areas.”

ANNOTATED BIBLIOGRAPHY—SMART GROWTH

ABAG—Association of Bay Area Governments. *Making Better Communities by Linking Land Use and Transportation*. April 1997. Available from www.abag.ca.gov/planning/lut/.

This report outlines the tenets of sound land use and transportation and land use planning. It asserts that there is an increasingly awareness that the United States cannot sustain the approach to development followed over the last 50 years for two distinct reasons, both of which are related to transportation: on the one hand, governments are finding it harder and harder to provide safe, efficient transportation services; on the other hand, the negative environmental effects of America's increasing auto dependence and a new awareness of how the ways we develop make it harder to give all citizens real accessibility to vital goods and services have brought the focus onto how we build our cities.

The actions localities can take to achieve this new vision of more integrated communities that provide both livability and accessibility are grouped into five basic strategies: compact and balanced communities, a greater mix and intensity of land uses, an integrated transportation network, pedestrian-friendly development standards, and incentives to reduce driving.

These would appear to apply to airport area planning, with some modifications and caveats, for example, pedestrian-friendly airport development will primarily affect ancillary trips, such as midday errands, rather than primary trips, such as journeys from home to work or journeys from workplaces to access air transportation.

_____. *Smart Growth Strategy Regional Livability Footprint Project Final Report*. October 2002. Available from www.abag.ca.gov/planning/smartgrowth/Publications/FinalReport/SmartGrowthRpt_final.pdf.

This report summarizes a major regional study leading to a smart growth land use strategy for the nine-county San Francisco Bay Area. In 1999, five regional agencies involved in transportation planning, environmental protection, and local government coordination came together to discuss how to nurture these seeds of “smart growth” and propagate them across the region's nine counties and one hundred one cities. As part of their work, this group sought to identify and obtain the regulatory changes and incentives that would be needed to implement a new growth vision in the Bay Area. Simultaneously, the Bay Area Alliance for Sustainable Development embarked on an ambitious public participation exercise to reach consensus on, and generate support for, a “regional livability footprint”: a preferred land use pattern to suggest how the Bay Area could grow in a smarter and more sustainable way. Although the two efforts represent diverse interests, they agreed on the urgent need to address the region's mounting traffic congestion, housing affordability crisis, and shrinking open space. In 2000, they merged

their respective outreach efforts, becoming the Bay Area Smart Growth Strategy and Regional Livability Footprint Project. The full documentation of this process may be found at www.abag.ca.gov/planning/smartgrowth/.

In essence, the Smart Growth Strategy and Regional Livability Footprint Project convened a county-level planning workshop comprising interested citizens, organizations, and local government policymakers. The workshops generated alternative development concepts that were distilled into three potential scenarios to accommodate forecasted population and employment growth through the year 2020. Each of these alternatives envisioned modifying the form and intensity of development near the Bay Area's three major airports (mainly in the form of Town Center development around BART, Caltrain, and San José light rail (VTA) stations). Airport area land use compatibility issues were not a major focus of the study.

_____. *Theory in Action: Smart Growth Case Studies in the San Francisco Bay Area and Around the Nation*. 2000. Available from www.abag.ca.gov/planning/theoryia/.

This report is related to the *Making Better Communities by Linking Land Use and Transportation* series of case studies that illustrate smart growth tenets of sound land use and transportation and land use planning, drawn from a variety of settings in the San Francisco Bay Area and from other regions of the United States. None deals directly with airport land use compatibility issues.

Audirac, Ivonne. *Information Technology and Urban Form: Challenges to Smart Growth*. Tallahassee: Florida State University, 2002. Available from www.smartgrowth.umd.edu/events/pdf/IT-UrbanForm&SmartGrowth.pdf.

This paper raises two questions: What conclusions can be gleaned from research about the urban form effects of information technology (IT)? And what are the implications for Smart Growth? The author recognizes that on a subject as dynamic and volatile as telecommunications and information technology, answers to these questions must remain tentative. However, there is an emerging research consensus regarding IT and urban form effects that raises important issues for Smart Growth policy.

Source: Page 2 of the report.

The author argues that the New Economy's effects on urban form and structure may challenge, at least in three ways, the smart growth objectives of enhancing citizens' quality of life by reducing sprawl via incentives that direct growth to inner neighborhoods, away from agricultural land at the urban periphery: the first challenge relates to the form and tempo of the information-age metropolis—an increasing emphasis on speed in IT-driven businesses; the second to its social polarizing tendencies (IT creates high-income jobs and low-income jobs, with few middle-income jobs); the third to the New Economy's proclivity to divert resources to new emerging digital landscapes on the

urban periphery. Collectively, the author asserts this favors auto-oriented peripheral locations.

The author overlooks the fact that development of peripheral land is not inconsistent with smart growth principles. While smart growth does emphasize infill development/redevelopment, it recognizes the need for some peripheral growth and seeks to foster more efficient and attractive development at the edges of the region. Efficient and attractive peripheral developments should have economic and social advantages over less efficient and less attractive development. Furthermore, many metropolitan airport sites are increasingly surrounded by development, meaning that airport area development is increasingly infill development.

Benedict, Mark A., and Edward T. McMahon. *The Conservation Fund Green Infrastructure: Smart Conservation for the 21st Century*. Washington DC: Sprawl Watch Clearinghouse, May 2001. Available from www.sprawlwatch.org/greeninfrastructure.pdf.

This monograph introduces green infrastructure as a strategic approach to land conservation that is critical to the success of smart growth initiatives. Green infrastructure is “smart” conservation that addresses the ecological and social impacts of sprawl and the accelerated consumption and fragmentation of open land. This monograph describes the concept and values of green infrastructure and presents seven principles and associated strategies for successful green infrastructure initiatives.

Green infrastructure is defined as an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations. Green infrastructure is presented as an essential ecological framework for environmental, social, and economic sustainability. Green infrastructure differs from conventional approaches to open-space planning because it looks at conservation values and actions in concert with land development, growth management, and built infrastructure planning. Other conservation approaches typically are undertaken in isolation from, or even in opposition to, development.

While airports are mentioned only in passing, the concept of green infrastructure seems relevant to airport area planning, since airports often promote preservation of open space as a buffer against incompatible uses. If such areas have further value as large nodes in a green infrastructure network, they will be easier to preserve.

Binger, Gary, and Paul Sedway. “Partnering for Smart Growth Success.” *Urban Land* (September 2003): 96-99, 139-140. Available from www.smartgrowthcalifornia.uli.org/download/binger.pdf.

This article provides an overview of the San Francisco Bay Area, a region comprising seven million residents, nine counties, three major cities (San Francisco, Oakland, and San Jose), and more than one hundred incorporated cities. Most of these jurisdictions are struggling thoughtfully with the challenges of housing supply and affordability, traffic

congestion, community opposition to more sustainable growth patterns, preservation of critical open space, redevelopment of underused sites, infrastructure financing, and maintaining strong economies during economic downturns.

In the public policy arena, local government officials are exploring ways to respond to pressure from their constituents (including economic, environmental, and social equity leaders) to do a better job of managing growth. The article describes the Association of Bay Area Governments project as reinforcing and significantly expanding smart growth in the region and notes that hope for further expansion of smart centers rests on creating a regional smart growth vision linked to long-term transportation investments.

Blanton, Whit. "On the Airfront." *Planning* 70, no. 5 (May 2004): 34–35.

This article outlines the American Planning Association (APA) multiyear research initiative titled "Airports in the Region." The author notes airports and their surrounding districts increasingly shape urban and regional growth patterns, yet planning efforts focus on impacts, particularly airport noise and land use compatibility, as required by federal law. While important, the federal requirements are limited and designed only to reduce conflicts relating to airport expansion and to identify mitigation strategies, not to maximize the social and economic benefits inherent in an airport district, which Blanton terms the "airfront." Blanton sees the following as basic requirements for a successful air district plan:

- good regional highway and transit access to other regional centers
- room for expansion, both for airport and airport-related facilities
- organizing land use, environmental, and transportation systems for the entire airport district
- addressing economic development and marketing for the district
- creating a governance framework that facilitates communication between the public and private sector and promote a shared sense of responsibility and purpose

Bochner, Brian S. "Smart Growth Transportation Tools." In *Institute of Transportation Engineers 2000 Annual Meeting and Exhibit, Nashville, Tennessee, 6-9 August 2000*, CD-ROM.

Author Abstract: This paper gives a summary of activities and resources provided by ITE on transportation and its support for smart growth. Many of these resources were initiated through ITE's Smart Growth Task Force, created to help ITE focus attention on smart growth. Among the resources described are an upcoming recommended practice (RP) on smart growth transportation guidelines, another RP on neighborhood street design guidelines, transportation-oriented smart growth definitions, publication articles on smart growth, and ongoing committee activities.

Bochner specifies that smart growth practices may have the following results:

- job/work force/housing balance

- compact, balanced, complementary mix of land uses consistent with community and regional needs
- economic vitality and competitiveness with other areas
- attractive aesthetics
- environmental sensitivity, sustainability, and integrity at local and regional levels
- building upon existing infrastructure where possible to provide sufficient but not excess capacity
- effective and efficient use of resources
- feasible and sustainable over time

The following goals are related to transportation:

- provision of a range of travel choices
- integration of various transportation/mobility services
- management of both demand and supply sides of mobility provision
- elimination or reduction of barriers to accessibility

Ewing, Reid. *Pedestrian- and Transit-Friendly Design: A Primer for Smart Growth*. Washington DC: Smart Growth Network, 1999. Available from www.epa.gov/smartgrowth/pdf/ptfd_primer.pdf.

This report is a useful primer is based on a manual prepared for the Florida Department of Transportation. It describes and illustrates more than 20 features, both essential and desirable, to encourage pedestrian- and transit-friendly design. The report does not contain any direct discussion of airport area planning.

Institute of Transportation Engineers. *Smart Growth Transportation Guidelines: An ITE Proposed Recommended Practice*. Washington DC: Institute of Transportation Engineers, 2003.

Author Abstract: This report addresses aspects of the smart growth concept related to transportation, that is, the effects of transportation and land use on each other, and the characteristics of transportation systems and services that can encourage and support desirable methods to achieve urban growth. The primary focus is transportation concepts for accommodating growth and improving quality of life by providing more mobility choices and reducing dependence on personal vehicle use. This report provides guidance on the types of transportation systems that support and are most efficient with smart growth development, and information on how to best meet these new transportation needs. Land use development trends, the land use/transportation relationship, the role of transportation systems and urban-form factors are examined. Smart growth is found to be a complex mix of land use and transportation design. Five goals are developed as the foundation for the smart growth guidelines in this document: 1) pursuing compact, efficient land use patterns to maximize transportation efficiency and improve neighborhood environment; 2) improving multimodal mobility within developed areas;

3) improving accessibility within existing built-up areas; 4) making the most efficient use of transportation infrastructure; and 5) supporting smart growth through pricing and sustainable funding. Guidelines are provided for pursuing and supporting smart growth objectives derived from these goals. The information contained in this report provides a basis for planning and implementing smart growth transportation concepts consistent with local objectives and policies in both developing and redeveloping areas.

Katz, Bruce. *Smart Growth: The Future of the American Metropolis?* London: Centre for Analysis of Social Exclusion, November 2002. Available from www.sticerd.lse.ac.uk/dps/case/cp/CASEpaper58.pdf.

Widespread frustration with sprawling development patterns has precipitated an explosion in innovative smart growth thinking and action across the United States in recent years. This approach contends that neither the current shape nor quality of metropolitan growth in America is sustainable. It also assumes that metropolitan areas could grow in radically different ways if major government policies on land use, infrastructure, and taxation were overhauled. This essay, published by the London School of Economics, reviews the current state of smart growth and metropolitan thinking in the United States. It outlines the demographic, market, and development trends that are affecting metropolitan areas and the consequences of these trends for central cities, older suburbs, newer communities, and low-income and minority families. It describes how current government policies facilitate the excessive decentralization of people and jobs and how smart growth reforms are being enacted, particularly at the state level, to shape new, more urban-friendly, growth patterns. It concludes by identifying the major challenges the smart growth cause needs to address if it is going to succeed in shaping sustainable metropolitan communities. The report does not contain any direct discussion of airport area planning.

Lee, Richard W., et al. *The California General Plan Process and Sustainable Transportation Planning*. San Jose, CA: Mineta Transportation Institute, May 2002. Available from transweb.sjsu.edu/publications/01-18MTI.pdf.

Author Abstract: This study reviewed the current and potential utility of California's general plan process as a tool for promoting more sustainable local transportation systems. The study used multiple methods to investigate this issue, including:

- an extensive literature review on California's general plan process, the nature of sustainability and sustainable transportation, and criteria and evaluation methods for plans
- detailed analysis and scoring of policies from 26 exemplary general plans against criteria designed to measure both transport sustainability and plan quality
- in-depth case studies of the general plan process in seven diverse California communities
- key informant interviews

The results of these several lines of analysis and inquiry were synthesized into a series of observations, conclusions, and recommendations. Chief among these are the desirability of encouraging more frequent general plan updates, the need for greater emphasis on implementation of plan policies, and the need for and utility of educational and outreach efforts aimed at enhancing the proliferation of general plan policies that promote more sustainable transportation systems at the local level.

McElfish Jr., James M., and Susan Casey-Lefkowitz. *Smart Growth and the Clean Water Act*. Washington DC: Northeast-Midwest Institute, 2000. Available from www.nemw.org/SGCleanWater.pdf.

This study examines the relationship of three Clean Water Act (CWA) programs to patterns of land use and development. It addresses whether these programs encourage and enhance opportunities for smart growth or, conversely, lead to sprawl. The study also identifies ways in which federal, state, and local governments can reduce compliance costs and increase environmental benefits through the mutually reinforcing components of smart growth strategies and CWA programs. Although airport lands are often key elements of local and regional watersheds, the report does not contain any direct discussion of airport area planning.

Moore, Curtis. *Smart Growth and the Clean Air Act*. Washington DC: Northeast-Midwest Institute, 2001. Available from www.nemw.org/SGCleanAir.pdf.

This study examines the interplay between air pollution, its control (mainly through the U.S. Clean Air Act and its many amendments), and urban sprawl, which it characterizes as areas exhibiting:

- low population density
- rapid population growth in areas adjacent to the metropolitan center
- rapid development of rural, wilderness, and agricultural areas
- changes in school attendance and quality
- low transit boardings per capita
- high numbers of vehicle miles traveled per person
- low average occupancy per vehicle
- heavy roadway congestion
- lengthy commute time and distance

Pendall, Rolf, Jonathan Martin, and William Fulton. *Holding the Line: Urban Containment in the United States*. Washington DC: The Brookings Institution, August 2002. Available from www.brook.edu/dybdocroot/es/urban/publications/pendallfultoncontainment.pdf.

This paper reviews the research on urban containment generally, and also examines the experience of such policies in particular metropolitan areas. It discusses some lessons learned and raises relevant research questions for practitioners as well as policymakers at

the state and local level. The authors note urban containment goals are diverse, and that the precise impacts of containment policies are not well understood at present.

RBB Policy Research and Planning. *Smart Growth Strategies to Accommodate Orange County's Future*. Santa Ana, CA: Southern California Association of Governments, n.d. Available from www.scag.ca.gov/livable/publications/smartgrowthoc.pdf.

This report discusses the challenges to both new and older communities in Orange County for accommodating continued growth and for maintaining the current “quality of life.”

According to the U.S. Census Bureau, Orange County now ranks as the fifth most populous county in the United States. Official demographic projections by the Orange County Council of Governments indicate that an additional 576,747 people will locate in Orange County during the next 25 years. In this same time frame, the county will experience annual growth of some 10,000 new housing units built and 35,000 jobs created. This growth will not be confined to new communities and undeveloped spaces in southern Orange County but will also occur in the central, western, and northern areas that are already considerably dense and generally thought of as being built out. The report does not contain any direct discussion of airport area planning.

Smart Growth Network. *Getting to Smart Growth: 100 Policies for Implementation*; and *Getting to Smart Growth II: 100 More Policies for Implementation*. Washington DC: Smart Growth Network, November 2003. Available from www.smartgrowth.org/pdf/gettosg.pdf and www.smartgrowth.org/pdf/gettosg2.pdf.

These two 100-plus page primers are part of an ongoing series by the International City/County Management Association (ICMA) and the Smart Growth Network. Each describes what are termed “concrete” techniques of putting the following 10 smart growth principles into practice:

1. Create Range of Housing Opportunities and Choices
2. Create Walkable Neighborhoods
3. Encourage Community and Stakeholder Collaboration
4. Foster Distinctive, Attractive Communities with a Strong Sense of Place
5. Make Development Decisions Predictable, Fair, and Cost Effective
6. Mix Land Uses
7. Preserve Open Space, Farmland, Natural Beauty, and Critical Environmental Areas
8. Provide a Variety of Transportation Choices
9. Strengthen and Direct Development Towards Existing Communities
10. Take Advantage of Compact Building Design

Getting to Smart Growth and *Getting to Smart Growth II* shares a similar format. Both volumes list and describe unique sets of 100 policies for implementation. The policies

and guidelines presented in these primers have been successful in communities across the United States, and range from formal legislative or regulatory efforts to informal approaches, plans, and programs.

Of the 200 policies listed, only one (Policy 10 in the first volume) mentions airports: cluster freight facilities near ports, airports, and rail terminals. The commentary notes that efficient goods movement within a region can help reduce congestion and create healthier, more livable communities.

Szold, Terry S., and Armando Carbonell, eds. *Smart Growth: Form and Consequences*. Cambridge, MA: Lincoln Institute of Land Policy, 2002.

A useful collection of essays on the theme of the urban form and social, economic, and political consequences of smart growth; none focuses on airports or airport area planning issues. In the introduction, Szold poses the following questions about smart growth that still need to be answered: Have the most important lessons from past development practices been fully absorbed and learned? In striving to advance alternatives to low-density, where are viable models to be found? Have practical, ethical, and distribution considerations been appropriately brought to bear on proposed smart growth interventions? Are the components of smart growth constitutionally permissible? What consequences might unfold to affect various stakeholders and constituencies? In Chapter 5, Arthur Nelson attempts to answer the question “How Do We Know Smart Growth When We See It?”

United States Environmental Protection Agency. *EPA Guidance: Improving Air Quality through Land Use Activities*. Washington DC: January 2001. Available from www.epa.gov/otaq/transp/trancont/r01001.pdf.

In recent years, many of EPA’s stakeholders have explored using land use activities as strategies for improving air quality. These stakeholders, including state and local planning agencies, have suggested that EPA provide guidance on how to recognize land use strategies in the air quality planning process that result in improvements in local and regional air quality. In a survey conducted by EPA in 1998, staff and managers in state air agencies and regional transportation planning agencies said that being able to quantify and account for the air quality impacts of beneficial land use activities would have the following benefits:

- encourage funding for research into the impacts of such activities
- educate state and local government officials about land use planning as a tool for achieving clean air
- add support to these kinds of activities in regional and local debates

This guidance document is designed to describe how existing EPA regulations and policies can be used to account for the air quality benefits of land use activities that encourage travel patterns and choices that reduce vehicle miles of travel, consequently

reducing emissions from motor vehicles in your communities. This document lays out general guidance on quantifying the potential benefits of land use activities that your area may choose to adopt. The report notes that the EPA intends to provide additional guidance on quantifying benefits from specific types of land use strategies in the future.

ULI—The Urban Land Institute. *Putting the Pieces Together: State Actions to Encourage Smart Growth Practices in California*. Washington DC: 2002. Available from www.smartgrowthcalifornia.uli.org/download/CASGInitiative.pdf.

This report summarizes the ULI California Smart Growth Initiative. This project seeks to address growth challenges in California by examining growth and development trends, identifying barriers to smart growth, and making recommendations for specific local, regional, and state actions that can advance a collaborative smart growth agenda. The project was launched in September 2000 and is coordinated by ULI in collaboration with its five California district councils.

Eight guiding smart growth principles are delineated:

1. Prepare for the Future
2. Promote Viable and Livable Communities
3. Encourage Transportation Linked to Efficient Land Uses
4. Provide Greater Housing Opportunities
5. Preserve Open Space, Natural Resources, and the Environment
6. Protect California's Agricultural Areas
7. Foster Governmental Collaboration and Coordination
8. Encourage Education and Community Engagement

The ULI project's goals include the following:

- encourage collaboration at the local, regional, and state levels among key stakeholders in the smart growth dialogue
- foster the active participation of the private development community in local, regional, and statewide efforts to implement smart growth and sustainable development
- organize forums involving a diversity of community leaders who could be expected to take the lead in developing and implementing local and regional smart growth strategies
- inform decision-makers about the impediments and barriers to making smart growth work at the local, regional, and state levels, and suggest to them solutions

_____. *ULI California Smart Growth Initiative, Program of Work, July 2003–June 2004*. Washington DC: 21 April 2003. Available from www.smartgrowthcalifornia.uli.org/download/FinalYear4Workplan.doc.

This report summarizes efforts in 2003–2004 by the ULI California Smart Growth Initiative to move forward its state-level agenda through educational and outreach efforts to implement the specific recommendations developed by the Statewide Coordinating Committee in 2002. In pursuing these state economic incentives and regulatory reforms, the ULI program collaborated with California district council executive committees, as well as stakeholder organizations represented by members of the ULI committee, to gain useful input and strengthen the potential for implementing these actions.

The program centered on achieving five specific outcomes:

1. Modifications to the California Environmental Quality Act (CEQA) and its guidelines that will streamline environmental review for urban infill projects
2. New laws and administrative procedures that promote joint use and smaller schools
3. Streamlining brownfield liability rules
4. Tax-increment financing (TIF) to support transit-oriented development (TOD)
5. State financial rewards to cities and counties that address their housing needs and pursue the implementation of smart growth planning policies and projects

ABOUT THE AUTHORS

RICHARD W. LEE, PH.D., AICP

Richard W. Lee has been a Research Associate with the Mineta Transportation Institute (MTI) for more than 10 years, and has led MTI studies of general plans and sustainability and of sustainability indicators for transportation (MTI Reports 01-18 and 02-05). He is also a Senior Transportation Planner with Fehr & Peers in Walnut Creek. He has more than 20 years of experience as a transportation consultant and academic. His consulting experience includes management of regional transportation plans, general plan studies, high-speed rail and transit projects, and smart growth transportation studies, as well as a wide variety of traffic impact, travel demand management, and transportation policy studies. Dr. Lee earned his Masters Degrees in Civil Engineering (1984) and City and Regional Planning (1985) and his Ph.D. in City and Regional Planning (1995), all from the University of California, Berkeley. He has taught transportation planning and conducted transportation research projects at several universities, including Massey University in New Zealand, UCLA, Cal Poly San Luis Obispo, San José State University, and UC Berkeley.

GEOFFREY D. GOSLING, PH.D.

Geoffrey D. Gosling has been a Research Associate with MTI for three years. He is also the principal and founder of Aviation System Consulting, LLC, in Berkeley. He has more than 25 years of experience as a transportation consultant, researcher, and academic, and has been a consultant and expert witness in the areas of airport planning, aviation system planning, aviation safety, and airline economics to a wide range of government and other clients. From 1979 to March 2002 he was a member of the research staff of the Institute of Transportation Studies at the University of California, Berkeley, and helped establish the National Center of Excellence for Aviation Operations Research, serving as its first program manager. In addition to his research with the Mineta Transportation Institute, he has been undertaking research on airport ground access with the California Partners for Advanced Transit and Highways at UC Berkeley. Mr. Gosling earned Master of Science (1975), Master of Engineering (1976), and Ph.D. (1979) degrees in Civil Engineering (transportation) from the University of California, Berkeley. He was an Assistant Professor in the transportation engineering program at UC Berkeley for several years and continues to teach through the UC Extension and ITS Technology Transfer programs.

KATJA IRVIN, B.S.

Katja Irvin has been a research assistant for the Mineta Transportation Institute since January 2004. She was employed by IBM for more than 10 years, leaving to pursue a Master of Urban Planning degree from San José State University. She has a Bachelor of Science in Mathematics from Cal Poly San Luis Obispo. She has worked as a planning intern with the City of San José

and a transportation planning intern with the City of Sunnyvale. She is also a member of San José's Bicycle and Pedestrian Advisory Committee and is active in the California Chapter of the American Planning Association.

PEER REVIEW

San José State University, of the California State University system, and the MTI Board of Trustees have agreed upon a peer view process to ensure that the results presented are based upon a professionally acceptable research protocol.

Research projects begin with the approval of a scope of work by the sponsoring entities, with in-process reviews by the MTI research director and the project sponsor. Periodic progress reports are provided to the MTI research director and the Research Associates Policy Oversight Committee (RAPOC). Review of the draft research product is conducted by the Research Committee of the board of trustees and may include invited critiques from other professionals in the subject field. The review is based on the professional propriety of the research methodology.

MTI FOUNDER

Hon. Norman Y. Mineta

MTI BOARD OF TRUSTEES

Honorary Co-Chair
Hon. James Oberstar **
Chair
House Transportation and
Infrastructure Committee
House of Representatives
Washington, DC

Honorary Co-Chair
Hon. John L. Mica **
Ranking Member
House Transportation and
Infrastructure Committee
House of Representatives
Washington, DC

David L. Turney *
Chair/President/CEO
Digital Recorders, Inc.
Dallas, TX

William W. Millar ^
Vice Chair/President
American Public Transportation
Association (APTA)
Washington, DC

Hon. Rod Diridon, Sr. #
Executive Director
Mineta Transportation Institute
San Jose, CA

Ronald Barnes
General Manager
Veolia Transportation/East
Valley RPTA
Mesa, AZ

Rebecca Brewster
President/COO
American Transportation
Research Institute
Smyrna, GA

Donald H. Camph
President
California Institute for
Technology Exchange
Los Angeles, CA

Anne P. Canby
President
Surface Transportation
Policy Project
Washington, DC

Jane Chmielinski
President
DMJM Harris
New York, NY

William Dorey
President/CEO
Granite Construction, Inc.
Watsonville, CA

Mortimer Downey
Chairman
PB Consult Inc.
Washington, DC

Nuria Fernandez
Commissioner
City of Chicago,
Department of Aviation
Chicago, IL

Steve Heminger
Executive Director
Metropolitan Transportation
Commission
Oakland, CA

Hon. John Horsley #
Executive Director
American Association of State
Highway & Transportation
Officials (AASHTO)
Washington, DC

Will Kempton
Director
California Department of
Transportation
Sacramento, CA

Alex Kummant
President/CEO
Amtrak
Washington, DC

Brian Macleod
Senior Vice President
Gillig Corporation
Hayward, CA

Dr. Bruce Magid
Dean
College of Business
San José State University
San José, CA

Stephanie Pinson
President/COO
Gilbert Tweed Associates, Inc.
New York, NY

Hans Rat
Secretary General
Union Internationale des
Transports Publics
Bruxelles, Belgium

Vickie Shaffer
General Manager
Tri-State Transit Authority
Huntington, WV

Paul A. Toliver #
President
New Age Industries
Seattle, WA

Michael S. Townes #
President/CEO
Transportation District
Commission of Hampton Roads
Hampton, VA

Edward Wytkind
President
Transportation Trades
Department, AFL-CIO
Washington, DC

** Honorary
* Chair
^ Vice Chair
Past Chair

Directors

Hon. Rod Diridon, Sr.
Executive Director

Hon. Trixie Johnson
Research Director

Dr. Peter Haas
Education Director

Leslee Hamilton
Communications Director

Research Associates Policy Oversight Committee

Dayana Salazar, Chair
Associate Professor and Chair,
Dept. of Urban &
Regional Planning
San José State University

Dr. Jan Botha
Professor, Dept. of Civil &
Environmental Engineering
San José State University

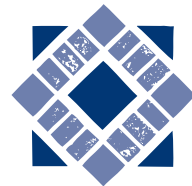
Dr. Dongsung Kong
Associate Professor,
Dept. of Political Science
San José State University

Dr. Jacqueline Snell
Professor and Chair, Marketing and
Decision Science
San José State University

Diana Wu
Research Librarian
Martin Luther King, Jr. Library
San José State University



Funded by
U.S. Department of
Transportation and
California Department
of Transportation



San José State
UNIVERSITY