Development of a Transportation and Land Use Public Policy Education Program for Iowa

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DEVELOPMENT OF A TRANSPORTATION AND LAND USE PUBLIC POLICY EDUCATION PROGRAM FOR IOWA

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ABSTRACT

This literature review serves as a foundation for a transportation and land use public policy education program for Iowa. The objective of the review is to summarize relevant research findings, to review the state of practice and policies of other state and local governments, and to explore land use trends both within the state of Iowa and the nation as a whole. Much of what we learned has been incorporated into the course materials. Because we expect to identify more useful sources throughout the project, *this literature review should be considered a work in progress.*

INTRODUCTION: WRESTLING WITH LAND USE, TRANSPORTATION, AND GROWTH MANAGEMENT

The land use public policy education program described below is the result of an extensive literature review sponsored by the Iowa Department of Transportation and is intended to summarize issues related to land use, transportation, and growth management. The objective was to compile relevant research findings, to review the practice and policies of other state and local governments, and to explore land use trends both within Iowa and across the nation as a whole. The review includes abstracts and topical references that range from land development and its costs and effect on infrastructure and services, to federal policies and smart-growth and other strategies that affect farmland preservation.

Much of what was learned was incorporated into two distinctly targeted sets of course material. The first is a two-hour policy discussion that summarizes issues and data related to transportation and land use, its effect on urban sprawl, associated trends occurring in Iowa, and policy approaches being incorporated by other states. The program was assembled from existing literature, data, and other anecdotal observations to provide an overview for use by state and local policy makers. Overall a case is presented that indicates concern regarding urban sprawl in Iowa should have less to do with loss of farmland and more to do with strain on public infrastructure and finances.

The second set of course material is a one-day land use, transportation, and growth management course that expands upon the technical issues and other content summarized in the two-hour policy course. This course was developed from the same review of literature but is presented in a format that is more useful to the needs of state and local transportation professionals. Separate modules covering the land development process, costs of development, development trends in Iowa, growth management policy, and integrating transportation and land use provide a more thorough and in-depth discussion of technical issues.

In general, both programs begin with a review of fundamental land development and public infrastructure concepts, which leads into discussions of urban sprawl, the issues surrounding it, and the role and effect that transportation has on economic development. Next, graphic trends profiling Iowa's population, economy, housing, and the rate in which farm acreage is being converted to urban use and how Iowa compares with the rest of the country are presented. Finally, an anecdotal discussion of state and federal policy issues and approaches that other states have used to enable growth management are provided.

Of note are data indicating that between 1992 and 1997, Iowa ranked fortieth of the 50 states relative to the amount of farm acreage converted for urban use. States that were experiencing much higher rates of conversion were those that were also experiencing rapid rates of population growth. Iowa is primarily a rural state, with only a handful of metropolitan areas that are experiencing such growth. With the exception of the Des Moines–Ames and Cedar Rapids–Iowa City corridors, Iowa's population is generally aging, with an expected overall decline by 2020. The "corridors" have very different demographic trends. Because Iowa has relatively fewer metropolitan areas "feeding" urban sprawl, conversion of farmland is more spread out and is occurring at a much slower pace than in the coastal states and other areas of the United States.

Within the programs are also discussions regarding the negative consequences that unrestrained large-lot rural development has on municipal infrastructure and services. Of primary concern is that municipalities lose organizational control of growth and some literally become

"hemmed in" by these developments. The infrastructures that support these developments incur both higher "up-front" costs and higher operating costs, and these costs end up being distributed among a smaller tax base. A result is that much of the infrastructure and services needed to support these rural developments are either under-funded or do not meet even minimal city standards.

THE IMPACT OF DEVELOPMENT ON INFRASTRUCTURE

- Halstead, J. M., and S. C. Deller. Public Infrastructure in Economic Development and Growth (*1*).

Halstead and Deller look at the role of public infrastructure in economic development and growth. Proponents of public infrastructure investment often argue that the infrastructure is needed to encourage new and expanded economic activity in their community. The authors point out that, although economic development and infrastructure investment appear to be related, causation has not been established. That is, economic development may or may not be attributable to infrastructure investment. "While infrastructure supports economic activity, one cannot conclude that infrastructure can be used as a policy tool to stimulate economic growth and development in any particular locale" (*1*). Public infrastructure is only one of many factors. One cannot assume that it is the key factor for any particular community.

Halstead and Deller question whether infrastructure investment is an effective tool for economic development. The authors surveyed rural manufacturing firms to assess the reason for business location. Firms in the states of Vermont, Wisconsin, Maine, and New Hampshire were asked to identify the reason behind their business location. Overall, 61 percent stated that they were in their present location because the owner of the business lives in the area. In a distant second, 25 percent of respondents cited cost advantages. Only 21 percent cited access to customers. Considering the survey findings and other research results, they conclude that the majority of growth in rural manufacturing is entrepreneurial and the result of growth of existing businesses. Very little growth is the result of firms relocating in the area.

The Costs of Development

- Burchell, R. W., et. al. *The Cost of Sprawl—Revisited* (*2*).

Urban sprawl is widely studied and is well documented. *The Cost of Sprawl–Revisited* reviews much of the research, examining methodologies and findings. This comprehensive review considers the arguments both supporting and opposing current development trends. Concerns are assigned to the following categories: public-private capitol and operating costs, transportation and travel costs, land/natural habitat preservation, quality of life, and social issues.

As an example, within the category of "quality of life," the alleged negative impacts include displeasing aesthetics, weakened sense of community, greater stress, higher energy consumption, more air pollution, and lessened historical preservation. The alleged positive impacts include that it meets preference for low-density living, that there are lower crime rates, that there is an enhanced value or reduced cost of public and private goods, and that it fosters greater economic well-being. The report summarizes studies pertinent to each of the claims, supporting or rebutting. The authors then judge (1) whether the conditions exist and (2) if the conditions exist whether they can be linked to current development patterns.

Findings and relative strength of different studies are presented both in a matrix and in narrative. The format makes this report a very effective reference document.

- Geddes, R. Metropolis Unbound (*3*).

The article looks at the change in growth pattern from New York to Los Angeles in the twentieth century. Geddes argues that it is not the growth that has hurt our cities; rather, it is the change in their form. He concludes that urban sprawl has isolated areas and has fragmented communities.

- Kunstler, J. H. *The Geography of Nowhere: The Rise and Decline of America's Man-Made Landscape* (*4*).

Kunstler examines land use patterns in the United States from more of an anthropological perspective. He begins by tracing the evolution of land use patterns from colonial times to the present. He then argues that current land use patterns and modern architectural trends degrade our quality of life and diminish our sense of community.

- Potter, S. The Transport Verses Land Use Dilemma (*5*).

This paper addresses what are described as inherent operational conflicts within urban design. The optimal design for private motorized transport would feature low density to reduce traffic intensity and random distribution of facilities to even out loading on roads. For public transit, the optimal design would include urban facilities that are located along corridors, hence concentrating demand and supporting high-frequency services. Facilities would best be located evenly along transit corridors to avoid peaks in loading. Housing density would increase toward public transport routes.

The author compares and contrasts transportation operating costs for two British towns with distinctly different urban forms. The town of Milton Keynes was designed around the operational requirements of the private vehicle, although city officials also strived to maintain a high quality public transit system. Having been designed in a dispersed manner, the public transit ridership was low; requiring substantial subsidies.

In considering the inherent transport conflicts of private and public facilities, the towns of Runcorn and Reddish were more successful. Both were designed on the following principles:

- Public transport and car flows are on separate networks, making it possible to concentrate travel flows for public transport with dispersing car traffic.
- The size of residential areas is determined by the population needed to maintain a frequent public transport system.
- Residential densities are zoned so that they increase toward public transport routes.
- Low-density uses (e.g., open space, warehousing, major roads, and parks) are zoned away from public transport so as not to increase walking distances to the routes.
- Residential areas, employment, shopping, and other major travel-generating land uses are arranged so that they provide corridors of public-transport movement conductive to high-service frequencies.
- The overall density of development is changed little, but land uses are rearranged to provide a pattern of development that is conducive to public transport operations.

Early public transportation funds supported dispersed development with the assumption that ample funds would be available to tend to public transportation issues later. Of course, transit funding sufficient to make up for auto-friendly development never materialized.

♦ Seskin, S. N. Guidance for Land Use Impacts of Transportation. (*6*).

National Cooperative Highway Research Program (NCHRP) project 8-23(3) produced a guidebook to assist planners in integrating land use concerns into transportation planning. The guidebook is divided into four sections: (1) tools and techniques, (2) a framework for understanding the land market, (3) conducting land use analysis, and (4) major lessons learned.

The tools and techniques section discusses several methodologies, including incorporating local jurisdictions' comprehensive plans, qualitative methods, allocation rules, decision rules, statistical methods, geographic information systems (GIS), regional economic models, and land use models.

The conducting land use analysis section compares land use forecasting with land use impact or policy impact analysis. One of the key differences between these methods is that land use impact or policy impact analysis requires not only estimating how travel behavior will change but how proposed policies might affect change. This summary concludes with a discussion of the major lessons learned, which are summarized below:

- think through the process of development;
- improve understanding of both the process of development and the players in the region;
- incrementally improve the land use forecasting and impact assessment process;
- develop measures of accessibility;
- recognize other factors;
- understand the potential and limitations of public policies;
- realistically evaluate local governments' approaches to public policies;
- recognize that infill and redevelopment can accommodate a significant share of growth;
- involve both technical and policy people in the process; and
- choose analytic techniques and tools that fit the situation.

♦ Soberman, R. M. Rethinking Urban Transportation: Lessons from Toronto (*7*).

Toronto has been credited for efficient transportation solutions, beginning in 1948:

- Invested in subways when almost everyone else was building expressways (1948).
- Created a metropolitan government with centralized land use and transportation decision making powers (1953).
- Obtained a public approval through referendum to earmark a portion of property taxes for rapid-transit construction (1964).
- Rehabilitated facilities to accommodate modern commuter rail service (1965).
- Altered funding and subsidy programs to favor public transit over roads (1972).
- Invested in transit as a strategic tool for leading land development (1975).

However, between 1986 and 1991, mode share for transit for the greater Toronto area had decreased 13 percent in all 24-hour trips. In assessing Toronto's transportation plan, Soberman concludes with thoughts of what has and what has not worked:

- Centralized controls on zoning during peak periods of rapid population growth encouraged high land use densities along designated transit corridors.
- Toronto's best transit decisions were taken by directly accountable agencies in response to locally determined needs.
- Planning approaches were not based on the concept of choice between transit and automobiles. Metropolitan Toronto's transportation system works because expressways were not built.
- Toronto's early successes with subway construction in obvious transit-intensive corridors led to attitudes that now preclude any serious consideration of less capital-intensive transit alternatives that may be more appropriate to emerging spatial patterns.
- Metropolitan Toronto lost about 10 years of transportation planning responding to technology-based, rather than demand-based, initiatives.
- There has never been a feasibility study that has failed to justify the need for a project. Costs are underestimated, and expected performance is overestimated.
- Cost-based subsidy policies encourage transit inefficiency in all aspects of construction, operation, and procurement, and eventually lead to unrealistic labor demands with respect to wages and work rules.
- Overemphasis on data and demand models consumes tremendous planning resources, usually with little or no positive impact on decision making and usually at the expense of the more thoughtful analysis of reasonable alternatives.
- Restricting road capacity or increasing parking costs does not always increase transit use over the long term. Some automobile users just go elsewhere.
- Increases in road capacity from street widening and new expressways could be obtained at far less cost and disruption by using existing street space more efficiently.
- Although Toronto is known as an example of the impact of transit investment on land use, expressways within and near the metropolitan area have had tremendous influence on patterns of land development as well. (*7*)

Congestion

- Aldrich, L., C. Beale, and K. Kassel. Commuting and the Economic Functions of Small Towns and Places (*8*).

This paper examines the extent to which residents of nonmetropolitan towns commute to work. Generally, commuting is tied to metropolitan areas. However, census data show that commuting between nonmetropolitan areas is becoming more widespread. This is especially true east of the Mississippi River, where nonmetropolitan communities are closer to metropolitan communities. Commuting behaviors are related to jobs, housing, and the size of the communities involved. Smaller communities (populations less than 2,500) usually have lower housing costs and few jobs. The majority of residents will commute out to larger jurisdictions for employment. The reverse is true for larger communities, which are "magnets" for commuters.

- Downs, A. The Costs of Sprawl: Alternative Forms of Growth (*9*).

Downs examines the relationship between land use planning strategies and congestion. The economic and social costs of sprawl reduce our quality of life. Several tactics for fighting sprawl are discussed. These include growth boundaries, regional coordination of local land use planning, regional tax-base sharing, and regionwide development of housing for low-income

households. Although potentially effective at addressing many of the negative impacts of sprawl, Downs argues these strategies are not effective at curbing traffic congestion.

- Gomez-Ibanez, J. A., and J. H. Meyer. *Autos, Transit and Cities* (*10*).

Chapter 8 of this work, "Land Use," includes a critical summary of transportation–land use theory and simulation models and examines intercity and intracity comparative policy studies. The authors conclude that the role of transportation in determining land use patterns has been exaggerated by some. Factors such as rising incomes and changes in production technology have contributed greatly to decentralization. Attempts to use transportation policy to shape land use patterns run the risk of being undermined by these other factors. For those cases in which transportation does affect land use, the impact is limited and usually is local. Policies designed to control development could conflict with policies that are designed to reduce fuel consumption or air pollution. Housing policies, (e.g., zoning and tax policies) may be more appropriate for alleviating the negative social or economic impacts of sprawl.

- Kelly, E. D., and D. R. Mandelker. *Growth and Public Transportation Investments: Growth Management Strategies to Reduce Transportation Costs In and Near Midwestern Urban Areas* (*11*).

This study examines the interrelationship of transportation and land use in Lincoln, Nebraska, and Des Moines, Iowa; compares six hypothetical case studies showing different patterns of decisions and different results; and lists growth management tools local governments may implement, with a legal analysis of the feasibility of these techniques as used in the Midwest. Kelly concludes with praising remarks for Lincoln and discusses how Des Moines's urban form has grown abnormally.

Over the last four decades, the population of the Des Moines metropolitan area has literally sprawled. Since 1950, the region's population has increased by 47 percent, while land area has increased by 136 percent. The density of Des Moines, which started low, has decreased considerably. In comparison with Lincoln, the urban area of Des Moines is less dense and a much higher proportion of people are living in the exurban parts of the region.

Sprawl on the west side of the Des Moines metropolitan area can be attributed to three major factors: (1) the pattern of highway development, (2) a long-range plan for regional sewage treatment adopted in 1976, (3) the city of Des Moines's annexation policies. A metropolitan service center boundary established in 1976 (under the areawide waste-water treatment management planning provisions of Section 208 of the Federal Water Pollution Control Act of 1972) extended sewer service westward, well beyond existing development. The third factor was the annexation policies of Des Moines and surrounding suburbs. Again the comparison is with Lincoln. In Nebraska, primary-class cities have the authority to annex smaller cities and villages. There is no such power in Iowa. The western suburbs of Des Moines made annexation to the west impossible. As of 1990, Clive, Grimes, Johnston, Urbandale and West Des Moines together were three-quarters the size of Des Moines and roughly one-third of the total urbanized area.

Using a hypothetical city, Kelly and Mandelker go on to illustrate how a variety of public sector decisions can influence urban form. They examine scenarios such as the lack of coordination among public-agency planners and the impact of an airport, a beltway, and a growth boundary.

The report concludes with a review of the techniques for managing growth. Techniques include zoning regulation, subdivision regulation, exactions and impact fees, annexation policies, construction of public facilities, adequate public facilities regulations, urban growth boundaries,

phased and rate of growth programs, and minimum density programs. Both the theories behind these techniques and the lessons learned in the application are discussed. Finally, each technique is presented in a table to show whether there is state or case law in each of the states (Iowa, Kansas, Missouri, and Nebraska) that support its use.

- Ross, C. L., and A. E. Dunning. *Land Use Transportation Interaction: An Examination of the 1995 NPTS Data* (*12*).

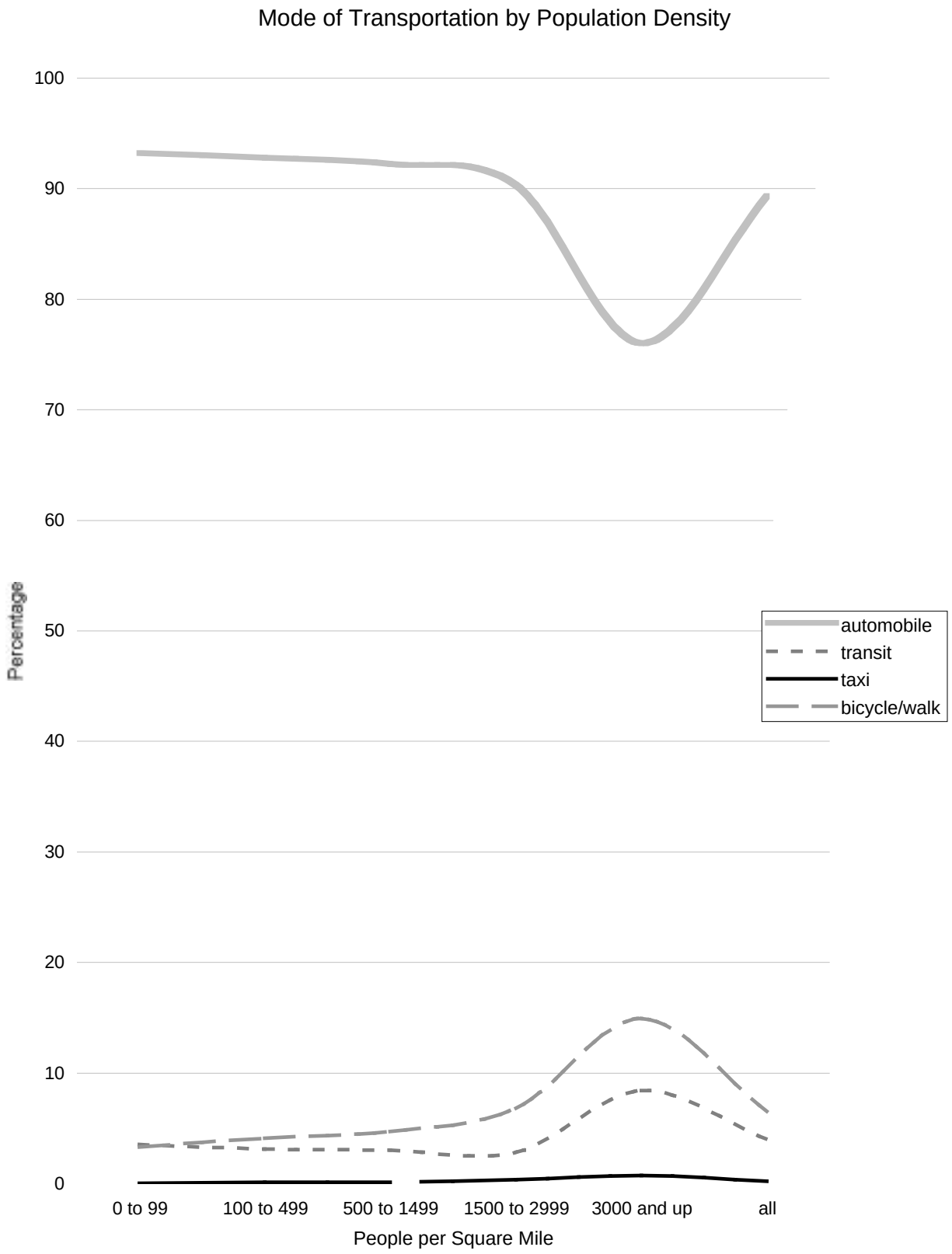
This study measures the interaction of land use and travel behavior. The data for the study were provided by the National Personal Transportation Survey (NPTS) conducted in 1995. To access the detail available in the data, population densities have been grouped into five classes: urban, second city, suburban, town, and rural. Other key variables include residential density and work-tract employment density. The scope of this study goes beyond the intent of this land use and transportation awareness program, including statistics on age, gender, race, and income.

Key questions in the analysis included the following:

- How do population density, employment, access to goods and services, and transit availability affect household travel behavior?
- What impact does urban sprawl or dispersion have on travel behavior and transportation investment costs?
- Do higher residential densities offer some chance of reducing vehicle trips and emissions?

See following page for figure.

FIGURE 1 Mode of transportation by population density.


Mode of Transportation by Population Density
100
90
80
70
60
50
40
30
20
10
0
Percentage
automobile
transit
taxi
bicycle/walk
0 to 99
100 to 499
500 to 1499
1500 to 2999
3000 and up
all
People per Square Mile

- Schimek, P. Household Motor Vehicle Ownership and Use: How Much Does Residential Density Matter? (*13*).

This report examines whether density affects the amount of household automobile travel in the United States. The study concluded a 10 percent increase in density leads to only a 0.7 percent reduction in household automobile travel. In other words, most current automobile travel would occur even if residential densities were greatly increased.

- Webster, F. V., and N. J. Paulley. An International Study on Land-Use and Transport Interaction (*14*).

This is an international study comparing various predictive models. Among the conclusions is that the greatest effect of highway improvement is upon retail employment location, density, and peripheral residential values.

Webster and Paulley subjected nine models from seven countries to rigorous tests. They examined both the performance of the models and the impact of the urban policies. Some of the more interesting findings in regard to urban policies are as follows:

- Development restrictions applied to the outskirts of a city mainly achieve their objectives of slowing down decentralization.
- Most growth management policies reduce the mean trip distance but not the travel time or travel cost.
- The policy of putting homes closer to jobs is successful in alleviating traffic congestion, but the gains are modest.
- Higher central area parking costs cause employment to move away from the center.
- Investment in road and rail infrastructure, which increase travel speeds, generally promote centralization of employment but decentralization of population.

Finally, Webster warns that "Planners should take note that if particular policies do not offer people what they want, they will seek more attractive alternatives elsewhere, even if present constraints prevent them from taking up these alternatives immediately. The non-interactive type of land-use model or the conventional transport model tends to ignore all but the first-round effects of a policy. As a result, many of the important adaptive responses of both people and firms are excluded" (*14*).

Services

- Sorenson, A. A., and J. D. Esseks. Living on the Edge: The Costs and Risks of Scatter Development (*15*).

Researchers from Northern Illinois University and American Farmland Trust found that scatter development in the Chicago suburbs is often subsidized by those living in adjoining communities. Existing communities often absorb the cost of the extension of sewer lines, police and fire services, and travel times of school buses.

Comparing the Fiscal Impact of Different Types of Development

- Swenson, D., and L. Eathington. Standard Measures of Interjurisdictional Capital Change in a Metropolitan Region: Using GIS to Isolate Sub-County Units of Economic Change (*16*).

This study shows the rapid suburbanization (particularly to the west and north) of residential and commercial activity in central Iowa. It also shows how manufacturing is moving to smaller towns 25 to 50 miles out of the central city.

TRANSPORTATION AND LAND USE ISSUES IN IOWA

Land Use Trends in Iowa

- Beaumont, T. Development Rules Aim for Balance (*17*).

There are two opposing views regarding the revision of a outdated Dallas county zoning ordinance regarding rural subdivisions: one side claims the new ordinance will stifle growth, and the other says it won't go far enough to protect the land. The goal of the revisions, according to Dallas County Planning and Development Director Murray McConnell, is to balance the somewhat conflicting goals of protecting personal property rights and protecting the county's rich farmland and scenic beauty while fostering orderly growth. The groups or players involved are environmentalists, developers, real estate agents, and new residents seeking the idyllic country life.

Numerous reasons exist for updating the ordinance:

- County planning officials adopted a rural land use plan in 1999 giving priority to natural and agricultural areas. The county land use plan will require building restrictions to make sure corn and wildlife thrive.
- A rating system for proposed rural developments, based on agricultural suitability, was adopted to guide county growth.
- A lack of road construction standards for rural subdivisions is blamed by new residents for the resulting case of narrow, steep, and unpaved roads to access their property.

The 36-year-old rural subdivision road clause requires developers to simply supply a road; the revised code would impose minimum standards for width, grade, and surface. New code additions also curtail the practice of subdividing parcels into five or 10 acre lots in favor of larger lot sizes by increasing the minimum lot size (to discourage building). The actual minimum lot size is not provided, only that it will be less than 35 acres and greater than 10. The ideas are incorporated into a draft revision that is currently before the Dallas County Planning and Zoning Commissioners for evaluation.

Jeff Logsdon, county conservation director, states the protections are adequate but overlook "the larger picture." Logsdon advocates a process to identify the ecologically and environmentally sensitive areas and preserve them from development. Realtor Kevin Sandquist of Adel called the changes "a taking of property rights." McConnell concludes with the following remarks:

> The code would help slow the disappearance of farmland and channel growth into 46,000 undeveloped rural acres. What we aren't going to be able to prevent, and what's had the greatest impact on agricultural land, is the annexation of cities; only a change in Iowa law will prevent that.

♦ Beaumont, T. Poor Roads Plague Subdivisions in Rural Dallas County (*18*).

The proliferation of rural subdivisions in Dallas county, viewed by some as the bucolic dream, has drawn significant attention to the lack of county standards for road construction. Access to these homes can be difficult because of steep grades, road surfacing (gravel), potholes, inclement weather conditions, and width of right-of-way. Dallas county is listed as Iowa's fastest growing county that struggles to adapt to growth which has outpaced its subdivision ordinance, last updated in 1986. Conflict arises from the question of who should fund repairs to the substandard roads- the homeowners, the county, or the developer. According to the county, the homeowners are responsible. Dallas County Planning and Development Director Murray McConnell states,

> People assume a lot of things when they move out to the country. They want the privacy and space of the country, but they want the same level of service they would get if they were living in town. . . . We're looking at raising the bar for development; it should take more than just hiring a surveyor, drawing the lines, mapping the property, and selling it.

Dave Elgin, developer of Timber Hills in Dallas county, claims such changes to county standards would force him and other small-scale developers out of the real estate market by increasing the costs to develop. According to Elgin, providing services is the purpose of the county and if a higher private road standard is adopted, he will work outside Dallas county. Other Iowa counties have considered higher road standards: Story and Warren counties already have stricter standards for subdivisions, and Jasper county is proposing them.

♦ Bergstrom, K. Small-Town Elements Flavor Big City Tracts (*19*).

The neotraditional approach is defined as returning to previous "small-town" design standards to increase the sense of community often lost in contemporary suburban development. The design elements are listed as traditional street grids, front porches, rear garages with alley access, reduced spacing between houses and closer proximity to the street, and mixes of commercial uses with multifamily, single family, schools, churches, pedestrian trail networks, and retail stores within a "village" unit of the larger urban whole. Benefits, in addition to community identity, are stated as a reduction of urban sprawl and traffic congestion. Somerset, a new subdivision in Ames, is the only existing example provided; proposed neotraditional developments, such as "the peninsula" in Iowa City, are described.

♦ Bergstrom, K. 'Burbs Lead [Des Moines] in Office Space (*20*).

An article discussing the difference in growth between Des Moines, Iowa, and the region. The Des Moines west and northwest suburbs now have more office space than the Des Moines downtown area. Although there is vacancy in both areas, the suburban space is being consumed more quickly. For the metropolitan area, the occupancy rate is above 93 percent. The occupancy rate in downtown Des Moines, however, is the lowest, at 79 percent.

♦ City of Ames Planning and Housing Department. *Annexation Study Phase II* (*21*).

Background of this report includes an account of events leading to the current growth direction conflict and the recognition of the need for additional research. Relevant details are as follows:

- City Council recognizes that the traditional passive approach of waiting for land to become available through voluntary annexation did not meet development demand.
- City Council discusses the need for a strategic plan to proactively annex land to meet the city's population goal (62,000 as prescribed in the Ames Land Use Policy Plan), even if it requires involuntary annexation.
- Various Ames home builders and developers express concern that insufficient land is available within the current city limits to satisfy the short-term market demands (two years) for single-family residential and multiple-family land uses.
- City Council has reviewed and approved a phase I annexation study indicating that the southwest priority growth area and the boundary adjustment area presented the least challenges to the city's provision of municipal services.
- Based on the results of the phase I annexation study, the City Council asked staff to complete an analysis of growth costs in four areas: the southwest growth priority area, the boundary adjustment area, the northern annexation area (Bloomington Road to Moose Road), and the Hallet's Quarry area (subsequently removed by City Council).
- Prior to making a final judgement on the annexation direction, the City Council seeks more detailed information on which to base its decision.

Four growth scenarios are detailed in terms of cost/benefits to the community. Definitions, methodology/assumptions, and nondirectional capital costs (defined as costs that would occur despite growth scenario choice) are listed to support the following conclusions:

- There is limited land available in the current city limits, 182 net acres to accommodate demand for a period of two to three years.
- The staff analysis verifies that the most efficient direction to expand would be into the southwest area (scenario 1), also recommended in the Ames Land Use Policy Plan (LUPP);
- The analysis verifies that simultaneous growth in both directions (to the extremes of both the north and southwest study area) is the most costly strategy by far.
- If the City Council accepts a lower density goal than that which is stated in the LUPP (the assumption is five units per acre), the per-acre costs in each scenario will remain the same, but the revenues per acre will go down, thus increasing the overall net costs to community citizens for accommodating growth.
- If southwest area B is annexed into the city, a portion of the boundary adjustment area must also grow in because of the state law prohibiting the creation of "islands."

Based on these conclusions, numerous recommendations include the obvious:

- The City Council must expand the city through voluntary annexation requests or an involuntary annexation plan.
- The best strategy is to advocate scenario 1, also prescribed in the LUPP.
- Some interim strategy must be adopted to relieve the short-term shortage of developable land—an acceptable option would be to include the Uthe property and the remainder of the Taylor farm (northern Ames) in addition to southwest A and southwest B areas (scenario 1).

- Staff's support for the Uthe property and the Taylor farm (Northern Ames) is conditionally based on the developer's provision of all infrastructure costs including, but not limited to, streets and community facilities attributable to this northern area.

♦ Erb, G., and D. DeValois. W.D.M., Johnston Pace Area Construction Boom (*22*).

Based on building permit valuations, West Des Moines (first) and Johnston (third) are the locations of the largest construction activity in the Des Moines area. The two combined for a total of 300 million dollars in residential and commercial construction; Johnston's growth was derived primarily from two major commercial projects, while West Des Moines's total was up 21 percent for the second consecutive year. Altoona (twelfth) is listed as the area of the highest rate of growth in the Des Moines metropolitan region for the fiscal year 1999; West Des Moines is Iowa's fastest growing community. Cedar Rapids (second), Coralville (seventh), Iowa City (eighth), and Ames (tenth) join the Des Moines area suburbs in the top 10 sites for construction activity in 1999. The source is listed as city officials.

♦ Finney, D. P. Small Towns, Big Changes: Dallas Juggles Growth, Rural Appeal. Dallas County Growth—First of a Three-Part Series (*23*).

♦ Petroski, W. As County Fills Up, More Drivers Get Fed Up. Dallas County Growth—Second of a Three-Part Series (*24*).

♦ Beeman, P. Goal of New Rules: Save the Good Life, Dallas Aim: Control Growth. Dallas County Growth—Third of a Three-Part Series (*25*).

Dallas county population growth is expressed in an interesting chart, which compares it to the population growth of Boone, Jasper, Madison, Marion, Polk, Story, and Warren counties from 1990 to 1998 to 2015. The population is expected to increase 36 percent from 1998 to 2015, the largest increase in Iowa, with crime and road congestion already exceeding statewide averages. Currently, there is a dichotomous relationship between the urbanized portions of southeastern Dallas county—the cities of Clive, Urbandale, Waukee, and West Des Moines—and the area westward, including Adel, the county seat, and the western portion of the county, which remains flavored with small towns and a rural atmosphere. Adel, Redfield and Perry citizens want to protect the rural character of their towns while still attracting growth, preferably at a slower rate than their southeastern counterparts. The problem seems to be how to balance rapid growth with small-town appeal.

Dallas county is the fastest growing county in Iowa. Travel on Dallas county roads is up 63 percent for the decade that ended in 1997, a dramatic increase being on the Iowa Highway 141 corridor between Granger and Woodward, where about 8,100 cars and trucks pass daily, an increase of 158 percent for the decade. U.S. Highway 6, which was closed recently for reconstruction, had traffic counts totaling 10,600 vehicles per day, up 92 percent. U.S. Highway 6 is being widened to four lanes to accommodate the increased traffic between Clive and Adel. Other area traffic improvements are the expansion of Iowa Highway 141 to four lanes between Perry and Des Moines, planned Interstate 80 interchange improvements in West Des Moines, and widening of city streets as well as new local street construction in various Dallas county towns. A western bypass route beginning near the Interstate 35, the Cumming exit, proceeding either east to Iowa Highway 141 near Grimes or northeast to the mile-long bridge near Polk City, is being evaluated in long-term plans. The four-lane expressway route would be an extension of

the relocated Iowa Highway 5 beltway under construction across the south side of the Des Moines area. Board of Supervisors Chairman Julius Little of Perry states,

> The county government's road system struggles to keep up with traffic demands. As more people move to Dallas county, rural gravel roads wear out faster and hard-paved roads require repairs . . . but tax breaks designed to spur residential development don't generate additional money for the county's road budget, so there is a shortage of money for major improvements.

An interesting chart of Dallas county traffic growth from 1987–1997 is listed in millions of vehicle miles traveled.

Dallas county's rapid growth is raising concern for the environment as open areas and farmland become converted to rural subdivisions. New development restrictions, approved by the Dallas County Board of Supervisors and taking effect in July 2000, will make it more difficult to remove cropland from production or to develop areas within the Raccoon River Valley greenbelt. These guidelines appear to be a form of minimum lot size agricultural zoning, requiring a minimum standard lot size for farmhouse construction. Typically these standards are around 40 acres. Dallas County Planning and Development Director Murray McConnell states that new Dallas county laws would force housing developers to get prime farmland rezoned unless there is more than 35 acres per house. Previously, houses could be built without rezoning if there was more than five acres per residence. This is an attempt to make new development consistent with the comprehensive plan; sensitive land in the greenbelt (e.g., "sloping and delicate" land) would also be protected.

The action also attempts to protect wildlife habitat from fragmentation along the banks of the Raccoon River. Often these natural amenities and recreational opportunities are the lure that draw urban residents to these sites. According to Jeff Logsdon, the Dallas county conservation director:

> The greenbelt should be preserved so that it is one large habitat, rather than stretches of left-over pieces no longer big enough to support the full range of animals and plants. . . . People move to the country to avoid cookie-cutter houses and to live among diverse plants and wildlife, but rural developments often end up delivering same-style houses while severing natural habitats. Some species are driven out, while skunks, deer, Canada geese, opossum, and other species dominate. Wildflowers often are killed. When you come in with a subdivision, you fragment the ecosystem, you change it dramatically.

Logsdon's sentiments are shared by others. McConnell states another popular opinion regarding redevelopment and infill before rural development:

> You can say no to development because you have other land available for that. We're looking for a balance between protecting farmland and protecting natural areas. We will still see rural subdivisions on the perimeter of the greenbelt, but out of the most sensitive areas.

Dallas county developer William Knapp says developers and homebuyers can live with the new rules. In fact, he considers them a good way to make sure local governments' ability to

provide services keeps pace with building. He states, “We can’t just keep passing land up and jump out a mile or two and bring the police, fire, and water service out farther.”

Dallas county is expected to have 50,200 residents by the year 2015, an increase of 36 percent over the 1998 population. McConnell said much of the growth should be within the cities’ present limits, on land that isn’t environmentally sensitive. He is dismayed when suburbs such as Urbandale, reacting to land wars aided by easy annexation laws, grab parcels of Dallas county before developing the land they already have.

- Hupp, S. Ames Schools Bid for ISU Land (*26*).

Iowa State University (ISU) staff are considering an offer from Ames school officials for the purchase of 115 acres of ISU land in southwest Ames for a proposed 28 million dollar middle school. Although the site is not ideal, the parcel is located adjacent to the existing Ames Middle School near State Avenue in west Ames. ISU officials are awaiting the results of an appraiser to determine whether the price is sufficient, a figure neither side will disclose. Voters will determine how to fund the proposed school expansions, a new middle school, and 14 million dollars in renovation to the Ames High School, with their response to a February 15, 2000, Story county vote on whether to increase the sales tax to pay for school infrastructure.

- Hupp, S. Ames Waits for Growth Direction (*27*).

After much conjecture last year concerning which direction the city should grow, and the completion of a six-month study into the matter, the final decision has yet to be made. City planners posted four development options derived from the study on the city’s website on January 31, 2000 and shared the report with the City Council on February 1, 2000. Each development option would annex 12,000 people; the difference is the geographic location, north or southwest. Planners recommend an 80 million dollar plan that would annex more than 1,000 acres in southwest Ames and 232 acres on the north side. Developers have yet to respond.

- Hupp, S. Ames City Planners Ready to Release Report (*28*).

Ames’s growth, as proposed by city planners, will be to the southwest; planners will present their report to the City Council during a meeting on Tuesday, February 1, 2000. The recommendations are based on cost efficiency for development. City Manager Steve Schainker, in favor of the southwest annexation, states that annexation of properties both north and southwest is a possibility. The city of Ames’s website provides further details on the report (*21*).

- Kuhns, M. Ames City Council Rejects Expansion Survey Proposal (*29*).

The Ames City Council, at its October 12, 1999, meeting, rejected plans for a survey of land owners in proposed growth areas to determine purchasing opportunity potential because of doubts of the validity of such results—decisions to sell land are highly volatile. These growth areas are located southwest and north of the city. Council Member John Parks said the city’s land use policy called for development north of the city only if “unforeseeable constraints” were found to developing the southwest growth area. Problems such as uncertainty about the availability of university-owned land in the southwest area qualified as such constraints. Contractors spoke of the severe shortage of lots in Ames, which could put them out of business if annexation plans are not completed; they proposed northern annexation to facilitate speedy development. Parks stated there are fewer separate properties to the north and therefore would be easier to annex.

- Lee, J. D. Dispute in Ames: Where to Grow (*30*).

Ames is growing faster than current space allocations can accommodate. A report is being prepared that outlines the costs and benefits of two proposals—growth to the southwest and growth to the north—and should be finished by early November 1999. The conflict arises between the two alternatives: growth to the southwest, which is claimed to be more financially feasible by planners, or growth to the north, which is advocated by developers that already own or have options on the northern property in question. The City Council is split on the issue. 10,000 new residents are expected to join the Ames community by 2030, an area already experiencing growth pressure. The Northridge Subdivision (northern edge of Ames) is nearing completion—five years ahead of schedule. One council member and ISU professor, Herman Quirmbach, believes ISU, as a landowner in the proposed southwest growth area, should help solve the space problem since its activities draws people to the community; ISU is considering selling a parcel according to Cathy Brown, ISU campus planner.

- Lewis, R. City Seeks Land for New West Ames Water Tower (*31*).

Community leaders are searching for land, at least five acres along the Boone-Story county-line road north of U.S. 30, to locate a one million gallon water tower to supply southwest and western portions of Ames with drinking water and increase water pressure in the area. This tower will also serve the southwest growth corridor. Sixty-five thousand dollars has been allocated to purchase land. The project total is expected to cost 10 million dollars and be funded through water utility revenues. Existing towers on North Dakota Avenue (one million gallons) and Bloomington Road (two million gallons) currently supply the city's needs. The project's anticipated online date is 2002. The North Dakota Avenue tower supply is currently being considered for redirection to east Ames.

- Lewis, R. Growth Plan Endorses North, SW (*32*).

The widely anticipated study of Ames's growth alternatives, to determine where to accommodate the expected 2030 population of 62,000, was released on January 28, 2000. The 48-page analysis, titled *Annexation Study Phase II* (*21*), outlines the cost comparisons of four growth scenarios involving land to the north and southwest of Ames. The decision-making process has created dispute between factions representing the two formerly mutually exclusive directions, north and south. City leaders will recommend an 80 million dollar plan that incorporates land in both directions, with primary growth to the southwest, as a sort of compromise. This scenario includes the annexation of 232.67 acres comprising the Taylor and Uthe farms north of Ames (owned by Hunziker and Friedrich Realty), the annexation of 385.54 acres in the southwest growth area A, and the annexation of 592.24 acres in southwest growth area B.

Dean Hunziker, local developer, states adding the northern properties was "a smart move" although he was "a little surprised" the study did not recommend further northerly growth. The compromise of adding the northern properties represents an additional 9.5 percent to the cost of growth over that strictly to the southwest. As of October 1999, developers owned approximately 20 acres in the southwest. The offer is contingent upon the developers' funding of "total costs for all infrastructure, street improvements and community facilities" to expand into the Taylor and Uthe properties. City leaders also want developers to relinquish at least 40 percent of the lots or land to homebuilders not affiliated with their companies on the two northern properties. City Manager Steve Schainker said this would "open the market" and guarantee less pressure to expand further north. Hunziker responds with, "It sounds like they [city officials] want to get in the development business."

- Lewis, R. Ames Looks to North, Southwest. Growing Pains: Part One in a Five-Part Series—Where to Build and Why, Conflicting Views in an Expanding City (*33*).

The city of Ames struggles with planning issues in determining where annexation and future growth should occur to meet anticipated need for the next 30 years. Six years ago, the city council commenced efforts to compile a land use policy plan to promote sound decision making; currently, it awaits the results of an annexation study due from a consultant near the end of October 1999. There seems to be consensus among land owners, developers, planners, educators, residents, and officials from the city and Iowa State University that the city should and must grow; the problem is deciding where, when, and how much. Conflict stems from competing viewpoints regarding which growth area is more suitable, the northern or southwestern area, when the city should annex land, and how many residents should live on each acre of newly acquired land.

Economic issues exacerbate the problem. In the last five years, Ames's growth has consumed 212.2 acres per year on average, with residential development accounting for 36 percent of that annual increase. The result is an exhaustion of developable land within the city's boundaries. Local developers claim the existing residential stock is two years from being tapped out and already is inflating housing prices and driving potential new residents to outlying communities. Questions arise concerning the amount of actual developable land that can be annexed to the south and the lack of sufficient transportation infrastructure to the north. In both cases, potential resident children will attend schools outside the Ames Community School District; children in the southwest area would reside mainly in United Community School District while children in the northern area would reside in Gilbert Community School District. Developers already own land to the north of Ames.

The truth of the matter is that when a city annexes land, all residents bear the cost burden. While the developer may pay to install roads, sidewalks, water lines, sewer lines, and other municipal services, residents, either with higher property taxes or through increased fees, pay for all the upkeep; this potentially includes a new fire station and adequate public safety employees to patrol the new area. The urban core subsidizes fringe development. The city has committed to a requirement that all new residential development occur at a minimum of 3.75 units per acre, which offends some.

- Lewis, R. City Weighs Attitudes, Costs, Traffic. Growing Pains: Part Two in a Five-Part Series—Where to Build and Why, Conflicting Views in an Expanding City (*34*).

The current residents southwest of Ames, a potential annexation area, enjoy their rural existence; many do not favor the urban changes, beginning with the construction of a new interchange at South Dakota Avenue and U.S. 30 slated to start in spring 2000. Two factions have arisen representing the two Ames growth areas, resulting in a north versus southwest conflict. Some of the city's leading developers with vested land interests, the mayor, and some City Council members favor the north; city planners and some City Council members favor the southwest. The pronorth faction argues there is more available land to the north (developers already own much of it) and that it is the area where people have been choosing to live; the pro-southwest faction argues the city should not abandon its six-year effort at a rational land use policy plan, which favors the southwest primarily for more cost efficient, manageable growth.

There remains a question as to how much of the southwest area is available for development, now and in the future, because of Iowa State University's ownership of 761 acres, 45 percent of the 1,692 acres the city wants to annex. Rural property owners in the area are literally stuck in

the middle of the debate, and many do not wish to sell. The university states it will consider selling 202.5 acres of the total according to Warren Madden, ISU's vice president of business and finance; however, this potential sale would probably be made to the Ames Community School District, which seeks to build a new high school in the next few years. City officials say it's fruitless to ask people now about potential land sales since decision making can be volatile and could change if the price is right. The major difference between the two areas seems to lie in transportation infrastructure, the southwest being more acceptable from an economic perspective.

- Lewis, R. Annexation: Ames Schools Could Lose Out. Growing Pains: Part Three in a Five-Part Series—Where to Build and Why, Conflicting Views in an Expanding City (*35*).

The annexation decision has great impact on area school systems, the direction of growth determining the affected school district: the Gilbert Community School District, which has been steadily increasing, the Ames Community School District, which has been declining, or the United Community School District, a small, slowly growing K–6 system that sends its older students primarily to Boone Schools. The change could affect the Ames Community School District: the southwest annexation area contains 712 acres or roughly half the total acres within the Ames Community School District boundary; the balance of the 1,692 total or 980 acres are contained in the United Community School District. Annexation to the north would only impact the Gilbert Community School District, which already serves 100 students that reside in Ames. In any case, extra students equate to more state and local money for school programs, personnel, and other expenses. A map of area school district boundaries and a table of enrollment trends is provided. Trends also affecting enrollment are listed, including a decline in the statewide birthrate, an increase in country living outside the Ames district, and a lack of space in the Ames middle and high schools, which bar the implementation of open enrollment.

- Lewis, R. City Wants ISU Land, but ISU Is Slow to Sell. Growing Pains: Part Four in a Five-Part Series—Where to Build and Why, Conflicting Views in an Expanding City (*36*).

Iowa State University statistics are provided: ISU owns the most land in Ames, 1,788 acres; ISU owns the most land outside Ames but within a 15-minute drive, 6,884.3 acres in 11 land clusters; ISU employs 11,000 people, or 44 percent of the 25,000-person workforce in 1993; ISU enrolled 24,431 students in 1995, half the city's 48, 691 population total. These facts dictate that ISU influences the issue because of its status as a landowner, employer; and service provider; however, the university is not interested in actively participating in the city growth debate. A table displays information on how much land ISU owns in and adjacent to the southwest growth area; a map accompanies these data.

Earlier figures prepared by consultants in an annexation report prepared in March 1999 erroneously reported that the university owned 761 acres in the southwest growth area; the actual figure is 200 acres. This development potentially weakens the argument for the northern annexation since ISU does not represent as limiting a factor for southwestern expansion as was earlier reported (it had been reported that ISU owned 45 percent of the total). In dispute is 90 acres (of the 200) that local officials claim ISU agreed to sell; ISU denies that claim and states it would give priority to the Ames Community School District for sale of those parcels. Warren Madden, ISU's vice president of business and finance, states that many believe ISU should be the solution to the Ames land use problem; that's not the case. ISU is not interested in debating

the growth problem; it only desires that adequate transportation planning be done to ensure student access to campus.

ISU student enrollment projections are provided to the year 2008; ISU will continue to affect land use because of the scale of its operation. The ISU Research Park is a rapidly expanding area predicted to add at least 1000 new jobs over the next decade to the existing employment there of 1,068.

- Lewis, R. Annexation Debate Divides City Council. Growing Pains: Part Five in a Five-Part Series—Where to Build and Why, Conflicting Views in an Expanding City (*37*).

.After six years of studying land use and land needs, the Ames City Council is approaching a landmark annexation decision. According to Councilwoman Ann Campbell, this is the most important decision the council has faced in her 14-year term as Councilwoman. The pressure of the decision and the differences of opinion on both the issue and the methodology have complicated communication between council members. The impacts of the decision on where, when, and how the city should grow for the next 30 years will affect all involved in and near the Ames community; the fact that there is no perfect growth solution further complicates the process. There will be winners and losers regardless of what happens. Vital questions are who will pay to support the required infrastructure improvements, how much, and what is the best solution from an economic perspective?

Economic Impact of Transportation Investment Decisions

Major Corridor Investments

- Sears, D. W., T. D. Rowley, and J. N. Reid. Infrastructure Investment and Economic Development: An Overview (*38*).

"Infrastructure investment as an economic development strategy rests on the assumption that, without such investment, a shortage or bottleneck will prevent, or at least restrain, development" (*38*). Infrastructure investment might stimulate economic development in four ways:

1. Providing a new facility or upgrading the quality and quantity of local infrastructure may enable local firms to expand existing activities. For example, the construction of a four lane highway from a community to a nearby interstate highway will reduce the travel time to the nearest metro area. In theory, this improvement will allow business to be transacted more efficiently and more reliably than before and will bolster the local economy. Studies are cited to support this theory.
2. Construction jobs are created as infrastructure is built or rehabilitated. While stimulating temporary growth, the temporary jobs do very little for the long-term capacity of the economy and thus do not meet the authors' definition of economic development.
3. Improving health, safety, and convenience of a community enhances the quality of life, making the community a more attractive place to live and work.
4. Major infrastructure investment can be good for local morale and encourage other investments. For example, a new airport or convention center might stimulate optimism and further investments that otherwise would not occur.

Infrastructure investment for economic development can be broken into three categories: (1) necessary and sufficient, (2) necessary but not sufficient, and (3) not necessary.

The authors contend that there are few, if any, clear-cut real-world cases in which infrastructure investment is necessary and sufficient. No single infrastructure investment can guarantee economic development. Situations in which infrastructure investment is necessary but not sufficient can be found on occasion and situations in which infrastructure investment is not necessary are frequent. Infrastructure in most of rural America is very good. There are few places where the infrastructure deficiencies are such that they restrain economic development.

It should be noted that although there is often no good economic development rationale for such investment, health, safety, or convenience concerns could easily warrant the investment. In other words, economic development has never been the only rationale for infrastructure investment.

Location of investment within a region is critical. The growth pole theory holds that, to most efficiently promote economic development in a region, resources should be concentrated at one or a few carefully selected locations—called "growth poles"—rather than spread evenly or randomly across a region. If this theory is accurate, state infrastructure investment decisions will not substantially affect the economic development routes. From a local officials' perspective, however, the question is always whether or not investment is made in their community.

In looking at the different types of infrastructure investments, the effect of the whole may be greater than the sum of its parts. That is to say, simultaneous investment in various infrastructure—for example, sewer, water, and transportation—would very likely stimulate more economic activity than any of the three separately.

- Forkenbrock, D. J., T. F. Pogue, D. J. Finnegan, and S. J. Foster. Transportation Investment to Promote Economic Development. (*39*).

When determining the net economic effect of a highway enhancement, one must factor in the reduction in benefits elsewhere. "For example, upgrading an existing highway to four lanes may lead some businesses to locate along the upgraded highway. The project does not necessarily increase overall business activity if the business could have located at an equivalent site or an existing four-lane road" (*39*). It is a loss for the region if the development costs exceed the net regional benefits.

A study of the impact of highway construction in Minnesota found that there was a short-term gain in employment, which most likely could be attributed to construction jobs. However, over a ten-year period, the rural counties, with their new or enhanced highways, still lost employment.

Separate studies by Isserman et al. and by Briggs have assessed the effect of highway investment in rural communities by comparing those communities that have been benefactors of major highway investments with similar communities that have not. The studies all conclude to some degree that highways are not a determining factor in economic development success and may be less of a contributing factor that some might imagine.

One of the difficulties in these studies is determining causation, that is, determining whether a community's economic growth leads to infrastructure improvements or whether the infrastructure improvement spurs economic growth.

- Briggs, R. Interstate Highway System Development in Nonmetropolitan Areas (*40*).

Briggs used Federal Highway Administration (FHWA) and Census Bureau data to analyze the effect of the interstate highway system on net migration and employment patterns in nonmetropolitan counties to determine the degree to which the interstate system influences economic performance relative to other factors. Although counties with freeways have higher

average growth rates, among the other factors considered—for example, urbanization, industrial base, social base, government activities, and environmental amenities—the presence of an interstate system is the least able to explain variation in county migration rates. Briggs concludes that, "The policy planning implication is that the presence of interstate is no guarantee of community development, and neither is its absence a precursor of community demise as might have been the case in an earlier era with the railroad" (*40*).

Rural Bypasses

- Otto, D., and C. Anderson. *The Economic Impact of Rural Highway Bypasses: Iowa and Minnesota Case Studies* (*41*).

This study looks at 21 nonmetropolitan cities that have received highway bypasses since the late 1970s. Ten of the communities are in Minnesota, and 11 are in Iowa. For purposes of comparison, each bypass city was matched with three nonbypass cities with similar populations, traffic volumes, and distance from metropolitan areas.

The study compares per capita total sales for businesses in the bypass cities with those of the "control cities" to assess the economic impact of the bypass. Although bypasses cities appeared to lose ground in automobile sales, eating and drinking establishments, general services, wholesaling and miscellaneous sales, they actually outperformed their control group counterparts in apparel and general merchandise sales. Both overall and by category, the difference in sales existed, but the differences were not statistically significant.

The research team also surveyed 1,438 merchants in the 11 bypassed communities in Iowa. They had a 36 percent return rate. Survey findings indicated that the overall majority of business owners agreed that traffic volume and noise had decreased since the bypass was constructed. Among the findings, 53 percent of respondents felt that the bypass had no significant impact on business.

- Burress, D. *Impacts of Highway Bypasses on Kansas Towns* (*42*).

Burress concludes that in the long term, bypasses in Kansas typically have not had significant negative effects on local economies. Regression analysis, using taxable sales data by county, showed that bypasses have ". . . no discernable effect in either direction" (*42*).

Consistent with the findings of Otto and Anderson (*41*) and as one would expect, existing traveler service businesses such as restaurants, motels, and service stations are most likely to experience loss of business. Burress points out that retail business within a region is a zero-sum game. That is, business lost in one location will be gained in another. The volume of business is determined more by macroeconomic trends than it is by traffic patterns throughout the region. Therefore, the loss of traveler service businesses may be offset by new traveler service businesses locating near the bypass. The impact on industry would also be expected to be negligible as relocation of basic industry is based on a variety of factors.

Benefits in terms of time savings for through traffic was conservatively estimated at one million dollars per year per bypass. (1994 dollars). Although the addition of a bypass may be beneficial overall, there remains a question of fairness. "If the benefits of the project are widely dispersed, while the costs are disproportionately borne by a particular group, then policy makers may perceive the project as unfair, and may be unwilling to proceed even when dollar values of benefits outweigh the costs" (*42*).

Urban Beltways

- Payne-Maxie Consultants, Blayney-Dyett. *Land Use and Urban Development Impacts of Beltways* (*43*).

This study was jointly commissioned by the U.S. Department of Transportation and the U.S. Department of Housing and Urban Development. The study includes a comparative analysis of 54 metropolitan areas, 27 with beltways and 27 without. The objective was to ascertain whether there are any significant differences in population or employment growth, retail activity, commuting patterns, or household patterns. Policy implications were emphasized so that results would provide a better understanding of the urban impacts of belt highways and the ways in which the benefits can be maximized and potential adverse effects eliminated or at least minimized.

The impact analysis of a beltway cannot be separated from the larger question of the impact of transportation policy on land use patterns, particularly on sprawl. Conclusions or arguments ranged from

1. transportation strongly affects land use and, therefore, should be used to further social objectives, to
2. lower density development are the result of increases in income and a consumer preference for additional space.

Both arguments are, most likely, partially correct.

Beltways came under increasing scrutiny in the late 1970s. Proponents of beltways were being asked to demonstrate consistency with national urban and transportation policies. The President's 1978 National Urban Policy Report presented the core ingredients of a national urban policy. The report called for greater coordination among agencies and for federal infrastructure programs to take urban policy objectives into account.

The report lists several studies from 1958 to 1978 that examine the impact of beltways. Although all research reports conclude that radials and beltways affect urban land use, there is no consensus as to the degree to which this is true. Of the studies that examined effects on travel decisions, most concluded that beltways encourage more travel between suburban communities. The majority of businesses locating along beltways indicated that the beltway was a locational factor; workers, however, did not consider a firm's location near a beltway as a deciding factor in taking the job. For relocating households, many indicated that the beltway, by decreasing travel time, allowed them to live farther from work. There was no clear consensus on the impact of a beltway on commercial activity. In terms of housing patterns, one study concluded that the beltway attracted medium- and high-density apartments that would benefit from the visibility, although increased land prices and noise and air pollution made the land closest to a beltway less attractive for single-family homes. One study concluded that the beltway, in comparison with further development of radial routes, led to more compact housing patterns and less leap-frog development.

Finally, upon review of the relevant studies, the authors conclude that

> Transportation improvements in a region do not have the economic effects today that they once did. A new highway, whether radial or beltway, only has a marginal effect on overall mobility and travel decisions and, therefore, can be

> expected to have only marginal effects on regional growth and development. Studies of impacts of highways on depressed or static economies generally have shown smaller effect than were anticipated. . . . Most analyses, however, continue to assume that highways do not affect the overall economic growth rate, but rather the distribution of employment within a metropolitan region. (*43*)

The statistical analysis comparing like cities with and without beltways suggest that although beltways have some influence on development patterns, the impacts are neither particularly large nor long term. Cities with beltways experienced more movement of manufacturing and wholesale employment out of the central business district and an increase in wholesale employment. Beltways did not seem to have an impact on the growth of retail-sales or overall employment.

The report also includes a case study concentrating on the history and impact of beltways in eight metropolitan areas. The majority of the bypasses were designed and planned in the 1950s. Most beltways were designed as bypass routes to accommodate through traffic and to alleviate congestion in the city center. There seems to have been little coordination between the planners and land use planners of the affected jurisdictions. Nor was there much evidence of coordination between development of the beltways and transit plans. The lack of effective planning and the large number of interchanges resulted in high volumes of local traffic. Many beltways had to increase capacity much earlier than anticipated.

With growth, planners began to realize the need for urban service areas. The beltways seemed a logical external border for service areas. By the time the beltways were completed, however, suburban development had already surpassed these borders.

GROWTH MANAGEMENT STRATEGIES

The Sierra Club defines *urban sprawl* as

> . . . low-density development beyond the edge of service and employment, which separates where people live from where they shop, work, recreate, and educate—thus requiring cars to move between zones. (*44*)

The Smart Growth Network Organization defines *smart growth* as

> [The exploration of] issues and [identification of] opportunities to improve growth patterns and economic opportunity. . . . Smart growth takes advantage of these locational decisions and site designs to minimize development's impact on the environment. . . . [It is the manner that] communities preserve their sense of place and their quality of life, particularly in the face of growing development pressure . . . [also considering] the fiscal impacts of land use, growth, and development in the U.S. (*45*)

The Chesapeake Bay Foundation defines the *principles of growth management* to be

> (1) Channel development into "growth areas"—compact, mixed-use patterns in and adjacent to existing cities and towns. (2) Create "growth boundaries" to keep sprawl out of open lands where farming, forestry and recreational activities should

> prevail. (3) Maintain existing highways, improve local roads, and use transit to connect and organize land uses in growth areas. (4) Revitalize existing towns and cities. (*46*)

The State of Colorado defines *integrated planning* as

> Integrated planning involves being aware of how land use, transportation, and environmental decisions affect each other. The principles of integrated planning apply to the state, regional, county, or municipal level. Integrated planning requires decision makers to recognize and consider relationships between land use, transportation, and environmental policies. . . . Integrated planning results in more livable communities and development patterns that are environmentally sustainable. (*47*)

♦ Uneven Development: Outer Suburbs and Exurbs (*48*).

This report provides an even-handed review of the cause and impact of prevalent land development patterns. It provides a review of the most recent studies of the phenomenon known as urban sprawl, considering both the costs and benefits and the degree to which sprawl is subsidized, particularly by the federal government.

In comparing cities in the United States to cities in other advanced industrialized nations, we find that, with the exception of New York City, residential densities in the United States are less than 20 persons per hectare. European and Asian cities average greater than 50 and 150 people per hectare, respectively. Land use patterns in the Chicago metropolitan area are indicative of recent trends. Between 1970 and 1990, land for housing increased by 46 percent while population increased by only 4 percent.

This study points to a number of factors that contribute to sprawl development. They include the following:

- Historically, Americans have shown preference for the suburban or exurban lifestyle. A great majority of Americans say they would prefer to live in low-density, single-family housing given the choice, often 30 miles from the center city.
- Improvements in technology and an excellent transportation network have made it possible to extend urban amenities farther out.
- The condition of the center city (higher crime rates, poor public schools, crumbling infrastructure) and the aversion of the white middle class to ethnic and racial diversity (white flight) have contributed.
- Government policy has also played a role. “A myriad of government policies, including tax policies, depreciation allowances, building regulations, and implicit subsidies . . . discourage effort to reuse older urban and suburban land and infrastructure” (*48*). Although these policies most certainly affect land use choices and current trends, quantifying the impact of government policies is difficult.

Benefits of sprawl include the following:

- After reaching a certain size, a polycentric metropolitan area is more efficient as it allows for clustering of land uses.

- The automobile, the primary mode of transportation affiliated with suburban land use patterns, has inherent benefits including low door-to-door travel time, freight carrying capacity, and flexible scheduling.
- Development costs in more sparsely populated areas are less than in more densely populated center cities. Also, new development on the fringe is less disruptive to existing businesses than is redevelopment of city centers.

The question of subsidy is discussed. It is estimated that in 1995 the deductions of mortgage loan interest, capital gains tax deferment, and property tax payments amounted to 83.2 billion dollars. Homeowners receive more subsidy than do renters, and high-income owners receive more than low and moderate income owners. This encourages low-density development. Not only does it encourage home ownership, but because of capitol gains laws, it encourages buyers to move on to more expensive (typically larger) houses.

Businesses often receive direct subsidies to entice them to locate in a city or state. However, as bidding wars between locales increase, the subsidies offered often increase to the point where the costs far outweigh the potential positive fiscal impact.

Additional points are worth noting. A New Jersey state study estimated that planned growth would save the state 90 million dollars a year in road costs over the 20-year study period. Utility companies although privately held are also obliged to subsidize fringe development. One state's public utilities commission dictates that all customers pay the same rate for local services. If one were to "de-average" the payments, urban costs per line would drop by 3.80 dollars per month and rural customers would see an increase of 19.03 dollars per month.

♦ *Managing Colorado's Future: A Guidebook for Integrating Land Use, Transportation and Air Quality Planning* (*47*).

This guidebook presents an introduction to comprehensive planning, its resulting benefits, and application to Colorado communities. It is written for a wide audience, including elected officials, policy makers, citizens, professional planners, and public administrators. It describes the principles of integrated planning, provides a community questionnaire, and discusses how some Colorado communities have responded to various challenges. It provides model documents and a resource directory to assist others in establishing a comprehensive plan through the integration of land use, transportation, and air quality planning.

♦ Gurwitt, R. The Quest for Common Ground (*49*).

Although the overall population of the Cleveland area has declined since 1970, each of the four counties that border Cleveland have grown by 50 percent. Communities that were once on the fringe are now enclosed and are feeling the same pressures of decline as the downtown area. To change the political game, the First Suburbs Consortium was created to rewrite some of the rules.

♦ Kelly, E. D. *Managing Community Growth: Policies, Techniques and Impacts* (*50*).

Kelly discusses the philosophy, operation, and effects of six types of growth management policies that are used today. These include adequate public facilities requirements, growth phasing programs, urban growth boundaries and rate-of-growth programs, comprehensive programs, and the role of exactions.

Adequate public facilities programs are generally included in subdivision regulations. The programs are designed to address the larger community issues and are based on a series of questions. For example,

- Can the street outside the development, or the street or highway into which it in turn connects, absorb more traffic?
- Do the central sewer and water treatment plants have enough additional capacity to serve the development.
- Can the schools hold additional students?
- Will there be adequate fire protection?

It has been argued that to gain the benefits that accompany economic growth, the public is willing to accept the increased congestion, the fire department can handle an additional mile of development, and the schools can always fit in another row of desks. Because practical limitations do exist (a fire department would not be able to provide protection for an additional hundred square miles of development without some organizational restructuring), Kelly suggests that limits be set in a community's land use planning process.

The six types of growth management policies that are used today are as follows:

1. Adequate public facilities. Many communities approve developments that can be accommodated by existing or planned public facilities. By maintaining agreed limits, development projects succeed or fail early in the process, prior to major investments.

2. The growth phasing program. The growth phasing program regulates the location and timing of new development based on both current and planned public facilities. In theory, it is similar to the adequate public facilities program discussed above; however, in practice, the two differ tremendously.

   Why implement a growth phasing program versus an adequate public facilities program? Growth phasing programs are user friendly to the public and developers. It is easy to determine which areas in the community will permit 1,000 residential units, 100 residential units, or no units at all. In addition, growth phasing programs protect public facility service levels and control the communities growth rate. An adequate public facilities program does not address the latter, and the growth phasing program also retains the benefits of the adequate public facilities programs.

   These two programs essentially have two different purposes. Growth phasing programs are designed to prevent sprawl or the changing of the form of the community. The timing and patterns of growth are more predictable than with an adequate public facilities program.

3. The urban growth boundary. Urban growth boundary is a visionary line around a community that designates the limits of further growth. It is similar to a growth phasing program, but more rigid. Generally, those that are the most strict are established by state governments. However, they only address the long-range boundaries of growth (and are

complicated by 20-year projections); they do not address the issues relating to adequate public facilities or congestion.

4. Rate-of-growth programs. Rate-of-growth programs are different from the adequate facilities program and the growth phasing program. Although these two programs may translate to a permissible growth rate for a given year, they do not control the rate of growth. Kelly provides two examples of adopting a rate-of-growth program. However, more important of their function and operation, both of these programs have been challenged in the courts. Petaluma, California's program allowed for 500 new housing units per year. These were divided between the two sides of town and the type of unit (single family/multifamily). During the period of Petaluma's rapid growth between 1980 and 1990, the policy allowed for 5,000 new units; however, only 4,006 were built. When the homebuilders sued the town, the courts ruled that Petaluma was "purposefully" limiting its water supply. Kelly disagreed with the courts decision. He found that although the town addressed adequate public facilities in its defense, the city did not use it to establish its rate of growth.

5. Comprehensive planning. Comprehensive planning programs are designed to manage the changes in communities. They require serious commitments of communities. They differ from the programs discussed above in that they are not single regulatory tools but a more comprehensive set of policies. Community policies can be set to cover land use, economic development, housing, transportation, community facilities, natural resources, and social and fiscal goals. Comprehensive programs are not as common as the programs discussed above.

6. Exactions. Exactions are not used so much to manage growth, but to decrease the fiscal impact of additional development on taxpayers. Developers are usually required to pay for improvements within a given subdivision. Exactions go beyond the costs of development and require developers to pay for the improvements needed near the new development. Improvements may include improvements to access roads, the sewer system, and drainage and the addition of signals to affected intersections. The benefits of extractions overlap with the benefits of the programs discussed above. However, they have their own effects on urban form, the availability of public facilities, and the financial position of the community. The use of exactions (impact fees) is more common than growth management programs. Those that have adopted both types of policy generally administer them separately.

♦ Ehrenhalt, A. The Czar of Gridlock (*51*).

The U.S. Environmental Protection Agency (EPA) has categorized the city of Atlanta as a serious violator of the 1990 Clean Air Act. As long as Atlanta is deemed to be out of compliance, it will not be eligible for federal highway funds. In response, the Georgia state legislature has formed the Georgia Regional Transportation Authority (GRTA). Headed by the governor, the GRTA has been given unprecedented decision-making authority. "GRTA can tell the state transportation department not to build a highway. It can tell a county not to allow a new shopping mall inside its borders. If it wants to it can build and operate a mass transit system in any jurisdictions surrounding Atlanta" (*51*).

Ostensibly, the EPA's edict led to the creation of such an omnipotent regional agency. In reality, it is the agreement among jurisdictions, businesses, and citizens in the Atlanta metropolitan area that the increasing traffic congestion is the regional economy's single largest liability. The median commuting time in Atlanta is now 31 minutes and is projected to reach 45 minutes within the next two decades. Corporations are opting not to relocate or expand in the Atlanta metropolitan area precisely because of concerns over gridlock.

The Chamber of Commerce and even some of the larger suburban developers have joined in the effort to combat sprawl. The Georgia Department of Transportation has gone along partially because of the fact that the law creating the GRTA also provides them with greater bonding authority.

- Langdon, P. In Search of a Center (*52*).

Towns were traditionally developed along railways, with depots the focal point of downtown development. This article discusses how newer suburbs established without a downtown are trying to create them. Key discussion is on Schaumburg, Illinois. Incorporated 42 years ago, Schaumburg now has a residential population of 75,000 and employs 80,000. The new city center in Schaumburg is anchored by a supermarket and the public library (which claims the sixth highest circulation of any public library in the United States).

- Lindquist, E. Moving Toward Sustainability: Transforming a Comprehensive Land Use and Transportation Plan (*53*).

The purpose of this paper is to outline the steps for transforming a traditional community plan into one that incorporates sustainable development. Using, as an example, the comprehensive plan of College Town, Texas, Lindquist defines the elements of a traditional community plan. He compares this plan with those incorporating sustainable development for four areas—(1) transportation, (2) land use, (3) environmental factors, and (4) economic development—and presents a general model to use to include sustainable development objectives and measures in a traditional plan.

- Perlman, E. Downtown: The Live-in Solution (*54*).

This paper discusses the move of residential populations to the city centers. It has been known for years that city centers need a residential population in order to thrive. Memphis has been successful in renovating old hotels and warehouses into stocked apartments through rehabilitation tax credits. The market includes both apartment and single residential units and is proving to be favorable among young singles, families, and those in retirement. The article also discusses what has worked in Baltimore, Denver, Philadelphia, and Tulsa.

Role of the Federal Government

- *Community Development: Extent of Federal Influence on Urban Sprawl Is Unclear* (*55*).

In this report, the General Accounting Office (GAO) evaluates the impacts of federal policies on metropolitan growth. The objectives are twofold: (1) to examine the various terms used in discussing metropolitan growth patterns, including their definitions, and (2) to identify federal policies and programs that may impact urban growth. Federal policies and programs examined for influence on urban sprawl include agriculture, environmental protection, housing, location of federal postal properties and facilities, taxation, transportation, utility pricing, and federal grant and loan programs for water and sewer infrastructure. Positive effects of urban sprawl are stated

as the increase of home ownership and the new, sometimes lower cost locations for businesses. The negative effects discussed include higher infrastructure costs in low-density areas, increased traffic congestion, reduced green space, and the diversion of economic resources from and the growth of poverty in central cities.

The stated ways in which the federal government influences "sprawl" are numerous. Federal investment in water and sewer systems has been suggested to increase growth in outer areas because such investment facilitates development. Little quantitative research was found to support this claim. Tax code provisions that subsidize homeowners through mortgage interest and property tax deductions have been believed to provide incentives for the purchase of more expensive housing, often in exurban areas. The tax policy reviewed did not concur with this belief. Local officials have suggested federal regulations implementing the Clean Air Act encourage industrial development in green fields since the act restricts emissions in areas that do not meet air quality standards. These nonattainment areas are typically urbanized. The report responds with studies indicating environmental regulations play a small role in business location decisions. Some experts believe the location of federal and postal facilities plays a significant role in the economic viability of downtown urban areas, implying their location in suburban areas reduces downtown viability. General Services Administration data on active building leases effective between October 1, 1995, and November 13, 1998, show that during the period analyzed, federally leased facilities were primarily located in central cities, not in suburbs. Furthermore, the General Accounting Office did not find any recent research indicating that the Federal Housing Administration's single-family housing program encourages housing development in suburban areas over central cities.

According to the General Accounting Office, "urban sprawl has resulted from a combination of factors in a complex interrelationship." The report states that

> [d]espite numerous studies on urban sprawl, so many elements contribute to it, and their relationship is so complex, the isolation of any individual factor is extremely difficult. As a result, researchers have generally been unable to assign a cost or level of influence to individual factors, including particular federal programs or policies. Post WW II suburban growth was a response to a number of social, economic, demographic, and technological factors: the postwar population boom, the increased availability of suburban housing, technological advancements and the greater use of passenger cars. Historically, federal housing and highway spending contributed to suburban growth because the availability of housing loans facilitated suburban homeownership and federal highway spending financed the expansion of highways that gave consumers access to suburban locations. (*55*)

A 1995 Transportation Research Board (TRB) report, *Expanding Metropolitan Highways: Implications for Air Quality and Energy Use*, is cited and states, "Transportation investments influence the location of growth but do not alone cause growth" (*56*). The difficulty of defining the difference between "suburban growth" and "urban sprawl" is also noted. The report states,

> The lack of agreement on a definition of "urban sprawl," coupled with the many interrelated factors that contribute to this condition, makes it extremely difficult to isolate and measure the influence of specific factors—including those relating to federal programs and policies. The shortage of quantitative evidence does not

> mean that federal programs and policies do not have an impact on "urban sprawl"; it simply means that the level of federal influence is difficult to determine. Since land use planning is usually considered a state and local responsibility, the federal government has had limited involvement in regulating land use. (*55*)

Six appendices are included in the report, as well as tables, figures, and a selected bibliography, for a total of 85 pages. Notable appendices are Appendix I, "The Influence of Selected Federal Policies and Programs on 'Urban Sprawl'" and Appendix II, "Summary of Studies on Factors Related to 'Urban Sprawl.'" The GAO office has scheduled a follow-up study examining the federal barriers to "smart growth" using a case study approach to be completed in spring 2000.

Better America Bonds

- Haveman, J. Gore Proposal Aims at Urban Sprawl (*57*).

The Better America Bonds initiative is one of the larger proposals in the Clinton budget for the fiscal year 2000. The bonds are a part of Gore's plan to provide federal funding for efforts to curb urban sprawl through the promotion of his "livable communities" agenda. This agenda is an effort to reverse the trend of governmental subsidies for the out-migration of urban residents. The new Better America Bonds, if approved, would allow state, local, and tribal governments to obtain zero-interest financing to be used to preserve and enhance green space, create or restore urban parks, and buy or get permanent easements on suburban open space and threatened wetlands.

The bonds would also be available to supplement existing administrative initiatives to clean up abandoned industrial sites (brown fields) and to protect rivers, lakes, and drinking water sources. Proposals would be submitted to the EPA for review. The EPA would then determine which communities could issue the bonds through an interagency process in conjunction with Gore's Community Empowerment Board. Clinton's budget will propose tax credits totaling almost 700 million dollars over five years to support the Better America Bonds.

Lands Legacy Initiative

- President Clinton's Land Legacy Initiative: Legislative Proposals (*58*).
- Remarks by the President and the Vice President on Announcement of the Lands Legacy Initiative (*59*).

In the fiscal year 2000 budget submitted to Congress, President Clinton is proposing a one billion dollar Land Legacy Initiative to expand federal protection (conservation) of critical lands across America, help state and communities preserve local green spaces, and strengthen protections for our oceans and coasts.

The first part of the plan continues the Clinton-Gore Administration's efforts to preserve America's natural treasures and is based directly on Theodore Roosevelt's conservation legacy. In the year 2000, 440 million dollars acquired primarily from the sale of oil from existing off-shore leases will be dedicated to the federal acquisition of new "crown jewels" to our endowment of natural resources. Areas targeted for protection are the Mojave Desert, New England Forests, the Everglades, the Lewis and Clark Trail, and Civil War Battlefields. In addition, Clinton is asking Congress to grant permanent wilderness protection to over five

million acres within the back country of Yellowstone, the Grand Tetons, Glacier, the Great Smoky Mountains, Cumberland Gap, and 12 other national parks and monuments.

The second part of the plan works in conjunction with the Livable Communities Initiative and represents a new vision of environmental stewardship by preserving the "small but sacred green and open spaces" within local communities. The concept is to provide communities across the nation the tools required to make the most of their respective possibilities without green mandates or red tape. Examples of such tools are land acquisition grants, open space planning grants, the cooperative endangered species conservation fund, the forest legacy program, urban and community forestry, the farmland protection program, the smart growth partnership, and urban parks and recreation recovery.

Protecting our oceans and coasts is the third aspect of this initiative and employs additional land management techniques such as national marine sanctuaries, the coastal zone management act program, the national estuarine research reserves system, coral reef restoration, coastal dredge area restoration, and fisheries habitat restoration.

This initiative will be administered through a federal interagency process involving the Department of the Interior, the Department of Agriculture, and the Department of Commerce's National Oceanic and Atmospheric Administration.

Transportation and Community and System Preservation Pilot Program

- Transportation and Community System Preservation Pilot Program Briefing (*60*).

The 13.1 million dollar Transportation and Community and System Preservation Pilot Program (TCSP), a key component of Clinton's livability agenda, is a financial tool intended to make communities more livable by preserving green space, reducing traffic congestion, and employing "smart growth" strategies. TCSP is an initiative established in the Transportation Efficiency Act for the 21st Century (TEA-21) and signed into law on June 9, 1998, by President Clinton. TCSP consists of research and grants to assist communities in solving interrelated problems involving transportation, land development, environmental protection, public safety, and economic development.

TCSP funds are available to achieve locally determined goals in such areas as transportation efficiency, reducing the negative impacts of transportation, building better access to jobs, service and trade centers, limiting the need for costly future infrastructure, and revitalizing underdeveloped and brown-field sites. Grants can also be used to examine urban development patterns and create strategies that encourage private companies to work toward these goals in the design of new developments

The Clinton Administration, as a part of its livability agenda, has requested 50 million dollars for the fiscal year 2000 to fund 35 TCSP projects across the nation. The projects were selected from 524 applications evaluated by a multidisciplinary panel from the EPA, FHWA, the Federal Transit Administration, and the Research and Special Program Administration.

States' Response to Growth

- National Wildlife Federation. Population and Urban Sprawl Fact Sheet (*61*).

The National Wildlife Federation (NWF) addresses the difference in economic prosperity and decline through new construction and sprawl. The fact sheet emphasizes the loss of farmland and small-town atmospheres as consequences of sprawl. The NWF praises smart growth

initiatives. Highlighting three states, Maryland, Oregon, and Vermont, the NWF calls for action from the remaining states.

Delaware

- *Transportation and Delaware's Future, Statewide Long-Range Transportation Plan* (*62*).

Delaware is considered a leader in the integration of transportation and land use planning. The link is reflected in their long-term transportation plan's vision statement, long-term objectives, and priority actions. Among Delaware's stated strategies for the next 25 years are to direct transportation investments to support the growth management goals of the counties and local governments and best use transportation services and facilities and to better coordinate transportation and land use.

Oregon

- Moore, T. Oregon's Growth Management: What's Working . . . What Isn't . . . So What? (*63*).

This paper discusses the formation and evolution of the Oregon State Planning Program. Developed in 1973, Oregon's planning program effectively reduces local autonomy to promote statewide growth management objectives. Although land use plans are still written by local jurisdictions, the jurisdictions are obliged to conform to a set of 19 legally binding state goals. The goals include containment of sprawl, protection of farm and forest land, efficient provision of public services, and preservation of affordable housing and economic development.

A state Land Conservation and Development Commission (LCDC) was established to review local plans. Once the plans have been accepted or "acknowledged" as being in agreement with the statewide goals, local land use decisions are evaluated in comparison with the local plans. After initial review, the LCDC periodically reviews all local plans as well as all local plan amendments. Appeals to decisions are handled through a the Land Use Board of Appeals and, ultimately, the Oregon State Supreme Court.

In 1991, with the transportation planning rule, requirements for local plans increased. Metropolitan areas must now develop a plan for reducing the number of vehicle miles traveled by 10 percent over 20 years.

The author points out that there is inherent contradiction written into the state goals. For example, the goals calls for both economic development and conservation of forests, the source of wealth for the timber industry. The goals allow for enough flexibility or room for interpretation to accommodate different economic situations. During the economic downturn of the early 1980s, LCDC rule-making involved mostly goal 9, promoting economic growth. In contrast, during the boom economy of the early 1990s and the in-migration of Californians, the LCDC established the aforementioned transportation planning rule and emphasized the growth management goals.

To serve the objectives of growth management, all Oregon cities are required to set very well defined urban growth boundaries (UGB). The growth boundary is to contain enough land to accommodate 20 years of growth. A study of growth boundaries in Oregon found that the application varied greatly between metropolitan areas. Cities that were more amenable to sprawl or low-density development were able to do so within the confines of the state law. In one metropolitan area, only 43 percent of new development was within the urban growth boundary (compared with 95 percent in Portland). The remainder was in areas designated as "exceptions."

Even so, the author points out that the UGB rule is beneficial in that it forces jurisdictions to discuss development from a regional perspective, encourages information gathering and analysis, and simplifies the political debate.

- Ehrenhalt, A. The Great Wall of Portland (*64*).

The state of Oregon's experiment in growth control is being put to the test. One hundred fifty-seven cities in Oregon have had urban growth boundaries since the mid-1970s. When Oregon's growth management law was adopted, urban growth boundaries were set well beyond existing development. Portland's economy has been very strong for the last decade, creating pressure to move the urban growth boundaries farther out. So far, the state and local officials have held their ground. Those in favor of increasing the area within the growth boundaries argue that the current boundaries are too restrictive and have led to a shortage in affordable housing. Portland's housing costs have gone from being 19 percent below the U.S. average in 1985 to 6 percent above the national average in 1994. In the last decade, Portland has shifted from the 55th most affordable city to 165th (out of 179).

Ehrenhalt questions whether the increase in housing costs can be attributed to the growth boundary. He argues that housing costs have risen across the country, even within communities that do not have growth boundaries. For example, Salt Lake City's housing costs increased 26 percent between 1994 and 1996, while Portland's only increased 19 percent. He suggests that the robust regional economy has resulted in higher housing costs.

So where will Portland and the metropolitan area be in 2040? The master plan does not call for extending the boundary, but rather increasing housing density even further. This will prove to be interesting in the suburban communities that include houses on large lots. Will multifamily housing be accepted? The Portland experiment warrants further analysis.

Washington

- Frank, L. D,. and R. T. Dunphy. Smart Growth and Transportation (*65*).

This paper explores the problems associated with the movement of people within the urban form, suggesting that the planning and management of urban growth (smart growth) can lead to the resolution of such traffic issues as congestion through the coordination of land use and transportation. Because transportation is a necessary component of growth, it is vital to any smart growth strategy. Traffic congestion is considered a result of unplanned urban growth (sprawl) and the major reason growth management strategies are politically accepted. The authors call for growth management programs that can withstand the changes in political compositions of state legislatures and the cycles of economies to allow these programs to become fully effective. Examples of growth management programs in Washington state, New Jersey, and California's Contra Costa county, in addition to excerpts from papers of transportation professionals, are provided.

Population growth is a significant factor that drives the need for growth management. Washington state witnessed substantial population growth during the latter half of this century, an 87 percent increase between 1960 and 1990, the majority occurring in the unincorporated areas of the central Puget Sound region. During the 1980s, traffic grew 6 percent annually, a rate two to three times that of the population, as a result of sprawl. The political recognition of these impacts of unplanned growth led to the adoption of the Growth Management Act in 1990 by the Washington legislature. This unexpected decision was attributed to a political deal: Democrats would support a gas tax increase to fund transportation improvements if Republicans supported a

growth management bill, including a transportation concurrency provision implemented at the local level.

The balance of power at the local level is a cornerstone of Washington's growth management agenda, characterized as a bottom-up program. Unlike New Jersey, Oregon, and Florida, there is no state level plan, though the state Department of Community, Trade, and Economic Development is responsible for growth management implementation. The state retains some power under the act with review and legal authority over the internal consistency requirement among the elements of the comprehensive plan. The state's growth management legislation stipulates that a developer must mitigate the effect of a proposed project on transportation along all arterials and transit routes, meeting a pre-established level of service (LOS) within six years. This transportation concurrency requirement is an adaptation of Florida's growth management policies. Each jurisdiction must adopt a concurrency ordinance that establishes a LOS standard on all arterials under its authority and monitor their performance; transit routes have yet to be addressed. Developers whose projects would bring the LOS below the adopted standard are required to mitigate its impact or improve traffic conditions to comply with the standard. Each jurisdiction is also required to limit transportation plans assumed over a six-year period to projects that are affordable, based on current funding levels adjusted for inflation. The intent is to ensure that transportation investments support the land use policies adopted in the jurisdiction's concurrency ordinance and, conversely, that land use policies support earmarked transportation investments. A Growth Management Hearings Board was established to settle conflicts relating to the implementation of the Growth Management Act.

Washington's Growth Management Goal*s* The state of Washington has strong private property rights, local control, and limited capabilities for public sector intervention in the private development process. Because of these conditions, goals identified in the growth management program represent a balance of public and private sector concerns. Public sector goals include

- the promotion of sustainable development patterns,
- the preservation of pristine lands,
- the creation of an efficient multimodal transportation network,
- the promotion of economic development, and
- the provision of affordable housing to all segments of the population.

Private sector goals stipulate that

- private property shall not be taken for public use without just compensation, and private property rights shall be projected from arbitrary and discriminatory actions; and
- applications for both state and local government permits shall be processed in a timely and fair manner to ensure predictability.

Since the implementation of the Growth Management Act in 1994, the central Puget Sound region has continued its rapid growth. A review of the impact of growth management and transportation concurrency ordinances on land use and transportation investment suggests that central cities have been affected less than their suburban counterparts. The city of Redmond, home of Microsoft, is located 15 miles northeast of Seattle and is bounded on its east side by the adopted urban growth boundary. A reverse commute has developed between Seattle and

Redmond since approximately one of four of the city's 42,000 employees actually lives in Redmond. Redmond is one of several suburban communities in the area that have experienced significant job growth resulting in complex commute patterns for the region. As a result of the rapid growth in suburban communities such as Redmond, meeting the concurrency requirement has been a challenge. In many instances, developers in Redmond have to pay the normal impact fees and bankroll projects adopted in the long-range transportation plan for which public funding is not available, to bring them into compliance with LOS standards. In some cases, projects have been delayed and even denied, not because their developers were unwilling to pay for additional transportation improvements, but because the city felt that the projects were not compliant with the goals of the comprehensive plan. The types of improvements that the current vehicle-based level of service method would suggest—double or triple left-turn lanes, for example—are not compatible with the type of community that Redmond is trying to cultivate.

While growth management has increased coordination between state and local agencies, it has also met significant resistance. If the growth management program provides for a timely and predictable permitting process, developers may be strong supporters. Local governments concerned with the impact of development on state-owned highways are resistant to include limited-access, state-owned highways in their concurrency ordinances because of the high costs of mitigating impacts and the inability to predict state investment in the roads. Coordination among adjacent jurisdictions has been hampered by the fact that each local government has adopted a unique system to monitor the level of service on its roadways. The ability to receive credit for diverting some of the traffic generated by new development to transit has been limited because the measures do not give credit for transit access. Broadening the transportation measures beyond the traditional LOS measures could give planners a wider range of choices to serve the needs of new development, including public transit and pedestrian and bicycle routes rather than road improvements only. This is essential to ensure that the highway system maintains or exceeds a desired capacity. The city of Renton developed a level of service system based on travel time to address system performance from a multimodal perspective. Although limited, this approach provides the theoretical basis required to compare the benefits of various investments across a variety of transportation modes.

New Jersey

New Jersey has been blessed with a strong economy, abundant resources, and a high quality of life. The state's resources and its quality of life are sensitive to the impacts of unplanned growth and development, and there are increasing signs that New Jersey's resources and quality of life are under siege. In many parts of the state, a deterioration in the quality of life is occurring: traffic congestion, loss of agricultural lands, polluted streams, loss of wetlands, deteriorating urban centers, fiscal stress, and other impacts of unplanned growth.

In recent decades, shifts in the state's development pattern and the aging of its urban infrastructure have led to decay and decline in many urban areas. While jobs in the state have doubled over the last several decades, jobs in major cities have declined by more than 35 percent. In turn, this sprawling, consumptive pattern of development has contributed to increased housing prices. Worse still, sprawl generates more vehicle miles of travel than more compact forms of development. Ironically, though New Jersey has more miles of highway per square mile than any other state, over 60 percent of the state's interstate system is operating at or above capacity during peak periods of use.

The State Planning Act

- New Jersey Office of State Planning. State Planning Act of 1985: Summary (*66*).

If New Jersey wants to preserve and maintain its abundant natural, cultural, economic, and social resources and its quality of life, it must plan for its future. In 1985, the Legislature of the State of New Jersey adopted the State Planning Act (*67*). In the act, the Legislature declared that the State of New Jersey needs sound and integrated "statewide planning" to

> . . . conserve its natural resources, revitalize its urban centers, protect the quality of its environment, and provide needed housing and adequate public services at a reasonable cost while promoting beneficial economic growth, development and renewal. (*67*)

The State Planning Act of 1985 created the New Jersey State Planning Commission and its staff arm, the Office of State Planning. The act established the following mandates for the commission:

- prepare and adopt within 18 months after the enactment of the act, and revise and readopt at least every three years thereafter, a state development and redevelopment plan, which shall provide a coordinated, integrated and comprehensive plan for the growth, development, renewal, and conservation of the state and its regions;
- prepare and adopt as part of the state plan a long-term infrastructure needs assessment, which shall provide information on present and prospective conditions, needs, and costs with regard to state, county, and municipal capital facilities;
- develop and promote procedures to facilitate cooperation and coordination among state agencies and local governments;
- provide technical assistance to local governments;
- periodically review state and local government planning procedures and relationships;
- review any bill introduced in either house of the legislature that appropriates funds for a capital project; and
- take all actions necessary and proper to carry out the provisions of the act. (*66*)

The State Development and Redevelopment Plan

- New Jersey Office of State Planning. Summary of the New Jersey State Development and Redevelopment Plan (*68*).

The State Development and Redevelopment Plan defines a comprehensive strategy to achieve the goals enumerated in the State Planning Act. The act instructs the State Planning Commission to prepare, adopt, revise, and update the state plan in consultation with local governments. The plan should establish statewide planning objectives, coordinate planning activities, and guide policies concerning economic development, urban renewal, natural resource preservation, land use, and other infrastructure improvements and capital expenditures. It should also identify areas for growth, limited growth, agriculture, open space conservation, and other appropriate designations. In addition, the plan is to promote development and redevelopment in a manner consistent with sound planning and where infrastructure can be provided at private expense or with reasonable expenditure of public funds.

Under the act, the State Development and Redevelopment Plan is to establish "statewide planning objectives" regarding land use, housing, economic development, transportation, natural resource conservation, agriculture and farmland retention, recreation, urban and suburban redevelopment, historic preservation, public facilities and services, and intergovernmental coordination. *Achieving this end requires sound planning to ensure an adequate supply of available land that can be developed in an efficient growth pattern.* The State Development and Redevelopment Plan responds to these principles and establishes a vision and a plan for the future of New Jersey. It is intended to serve as a guide for how public policy decisions should be made at all levels of government to achieve the goals of the State Planning Act.

The Office of State Planning is also required to publish an annual progress report on achieving the goals of the State Planning Act. It should include a discussion of the state plan's effectiveness in promoting consistency among municipal, county, and state plans and an accounting of the state's capital needs and progress toward providing housing where such a need is indicated.

State Planning Goals and Strategies

1. *Revitalize the state's urban centers and areas* by investing wisely and sufficiently in improvements to their human resources and infrastructure systems to attract private investment;
2. *Conserve the state's natural resources* by planning the location and intensity of growth to maintain the capacities of natural resource systems and then investing in infrastructure and natural resource protection programs in ways that guide growth according to this planning;
3. *Promote beneficial economic growth, development, and renewal* by providing infrastructure in advance of, or concurrent with, the impacts of new development sufficient to maintain adequate facility standards;
4. *Protect the environment* by planning for growth in compact forms at locations and intensities of use that protect land and water quality, allow expeditious regulatory reviews and make sufficient transportation alternatives feasible to help achieve and maintain air quality standards;
5. *Provide adequate public services at a reasonable cost* by planning locations and patterns of growth that maintain existing and planned capacities of infrastructure, fiscal, social and natural resource systems;
6. *Provide adequate housing at a reasonable cost* by planning for the location of a density of housing sufficiently close to both employment opportunities and public transportation so as to reduce both housing and commuting costs for low-, moderate-, and middle-income groups;
7. *Preserve and enhance historic, cultural open space and recreational lands and structures* by identifying these resources and using public investment strategies; preservation, conservation, and regulatory programs; and other techniques to guide growth in locations and patterns that protect them; and
8. *Ensure sound and integrated planning statewide* by using the state plan as a guide to planning and growth-related decisions at all levels of government.

Growth occurs primarily, though not exclusively, through private investment in jobs, housing, commercial services, and other economic activities. The public sector invests in the facilities and services required to support this growth and regulates private development activities to protect the public health, safety, and welfare. Public and private decisions on where, how, and when growth occurs, therefore, are inextricably linked—each influences the decisions of the other. While private-sector development decisions must follow existing regulations, these decisions usually lead public investments in the infrastructure that will be required to support it. In other words, growth usually occurs first, and many of the public facilities required to maintain service standards lag behind. The result is traffic congestion, pollution, loss of open space, and other negative impacts.

Because the negative impacts of growth occur when the capacities of natural and built systems are exceeded, planning must carefully consider these capacities. In follow-up to planning, regulatory programs should assure that system capacities are maintained at levels that protect the public's health and safety. Capacities are not, however, just matters of physical tolerances. They are also matters of fiscal responsibility and foresight. The ability of the state and its citizens to generate revenue for expensive new infrastructure and natural resource protection programs is not unlimited, so public funds should be used to maximize capacity per unit of investment. For instance, if a certain amount of public investment in a compact form of development can support more development than the same amount invested to support a sprawl pattern, then the fiscal capacity of the state is enhanced by investing in the more compact form.

Smart Growth In New Jersey, the most urban U.S. state, the motivation for smart growth originated from urban decline and traffic congestion rather than the excessive population growth in Washington, California, and Florida. Traffic congestion along the Route 1 corridor in central New Jersey near Princeton occurred as a result of the state's economic resurgence in the 1980s. This, in addition to the problems of increasing concentration of poverty and minorities in urban areas, crumbling urban infrastructure, spiraling housing costs, and inadequate consideration of spillover effects in local land use decisions, led to the development of a growth management plan, the New Jersey State Development and Redevelopment Plan. This plan, initiated in 1986 and adopted in 1992, emphasizes concentrating growth into urban centers known as "communities of place" along main transportation corridors, a direct contrast to the prevailing spread of development to rural areas, which depletes the supply of farmland and open space. The intent of the plan is to allow the state to maintain and improve transportation facilities in established urban areas and to avoid expensive and/or underused highways and transit in undeveloped (rural) regions.

A major challenge for New Jersey was gaining localities' support for a state development plan. The New Jersey Office of State Planning was established as a division of the state treasury department to oversee the ongoing development and implementation of the state plan; the office is chartered to review and report the progress made toward achieving specific plan goals. Rather than a top-down process such as Florida's, which was recognized as politically unacceptable, or Washington's bottom-up approach, New Jersey chose an informal process called "cross-acceptance." Cross-acceptance involves reaching agreements among state, county, and local governments regarding the appropriate level of development for specific land areas. This process is designed to generate a written statement of areas of agreement and disagreement.

Two major transportation initiatives were adopted to further focus development priorities and state investment. An access management code for developments that need driveways along state

highways gives the state even greater control over adjacent development than the state plan, requiring consistency with the Department of Transportation's functional plan. If a development project requires an extra lane on a state highway or intersection improvements nearby, the developer is responsible for paying a fair share. This code also provides incentives for developers by relaxing LOS standards to encourage development in established centers. Transportation development districts identify areas designated by the county and the Department of Transportation commissioner for planned growth and document the transportation infrastructure needed to serve them. A fee schedule is then formed so that development fees will supplement the funding needed to provide adequate multimodal transportation for the area, allowing development to proceed. The Public/Private Partnership Act, already signed into law, allows the transportation commissioner to negotiate with the private sector to design and/or build transportation projects.

Growth management needs to carefully balance the interests of both the public and private sector to survive. To make a difference in transportation, it needs to alter local development policies to significantly reduce the impact of growth on state roads, which would allow current transportation dollars to go further. State governments can use their control of transportation funds to encourage land use actions that are consistent with adopted growth management policies and, in the process, become consistent with these policies themselves.

Conversely, political expediency could make smart growth policies an excuse to avoid undertaking important transportation improvements. In New Jersey, a 1991 study by the Foundation of the New Jersey Alliance for Action, Inc., estimated infrastructure needs of 10 billion dollars annually, half of which was for transportation, and called for doubling current spending levels. The state of Washington similarly estimated needs for 27 billion dollars over the next 20 years, which represented a 16 billion dollar shortfall from current revenues, or a nine billion dollar gap. Assuming historical trends, that would imply a gas tax increase. New Jersey raised additional revenues by a constitutional change dedicating the gas tax to transportation. According to the New Jersey Department of Transportation, "it is easier to make a case for increasing spending to the citizens and the legislature if you can show that it will be spent to support smart growth." Smart transportation will increasingly require that transportation agencies convince the public that new facilities are part of a collective strategic agreement for managing growth.

Florida

- 1000 Friends of Florida. Grappling with Growth: Florida Confronts the Future (*69*).

This report provides documentation on Florida's status as one of the fastest growing states in the nation. The state has low property taxes, no personal income taxes, and attractive environmental conditions, all which serve to lure new residents. The resulting growth demands funding for public infrastructure in addition to the wise use of it. This document describes the state's nationally recognized approach to smart planning for the future.

Pre–World War II communities are described as compact, pedestrian and bicycle friendly neighborhoods. The post-war era is contrasted as the age of governmental subsidies for the "American dream" of sprawled suburban housing with autos employed to traverse the ever-growing distances. According to the report, this is no longer an affordable or acceptable method for growth planning. Sprawl diminishes our quality of life by forcing us to travel in cars, losing valuable time that could be better spent with family. The network of roads required for

automobile travel blurs the distinction of neighborhoods; furthermore, strip malls facilitate the loss of a "sense of place" and draw commerce away from urban centers or downtown businesses. Finally, the social value of streets and neighborhoods for residents to play, bicycle, walk, meet, and talk is lost to the primary function of moving autos quickly, dividing neighborhoods instead of connection them. Other harmful effects of sprawl are noted as damaging to natural environments, making public transportation prohibitively expensive, and wasting taxpayer dollars on excessive infrastructure.

A study by a Florida professor of urban and regional planning compared the costs of providing sewer service between an inner-city neighborhood and a suburban neighborhood. The figures averaged 4,500 dollars for inner-city homes to over 11,000 dollars for their suburban counterparts. Since utility charges for water and sewer services are based on an average cost, both sets of customers pay the same per unit rate, indicating that the inner city residents actually subsidize the suburbanites. Similar results were found in transportation infrastructure: 10,000 dollars is required for suburban roads per house and 570 dollars per house in town.

A study for the Brookings Institute compared sprawl to compact growth (greater than three units per acre with mixed housing types) found that compact growth consumed 45 percent less land, cost 25 percent less for roads, 15 percent less for utilities, and five percent less for housing than sprawling development up to three units per acre.

In Florida, solutions to urban sprawl and its effects originated in the vision of foresighted leaders of the 1970s. Florida's legislature took progressive steps that eventually resulted in the landmark Growth Management Act of 1985. The 1985 legislation established a "pyramid of planning" with state oversight and basic planning standards. At the top of the pyramid is the state comprehensive plan, with broad goals and policies dealing with subjects ranging from education to the environment. In the next tier, 11 regional planning councils are required to adopt strategic regional policy plans consistent with the state plan. Then there are the approximately 470 local government comprehensive plans, which must be consistent with the regional and state plans; however, local government standards that establish more stringent requirements than those at the regional level are usually better able to deal with the impacts of growth. The law requires that citizens be given the ability to shape these plans "to the fullest extent possible." The Florida Department of Community Affairs (DCA) and its Division of Community Planning oversee this planning pyramid, reviewing and approving the initial adoption and subsequent amendment of local government comprehensive plans.

Florida's Growth Management Act also requires that every seven years local governments adopt an evaluation and appraisal report on how local government is meeting the requirements set forth in its plan, which often leads to amendments. The local governments' land development regulations (i.e., zoning and subdivision ordinances) must also be consistent with the plan.

The Growth Management Act has established a workable process to guide future development in Florida communities, although there are some glitches. An urban service area (USA) identifies the boundaries where public infrastructure that supports urbanized development is to be provided over a specified number of years and is one of a number of comprehensive planning techniques to reduce public costs of development. Unfortunately, some Florida communities have adopted USAs that are ineffective because they encompass too large a geographic area, promoting sprawling rather than compact development.

Other comprehensive planning techniques include the capital improvements element, a requirement in local comprehensive plans that includes estimates of the cost needed for public facilities, an assessment of the local governments' ability to finance and construct improvements,

and a schedule for funding and construction. Concurrency, which is related to the capital improvements element, allows local governments to approve new development only when plans are in place to provide for adequate facilities and services needed to serve that development. Examples of facilities and services are roads, sanitary sewers, solid-waste treatment, drainage, potable water, parks, recreation, and mass transit. If the infrastructure is not available, a local government cannot approve new development; however, not all facilities have to be completed when growth is approved. Parks are considered "concurrent" if under construction one year after the certificate for the particular development is issued, while roads must be under construction within three years. Impact fees, a funding source similar to local property taxes and special assessments, are levied on the developer to pay some of the cost of providing public services and facilities to a new development to maintain the adopted level-of-service standards. Impact fees are limited by law to cover only certain, specific costs, and cannot include all the costs providing public services and infrastructure. In some cases, impact fees can raise the cost of a house by several thousand dollars.

The Florida Department of Community Affairs has effected Rule 9J-5.006(5) Urban Sprawl Provisions, a requirement that local comprehensive plans contain provisions for "discouraging the proliferation of urban sprawl." This rule also outlines criteria to identify what constitutes sprawl. Other state programs that promote smarter planning are listed in the document, as well as a section on enhancing the quality of life by linking growth management and economic development. Methods for citizens to effect change in development patterns completes the report.

- Murphy, M. Property Rights and Growth Management in Florida: Balancing Opportunity and Responsibility in a Changing Political Climate (*70*).

This article examines the potential conflict between Florida's 1985 Growth Management Act, which represents a tremendous commitment toward preserving a quality of life, natural resources, and opportunity for future generations, and the 1995 Property Rights Act, which allows a landowner to receive compensation when he or she demonstrates that a governmental action "inordinately burdens" the use of his property. The practical and legal consequences of the Property Rights Act in relation to Florida's growth management system are explored in this paper.

The land ethics of opportunity and responsibility are described as the guiding principles behind the growth management and property rights movement. Proponents of the opportunity ethic believe an individual should be afforded the widest range of choices with minimal limitations, thus challenging the validity of regulations that restrict the use of property. The responsibility ethic dictates a preservation of natural resources and sustainable development, implying that while current generations are entitled to use land for their well being, they are also trustees of the environment and obligated to protect it for future generations. These two ethics are described as "wholly irreconcilable." The property rights legislation in Florida is one of the strongest property rights measures of the 18 states with such laws and threatens to upset the delicate balance between allowable economically beneficial uses, *opportunity*, and governmental regulation toward protection, *responsibility*. Simply stated, the conflict is property rights versus growth management, and who should pay for lost opportunity?

The guiding principles behind the Growth Management Act are the control of development along Florida's fragile coastline, the encouragement of compact urban development instead of sprawl, and to mandate that development should only occur when adequate infrastructure is in

place. To accomplish these goals, all levels of governments within the state were asked to cooperate and coordinate their land use regulatory efforts. This combined effort required local governments to yield some of their local autonomy or "home rule" in the planning process.

According to the author, the property rights law could affect the growth management act in numerous ways although the full impact will depend on judicial interpretation. A state's growth management commitment requires both the individual landowner and present generations to exercise restraint and responsibility in land use. Land use burdens, such as restrictions on land use and public access to preserve the community character and natural resources, have been traditionally shared by the land owner and the public, for the common good. The impact of the property rights law shifts responsibility for land resource protection from the individual landowner to the general public by requiring compensation be paid to landowners burdened by the government regulation. The general public, not the landowner, will ultimately bear the cost of that regulation since public monies must be spent to compensate. The question is raised as to where this funding will come from, local or state taxes? Furthermore, the landowner's commitment to the broader community is reduced because of the public's responsibility for compensation claims.

A second impact, that the property rights act will potentially pit state and local governments against each other, is based on the Property Rights Act text. The act contains a provision that allows a court to determine the relative percentage of responsibility of each government entity where more than one is determined to be responsible. Each governmental entity is likely to argue against that responsibility to avoid additional cost, thereby creating discordance between government levels, to the ultimate detriment of governmental cooperation and growth management efforts.

In the author's words, "Growth management, at its purest, embraces a common vision for realizing a worthwhile future and asks all of us to forego opportunity today to preserve opportunity for tomorrow. The Property Rights Act does little to further that cause" (*70*). The article concludes that the property rights bill, in fulfilling its mandate, will necessarily frustrate Florida's efforts to achieve its growth management goals.

Vermont

- American Planning Association, Growing Smart. Statutory Summary for the State of Vermont (*71*).
- Vermont Statutes Online. Title 24 Municipal and County Government, Chapter 117 Municipal and Regional Planning Development (*72*).

Vermont land use and planning statutes reflect an interesting consolidation of economic and environmental concerns, placing the emphasis on top-down comprehensive planning. The State Environmental Review Board regulates development and subdivision planning, exercising development control through Act 250, Vermont's land use and development law. Act 250 specifies 10 criteria for new development. These criteria ensure that new development does not detrimentally affect or unduly strain the following: water and air quality, soil erosion, transportation services, educational services, municipal services, scenic or natural beauty, historic sites, or rare and irreplaceable natural areas. In addition, all new development must conform to local land-use plans. The Environmental Review Board conducts permit reviews of proposed development for adherence to the specific permit application criteria set forth in Act 250, which was passed 25 years ago in response to increasing development pressures that

threatened Vermont's economy and quality of life. This act, as well as Act 200, the state's regional planning law, is also utilized to involve citizens in planning for development in Vermont through participation in the approval of local plans.

Regional planning commissions and councils are also given strong responsibilities for assuring all municipalities' plans within a specified region are in accord. A Council of Regional Commissions acts as a mediator when disputes arise between municipalities and regional planning commissions, and between and among regional planning commissions and state agencies. The council consists of a representative from each planning commission and three members who are state agency or department heads appointed by the governor. This council also reviews proposed regional plans and amendments to determine whether the plan contains the required elements, is compatible with plans of adjoining regions, and is consistent with the goals of the state.

Vermont is unique in that the State Office of Planning appears to have virtually little to no powers; rather, the state appears to have vested most of the planning powers, as they relate to development, to the State Environmental Review Board and the State Economic Development Authority. The State Environmental Review Board is entrusted with adopting a plan that must be consistent with the interim land capability plan and that will guide and accomplish a coordinated efficient and economic development of the state. The board is also entrusted with hearing appeals concerning the selling and transfer of land and the issuance of permits for any potential impacting land uses, in addition to developing rules that may provide alternatives to the otherwise complex procedures required for permitting by the State Land Use Act (Act 250).

The State Economic Development Authority is directed to alleviate unemployment and to raise per capita income within the state through the development of business incubator facilities. The authority funds these facilities to assist small and start-up businesses by providing low-cost flexible space, necessary support services, inventory control, and marketing assistance. The authority consists of eleven voting members, including the state treasurer, the secretary of the Agency of Development and Community Affairs, and nine residents appointed by the governor. The State Economic Development Authority works in close cooperation with the director of the Development and Community Affairs Agency to assist in the planning and financing of projects. The Authority may also make loans to local development corporations for the purpose of planning and developing industrial parks.

Vermont has found that its rather restrictive criteria have slowed development to a degree, but also have strengthened the state's agricultural economy and enhanced the quality of live. Tourism and agriculture are the backbone of Vermont's economy, and these criteria support those industries. Furthermore, Vermont has found that in periods of national economic downturn their state economy is relatively healthy and very stable. The state's goals for compatible development ensure that growth and its accompanying demands are predictable.

- National Conference of State Legislatures. State Incentive-Based Growth Management Laws (*73*).

A Vermont statute authorizes a municipality to assess an impact fee on any new development provided it has adopted a capital budget and a capital program. The municipality must also develop a reasonable formula to be used in calculating the fee that reflects the level of services that will be provided for the project and a means of assessing the impact of the development for which the fee is levied. The municipality may require the proposed development to cover the entire cost of a capital project constructed to service the new development. Where future

development projects benefit from the services provided to the initial developer, the municipality may require the new developers to reimburse the initial developer for a portion of the impact fee.

- Vermont Department of Education. Act 60 Ushers in New Era of Planning (*74*).
- Vermont Property Owners Report. Special Report on Act 60 (*75*).

Vermont's Equal Educational Opportunity Act, Act 60, was passed by the Vermont Legislature on June 12, 1997, in response to the Vermont Supreme Court ruling in the case of Brigham versus the state of Vermont. On February 5, 1997, the Supreme Court decreed that all children should have access to "substantially equal educational opportunities" and the state system of school finance violated the state constitution. Act 60 seeks to substantially revise state school finance through a statewide property tax on all property, which helps fund a block grant of approximately 5000 dollars per student and an "equalized yield" system for local spending above the block grant.

Act 60 may cause a re-examination of how Act 250 and Act 200 are utilized to involve citizens in planning for development in Vermont. The state's Environmental Review Board has contracted with an independent reviewer to examine Act 60's impact on several criteria contained in the state's land use planning law. According to the chairman of the Environmental Board, "Act 60 may cause local district environmental commissions to reconsider how they examine projects under Act 250, but it may give a boost to Act 200, the state's regional planning law. I think Act 60 will enhance a town's ability to do effective planning and will empower local citizens to get involved. This will allow this process to go forward more vigorously." He notes that communities will be able to more effectively plan because they will not have to promote development at any cost to ensure a tax base.

The "Smart Growth" Strategy: Maryland

- Salisbury, B. Smart Growth Movement Sprouts in Maryland (*76*).

In this article, smart growth is defined as "…a set of public policies designed to combat urban sprawl and associated problems, from traffic congestion to loss of forests" (*76*). This particular article focuses on the experiences of the state of Maryland and implications for the Minneapolis–St. Paul metropolitan area.

Although Maryland is a bellwether state in the public response to sprawl, they are not alone. In fact, more than 200 measures aimed at curbing sprawl appeared on state and local ballot in November of 1998 and in state legislatures over the past two years. Examples include the following:

- by a two to one margin, New Jersey voters elected to spend one billion dollars over the next 10 years to preserve half of the state's remaining forests and farmlands;
- the Tennessee legislature ordered cities and counties to set "urban growth boundaries" to guide development over the next 20 years; and
- Arizona voters elected to spend 220 million dollars to preserve open space.

If regulation is the stick, the incentive laden approach of Maryland could be described as the big carrot. The state offers financial incentive to encourage development in designated growth areas, which include existing cities and towns and adjacent areas targeted for development. Maryland is altering development patterns without creating additional bureaucracy.

There are quantifiable benefits for the state in reducing sprawl. For example, in suburban Montgomery county, between 1970 and 1990, the state helped the county build 60 new schools as they closed 60 older schools in the older suburbs of the same county. The state pays half the cost of new school construction.

Governor Paris Glendening decided that if state policies encouraged sprawl by partial subsidy of the needed infrastructure, roads, sewer and water, it was time to reverse course. New laws serve to

- limit state subsidies for infrastructure to smart growth areas;
- establish a rural legacy program to purchase the development rights and conservation easements of up to 250,000 acres of the remaining farmland, recreational areas, and habitat;
- establish a brown-field program to limit future liability and provide development loans for parties that redevelop contaminated sites;
- establish a job creation tax credit for business owners that create at least 25 jobs in smart-growth areas; and
- establish a live near your work program that provides up to 3,000 dollar grants to employees who buy homes in targeted neighborhoods near their workplaces.

The most vocal critics of these initiatives have been homebuilders and county officials who saw much of this as a threat to their autonomy. Much of the opposition was negated when local governments were allowed to set their own growth boundaries. In setting growth boundaries, some counties have set tight boundaries, and others plan to continue to spread out.

♦ Dresser, M., and M. G. Hare. Deletion of Projects Criticized: State Delegate Says Transportation Officials Don't See Quality of Life (*77*).

Governor Glendening's "smart growth" initiatives are meeting with opposition in the Maryland legislature. In three Maryland communities, bypasses have been programmed to alleviate congestion caused by through traffic. These bypasses have strong support from local residents. The governor has rejected the projects, arguing that the bypasses will result in more sprawl-type development. The legislature is also taking issue with the governor's rejection of a law enforcement training center based on it proposed location outside of a city center. It appears that the success of the smart growth initiatives may very well be determined by the state legislature at the project level.

♦ Campbell, F. Smart Growth, Stupid Policy (*78*).

This article raises the argument against the state of Maryland's current Smart Growth Act and favors changes. State law in Maryland confines state infrastructure funding to areas already developed or approved for development by the state. Although the law does not prohibit building in unapproved areas, new roads and sewers become the developer's responsibility, raising purchasing costs. Maryland's 2020 plan is based on the belief that sprawl produces more problems than planned density. Campbell argues that this smart growth solution to density-related problems is inadequate. She critiques *The Costs of Sprawl*, a 1974 study by the U.S. Council on Environmental Quality (CEQ) and sites the dangers of density (increased crime, congestion, and pollution).

- Froehlich, M. Smart Growth: Why Local Governments Are Taking a New Approach to Managing Their Communities (*79*).

This paper is a look at how smart growth creates good neighborhoods, reduces traffic, and preserves open space. The author defines smart growth as that which enhances a sense of community, protects investments of existing neighborhoods, preserves the environment, and decreases congestion through alternative forms of travel. She notes, however, that smart growth is not a one-size fits all formula.

New Urbanism/Neotraditional Development

Randal O'Toole defines *neotraditional communities* to be synonymous with new urbanism or traditional neighborhood development:

> [It] assumes that people would rather walk, ride a bicycle, or take the bus than drive. The only reason why people drive so much, the theory goes, is that our cities are so poorly designed. The solution is to redesign the cities so that people will. . . . Neo-traditionalism, then, requires a mixture of homes and businesses, small lot sizes, and lots of multi-family residences. (*80*)

New urbanism/Neotraditional development as defined by the Congress for the New Urbanism is

- The basic unit of planning is the neighborhood. A neighborhood standing alone can be a village or a town. A cluster of neighborhoods becomes a bigger town. Clusters of a great many neighborhoods becomes a city. The population of the neighborhood can vary depending on local conditions
- The neighborhood is limited in physical size, with a well defined edge and a focused center. The size of a neighborhood is defined as a five-minute walking distance (quarter mile) from the edge to the center. Human scale is the standard for proportion in buildings and their accessories. Automobiles do not take precedence over human needs, including aesthetic needs. The neighborhood contains a public transit stop.
- The secondary units of assembly are corridors and districts. Corridors form the boundaries between neighborhoods, both connecting and defining them. Corridors can incorporate natural features such as streams.
- The neighborhood is mixed-use and provides housing for people with different incomes. Buildings may be variable in function, but compatible in size and disposition to the street. (*81*)

- Ewing, R., C. Heflin, M. Deanna, and D. R. Porter. *Best Development Practices, Doing the Right Thing and Making Money at the Same Time* (*82*).

This manual describes neotraditional and new urbanism concepts at the design level. The audience includes developers, local planners, and engineers. Typically, state and local regulations define what cannot be done. The objective of this manual is to define good community development. Chapter 4, "Best Transportation Practices," begins with a list of twelve best practices. The remainder of the chapter expands upon each of the practices and provides illustrations from throughout the state of Florida.

The best practices are as follows:

1. design the street network with multiple connections and relatively direct routes,
2. space through-streets no more than a half mile apart,
3. use traffic calming measures liberally,
4. keep speeds on local streets down to 20 mph,
5. keep speeds on arterials and collectors down to 35 mph,
6. keep all streets as narrow as possible, and never more than four traffic lanes wide,
7. align streets to give buildings energy efficient operations,
8. avoid using traffic signals wherever possible and always space them for good traffic progression,
9. provide networks for pedestrians and bicyclists as good as the network for motorists,
10. provide pedestrians and bicyclists with shortcuts and alternatives to travel along high-volume streets,
11. incorporate transit-oriented design features, and
12. establish transportation demand management programs for local employees.

♦ Handy, S. L. Urban Form and Pedestrian Choices: Study of Austin Neighborhoods (*83*).

This report looks at support for the new urbanism and the suggestion that the right design will encourage walking verses driving. The study concluded that certain aspects of urban form can play an important role but the impact on modal split, e.g., public transit use, will be small.

♦ O'Donnel, T. A. Development: It Does Not Take a Village (*84*).

This article is a look at the concept to prevent sprawl in Ames, Iowa. After a decade of planning, Iowa's first new village subdivision is in construction in Ames after long controversial debates of developers and bank officials. The cost of the new village or Neo-traditional, subdivision is four to five times greater than standard subdivisions. Most developers are leery of this concept.

♦ O'Toole, R. A Critique of Neo-traditionalism (*80*).

This article discusses the problems with neo-traditional planning. O'Toole does not believe that neotraditional planning will necessarily change our travel habits:

1. Neotraditional development is based on the street car development patterns of the 1920s. Times have changed. These patterns were set at a time of fewer automobiles and fewer single family homes.
2. People will always be able to reach their destinations quicker and/or more conveniently by automobile than by mass transit. As an example, Portland, an area known for high population density, transit rideshare has decreased 0.8 percent between 1977 and 1994.
3. Planning was not a profession in the 1920s. The mixed use development that neotraditionalism replicates, was zoned out of existence in the 1930s and 1940s. (*80*)

The debate continues: is urban blight the result of the emergence of the automobile or of zoning? O'Toole's main point is that neotraditional development won't fix the problems of today's development patterns. He favors the use of tradable development credits, deed restrictions, emission fees, and other tolls to improve our quality of life.

- Penn, M. Taming the Suburban Wasteland (*85*).

This article describes the attributes of Middleton Hills, a planned neighborhood in Madison, Wisconsin. Middleton Hills is an example of neotraditionalism, a national movement to build more livable alternatives to sprawl. Techniques include laying out straight narrow streets to encourage walkers and mixing residential houses with retail. Most of these new urban neighborhoods, however, are being developed in the suburbs. The challenge is to get this type of development initiated in close proximity to city centers. With a good portion of industry and warehouses moving out of central cities, Jerry Kaufman, a professor of urban and regional planning at the University of Wisconsin, believes that the urban landscape is ripe for this type of infill development.

Farmland Preservation: Iowa

- Edelman, M. A. Extension Public Policy Economist, Iowa State University Extension to Communities (*86*).

This series of short articles from Iowa State University Extension provides a thorough background on urban growth in relation to Iowa's farmland. Such issues as Iowa's designated "agricultural areas," zoning tools and goals, economics, urban sprawl definitions, causes, and potential solutions, farmland and open area preservation, and land use policy are discussed. Concerns about sprawl in relation to farmland are two-fold: (1) does the loss of farmland affect food production in Iowa and (2) should we enact legislation for the protection of areas of special natural, historic, or cultural significance including open spaces from the effects of uncontrolled low-density urban growth?

According to Edelman,

> The bottom line for development is the bottom line for most economic decisions. The reason sprawl occurs is that an abundance of open space land is available, it is the least expensive option relative to other development alternatives, and it is easy to assemble. . . . The problem becomes a political issue that may involve real tradeoffs among economic development and jobs for the community, agricultural competitiveness of the region, aesthetics, and quality of life. (*86*)

- Iowa Legislature's Commission on Urban Planning. *Growth Management of Cities and Protection of Farmland: Proposal for Legislation* (*87*).

The Iowa Legislature's Commission proposes establishing a State Strategic Development Council consisting of agency heads or designee, the governor, a designee from Iowa State University, a designee from the University of Iowa, and four members of the General Assembly. The council would oversee planning of state agencies involved in major development projects and the development of a state strategic development plan.

The commission proposes the development of an urban planning, growth management of cities, and protection of farmland board. It would consist of the same members as the current City Development Board. The board would have oversight of local government planning, having approval power over local agency comprehensive plans as well as application for annexation.

The commission proposes that local agencies develop strategic development plans to

- protect agricultural and sensitive lands,
- prevent sprawl,
- allow local governments to plan for urban development,
- identify and protect critical areas, and
- ensure that adequate infrastructure and services are available concurrently with development.

All cities and counties would be obliged to develop these plans. The obligation would be phased in, with plans due in 2002 for the largest cities and counties. All plans would be due by 2004.

Although it is helpful to understand the issues and rationale behind the proposed legislation, it is difficult to predict how the legislature will respond. The Department of Transportation's role in land use and transportation planning could certainly be affected.

An Alternative View

♦ Staley, S. R. The Sprawling of America: In Defense of the Dynamic City (*88*).

Staley, a researcher for the Research Public Policy Institute, provides an alternative view in the national discussion on urban sprawl and land use policy. Staley argues that current land use trends are not as foreboding as some have claimed. Staley systematically refutes the concerns raised by public officials and public interests groups.

With less than five percent of the nation's land developed and with 75 percent of the population living on 3.5 percent of the land, sprawl should not be considered a national issue, according to Staley. Some of the concerns about recent sprawl fail to view recent trends from a broader historical perspective. Nationally, urbanization occurred most rapidly between 1920 and 1950. Urban sprawl or outward growth of metropolitan areas seems to have natural limits. Staley points out that "Over time, the pace of urbanization in any single location appears to constantly adjust with high-growth areas becoming low-growth areas and vice versa" (*88*).

Staley also refutes claims that urbanization is a serious threat to farmland. Although the number of farms and the acres farmed have decreased rather dramatically, this is the result of consolidation within the industry and greater productivity. The concern that urbanization will restrict the world's ability to feed future generations appears to be unfounded. The growth in the food productivity rate is now much greater than the population growth rate, which appears to be leveling off. Ohio State University economist Luther Tweeten found that from 1949 to 1992, only 26 percent of the decline in cropland could be explained by urbanization. The remaining loss must then be attributed to development of open space, parked reserves, or other recreational uses.

Another concern about development on previously undeveloped land is that developers/owners are able to avoid paying the full cost of extending services and infrastructure. Instead, many of the costs of new development are absorbed by the existing communities. Staley argues that the fact that cities or counties cover initial costs is not, in itself, bad. Over time, households will pay their way through taxes and fees. The alternative, having new developments pay for all infrastructure extensions and improvements up front, would make only high-end development feasible.

Staley goes on to argue that the most frequently supported alternative, compact development, would reduce the rate of land consumption by only about 0.5 percent per year or five percent per decade. History has shown that urbanization moderates on its own as a result of natural market

limits. Lot-size restrictions tend to limit housing choices even for those that are willing to cover the additional costs needed to gain a larger home. Infrastructure costs are but one consideration in development. Concerns over these costs should not restrict the market so dramatically.

Factors such as crime, high taxes, poor quality public schools, deteriorating housing stock, and prohibitive regulations have all contributed to the flight from major cities. When these negative factors begin to outweigh the amenities of city life, cities will experience an exodus.

Staley recommends minimizing the role of public policy in land use determination and allowing the real estate market to reflect societal choices. He proposes a market-oriented approach that would include the following:

- Adopt economic policy neutrality, with no preferences for particular industries including agriculture.
- Provide price on-site public services, include operating, capitol and debt costs.
- Reform zoning to accommodate market trends.
- Use flexible, voluntary programs to protect open space.
- Strengthen private-property rights.
- Adopt nuisance-based standards for land use regulation. Those objecting to land uses should be required to prove a tangible harm and receive compensation based on the severity of the harm.
- Facilitate change and community evolution. Local land use regulations should allow communities to evolve with their changing natures, not become instruments of preservation.

INTEGRATING TRANSPORTATION AND LAND USE PLANNING

- Carlson, D., and D. Billen. Transportation Corridor Management: Are We Linking Transportation and Land Use Yet? (*89*).

This study suggests that urban sprawl could be linked to the separation of powers between state and local governments. Often, the state has authority over transportation and the local governments have land use planning authority. This study asks, Does it have to be this way? Eleven cases across the United States (where institutional, implementation and planning mechanisms are either in place or being contemplated) are examined. The research found few institutional models but concluded there are several approaches that may prove beneficial. Essentially, each locality would need to develop a corridor management framework that fits its characteristics.

- Dunphy, R. T. Understanding the Decision-Makers: Policy Requirement for Land Use Modeling (*90*).

According to Dunphy, understanding how real estate decisions are made will provide a window on long-term land use trends.

Real estate ownership is very diverse. For most owners, both residential and commercial, real estate development is a secondary interest and not a profession. As a result, location decisions are not always the result of rigorous analysis and, therefore, are not particularly rational. As an example, Dunphy uses site selection for new corporate regional offices or headquarters. “It is widely held among commercial real estate brokers that the single most important factor in

identifying a new business location is the location of the house of the CEO or decision maker" (*90*). Whatever market research is done often occurs after preliminary decisions have been made.

Home buying patterns are also difficult to predict. Recent surveys of homebuyers show that commuting distance ranks below price, size, style, and investment potential as a decision-making factor.

Dunphy suggests that planners should study market trends and incorporate these trends into comprehensive plans. "Since the goals of local governments and the goals of local developers are both to identify and serve future market demand, developers may be willing participants in a broader dialogue on forecasting the location of growth" (*90*).

- *The Transportation, Economic, and Land-Use System: A State-of-the-Art Transportation Information System for the Twenty-First Century* (*91*).

This report summarizes the initial development of The Transportation, Economic, and Land-Use System (TELUS), a transportation-management software tool, which is being developed by the New Jersey Transportation Planning Authority in partnership with the New Jersey Institute of Technology and Rutgers University. The objective is to provide a system for tracking the progress of projects and assessing the economic and land use impact of each project as well as the inter relationship of each project. The literature review focused on the land use component of the software.

Although the software was originally developed for the counties in northern New Jersey, there are plans to expand the model to be applicable throughout the United States. The Des Moines Metropolitan Planning Organization will serve as a pilot planning agency.

The TELUS land use model delineates transportation projects into four categories: (1) road capacity, (2) road accessibility, (3) transit capacity, and (4) transit accessibility. Multiple regression analysis indicates that for all four types of projects, there is a strong and positive correlation between the improvements and residential property values.

The modeling software prompts the user to enter average property values for a given municipality, categorized as residential and nonresidential, the type of transportation improvement project, and total investment in the project. The model then approximates the effect of the improvement on adjacent real estate.

TELUS is a very ambitious undertaking. TELUS attempts to greatly simplify the workings of complex inter relationships and is vulnerable to criticisms from a number of perspectives. In its current form, TELUS is not likely to have much relevance outside of northern New Jersey.

- Parsons, Brinckerhoff, Quade and Douglas, Inc. *Land Use Impacts of Transportation: A Guidebook* (*92*).

This guidebook was developed to improve the practice of land use forecasts and to identify tools and procedures for realistically evaluating the land use impacts of transportation investments and policies. In addition to the guidebook, the authors provide UrbanSim, an integrated land use model for metropolitan areas.

The major lessons learned in this project are listed in the introduction. Among the suggestions for state and metropolitan transportation planners are to pay more attention to the process of land development, to incrementally improve the land use forecasting and impact assessment process, and to include both technical and policy people in the process.

Although the emphasis of the guidebook, adapting and improving land use models, seems a bit misguided, the report does a nice job of summarizing the tools available for the analysis of transportation–land use interactions. The tools are given below:

1. Comprehensive land use plans and local land use regulations. For those localities in which transportation land use plans have the force of law, comprehensive land use plans can serve as the principal forecasting tool. The danger in relying exclusively on comprehensive plans is that it assumes that the planners will be able to achieve policy goals and direct growth to predetermined areas.

2. Qualitative methods. Qualitative methods rely on the knowledge and skills of experts. Through surveys, focus groups, interviews, advisory panels and/or oversight committees, expertise can be gleaned quite systematically. Smaller metropolitan planning organizations (MPOs) rely heavily on this method. They give the example of Denver's Regional Council of Governments. Although they used a traditional land use model to forecast future land use trends, they employ a panel of planners and economists to determine the relative weight of each variable. When deciding upon a qualitative approach, one must take into consideration the availability of experts, diversity of views desired, complexity of issues, and time and resources available.

3. Allocation rules. There are several ways to allocate growth to defined zones within a region:

   Constant share. Assumes that all areas within a region will share equally in growth of population or jobs proportional to the amount of vacant land zoned for that purpose.

   Share of growth. Assumes that recent growth trends will continue. That is, growth rates by area will remain constant. This does not take into account the shift of development or the maturation of an area.

   Shift-share. Like shares of growth, this method is limited by the fact that it is largely based on recent trends. However, because it includes more factors such as types of industry in each area and changed in accessibility, shift-share should be more accurate.

   Simple gravity models. More complex than the shift-share system, gravity models focus on the attractiveness of a given area based on such factors as proximity to employment centers, income levels, tax rates, availability of infrastructure and school quality. The gravity model is widely used in transportation planning. The same principals apply in land use.

   Allocation procedures work better in forecasting location of residential and commercial. They are less effective in forecasting industry location.

4. Decision rules. Decision rules are used to quantify relationships between transportation and land use. Publications such as the Institute of Traffic Engineers *Trip Generation Manual* (*93*) are used to apply previous empirical studies to current situations. Although this approach provides the decision maker with an authoritative source, in reality, the context of the development will greatly determine the impact on travel patterns.

5. Statistical methods:

   Multiple linear regression. Regression analysis is used to forecast growth based on the effect of multiple factors such as, proximity to employment centers, access to freeways or transit. The method allows the planner to assign weight to each factor based on recent experience.

   Discrete choice models. Discrete choice models are designed to model individual choices in situations. It can be applied to predict the location decisions that households or businesses would make during a planning period. The type of business, the characteristics of the household and the cost, and the accessibility and availability of alternative sites can all be factored into the model.

   State and MPO planners that have used statistical models in transportation planning understand that although quite effective, these models typically require a considerable amount of data. For example, the development of discrete choice models will almost necessarily include extensive surveys. Also, the authors point out that statistical methods provide information on average, and therefore, are not as helpful if factors change dramatically.

6. Geographic information systems. GIS applications allow planners to analyze all types of data with spatial components, such as census data by tract, property value by tax district, location of amenities, natural borders and location of roads. Using GIS, it is possible to store, sort, and analyze the inter-relationships between different types of locational data very efficiently. Recent advancements in the power of desktop computers and improvements in GIS software have added to its the functionality and popularity. It is often used in combination with land use models. The results are dependent upon well maintained databases.

7. Regional economic models. Regional economic models estimate impact of economic changes and can be used in combination with land use models to forecast changes in land use. Input-output models calculate changes in direct, indirect and induced demand that would accompany large economic events. These models are most often used by planner to estimate the impact of new transportation projects on the regional economy. Examples of input-output models include the Impact Analysis for Planning (IMPLAN) system and RIMS II. Econometrics is the application of statistical techniques to economics in the study of problems or the analysis of data. An econometric regional model is a system of simultaneous equations used to describe how the decision making processes of businesses, households, financial institutions, and governments will affect the regional economy.

   Although regional economic models are useful in forecasting the overall regional economic impact of a proposed transportation project or policy, they do not identify where, within the region, expansion or contraction will occur. The models are only as valid as the assumptions and data that are entered into them.

8. Formal land use models. The guidebook includes review several land use models now in use. The models include DRAM/EMPAL, MEPLAN, TRANUS, METROSIM, HLFM II+, LUTRIM, CUF, and UrbanSim.

For those interested in using a formal land use model, this guidebook would serve as an excellent reference document. It describes the methodology and assumptions behind each model, summarizes the strength and weaknesses, and provides contact information. It should be noted that none of the models can used by MPOs without substantial customization.

- Greene, S. Cityshape: Communicating and Evaluating Community Design (*94*).

This paper presents a framework for community planners and designers to use to help citizens understand and evaluate community designs and build land use concern into the state planning process.

CONCLUSION

This literature review is intended as a foundation for a transportation and land use public policy education program for Iowa. Relevant research is summarized, and policies, practices, and trends in Iowa and other states are discussed. This information has been used in two targeted sets of course material. The report is considered a work in progress because the source material and practices related to transportation and land use continue to evolve.

REFERENCES

1. Halstead, J. M., and S. C. Deller. Public Infrastructure in Economic Development and Growth. *The Journal of the Community Development Society,* Vol. 2, No. 8, Feb. 1997, pp. 149–169.

2. Burchell, R. W., et. al. *The Cost of Sprawl-Revisited*. Transit Cooperative Research Program Report 39. National Academy Press, Washington, D.C., 1998.

3. Geddes, R. Metropolis Unbound. *The American Prospect*, Nov.-Dec. 1997, pp. 40–46.

4. Kunstler, J. H. *The Geography of Nowhere: The Rise and Decline of America's Man-Made Landscape*. Simon and Schuster, New York, 1993.

5. Potter, S. The Transport Verses Land Use Dilemma. In *Transportation Research Record 964*, TRB, National Research Council, Washington, D.C., 1984, pp. 10–17.

6. Seskin, S. N. Guidance for Land Use Impacts of Transportation. In *Transportation, Land Use, and Air Quality: Making the Connection*, edited by S. Easa and D. Samdahl. Proceedings of a Specialty Conference, Portland, Oreg., May 17–20, 1998. American Society of Civil Engineers, 1998, pp. 296–305.

7. Soberman, R. M. Rethinking Urban Transportation: Lessons from Toronto. In *Transportation Research Record 1606*, TRB, National Research Council, Washington D.C., 1996, pp. 33–39.

8. Aldrich, L., C. Beale, and K. Kassel. Commuting and the Economic Functions of Small Towns and Places. *Rural Development Perspectives*, Vol. 12, June 1997, pp. 26–30.

9. Downs, A. The Costs of Sprawl: Alternative Forms of Growth. http://www1.umn.edu/cts/TRG/ADowns.html. Accessed Sept. 2, 1998.

10. Gomez-Ibanez, J. A., and J. H. Meyer. *Autos, Transit and Cities*. Harvard University Press, Cambridge, Mass., 1981.

11. Kelly, E. D., and D. R. Mandelker. *Growth and Public Transportation Investments: Growth Management Strategies to Reduce Transportation Costs In and Near Midwestern Urban Areas*. Midwest Transportation Center, Iowa State University, Ames, Iowa, June 1995.

12. Ross, C. L., and A. E. Dunning. *Land Use Transportation Interaction: An Examination of the 1995 NPTS Data*. Prepared for the Federal Highway Administration. Georgia Institute of Technology, Atlanta, Oct. 1997.

13. Schimek, P. Household Motor Vehicle Ownership and Use: How Much Does Residential Density Matter? In *Transportation Research Record 1552*, TRB, National Research Council, Washington, D.C., 1996, pp. 120–125.

14. Webster, F. V., and N. J. Paulley. An International Study on Land Use and Transport Interaction. *Transport Reviews*, Vol. 10, No. 4, Oct.–Dec. 1990, pp. 287–308.

15. Sorenson, A. A., and J. D. Esseks. Living on the Edge: The Costs and Risks of Scatter Development. Prepared for the American Farmland Trust. March 1998. http://farm.fic.niu.edu/cae/scatter/e-loecov.html. Accessed Sept. 3, 1998.

16. Swenson, D., and L. Eathington. Standard Measures of Interjurisdictional Capital Change in a Metropolitan Region: Using GIS to Isolate Sub-County Units of Economic Change. Paper presented at the Southern Regional Science Association Annual Meeting, Memphis, April 17–19, 1997.

17. Beaumont, T. Development Rules Aim for Balance. *Des Moines Register,* Jan. 31, 2000, pp. M, 2M.

18. Beaumont, T. Poor Roads Plague Subdivisions in Rural Dallas County. *Des Moines Register,* Oct. 3, 1999, pp. 1A, 4A.

19. Bergstrom, K. Small-Town Elements Flavor Big City Tracts. *Des Moines Register,* Aug. 30, 1999, pp. 1A, 5A.

20. Bergstrom, K. 'Burbs Lead [Des Moines] in Office Space. *Des Moines Register,* July 11, 1998, p. 12S.

21. City of Ames Planning and Housing Department. *Annexation Study Phase II.* Jan. 31, 2000. http://www.city.ames.ia.us/HousingWeb/annexation_opening.htm. Accessed Jan. 31, 2000.

22. Erb, G., and D. DeValois. W.D.M., Johnston Pace Area Construction Boom. *Des Moines Register,* Jan. 20, 2000, pp. 1A, 5A.

23. Finney, D. P. Small Towns, Big Changes: Dallas Juggles Growth, Rural Appeal. Dallas County Growth—First of a Three-Part Series. *Des Moines Register,* April 11, 1999, pp. 1A, 8A.

24. Petroski, W. As County Fills Up, More Drivers Get Fed Up. Dallas County Growth—Second of a Three-Part Series. *Des Moines Register,* April 12, 1999, pp. 1A, 5A.

25. Beeman, P. Goal of New Rules: Save the Good Life, Dallas Aim: Control Growth. Dallas County Growth—Third of a Three-Part Series. *Des Moines Register,* April 13, 1999, pp. 1A, 4A.

26. Hupp, S. Ames Schools Bid for ISU Land. *Des Moines Register,* Feb. 4, 2000, p. 3M.

27. Hupp, S. Ames Waits for Growth Direction. *Des Moines Register,* Feb. 2, 2000, p. 3M.

28. Hupp, S. Ames City Planners Ready to Release Report. *Des Moines Register,* Jan. 31, 2000, p. M.

29. Kuhns, M. Ames City Council Rejects Expansion Survey Proposal. *Iowa State Daily,* Oct. 14, 1999, p. 2.

30. Lee, J. D. Dispute in Ames: Where to Grow. *Des Moines Register,* Oct. 6, 1999, pp. 1A, 4A.

31. Lewis, R. City Seeks Land for New West Ames Water Tower. *Ames Tribune,* Feb. 12, 2000, pp. B1, B8.

32. Lewis, R. Growth Plan Endorses North, SW. *Ames Daily Tribune,* Jan. 29, 2000, pp. A1, A8.

33. Lewis, R. Ames Looks to North, Southwest. Growing Pains: Part One in a Five-Part Series—Where to Build and Why, Conflicting Views in an Expanding City. *Ames Tribune,* Oct. 4, 1999. http://www.amestrib.com/ames.cfm.

34. Lewis, R. City Weighs Attitudes, Costs, Traffic. Growing Pains: Part Two in a Five-Part Series—Where to Build and Why, Conflicting Views in an Expanding City. *Ames Tribune,* Oct. 5, 1999. http://www.amestrib.com/ames.cfm.

35. Lewis, R. Annexation: Ames Schools Could Lose Out. Growing Pains: Part Three in a Five-Part Series—Where to Build and Why, Conflicting Views in an Expanding City. *Ames Tribune,* Oct. 6, 1999. http://www.amestrib.com/ames.cfm.

36. Lewis, R. City Wants ISU Land, but ISU Is Slow to Sell. Growing Pains: Part Four in a Five-Part Series—Where to Build and Why, Conflicting Views in an Expanding City. *Ames Tribune,* Oct. 7, 1999. http://www.amestrib.com/ames.cfm.

37. Lewis, R. Annexation Debate Divides City Council. Growing Pains: Part Five in a Five-Part Series—Where to Build and Why, Conflicting Views in an Expanding City. *Ames Tribune,* Oct. 8, 1999. http://www.amestrib.com/ames.cfm.

38. Sears, D. W., T. D. Rowley, and J. N. Reid. Infrastructure Investment and Economic Development: An Overview. In *Infrastructure Investment and Economic Development: Rural Strategies for the 1990s*. Staff Report AGES 9069. Agriculture and Rural Economic Division, U.S. Department of Agriculture, Dec. 1990, pp. 1–18.

39. Forkenbrock, D. J., T. F. Pogue, D. J. Finnegan, and S. J. Foster. Transportation Investment to Promote Economic Development. In *Infrastructure Investment and Economic Development: Rural Strategies for the 1990s*. Staff Report AGES 9069. Agriculture and Rural Economic Division, U.S. Department of Agriculture, Dec. 1990, pp. 19–42.

40. Briggs, R. Interstate Highway System Development in Nonmetropolitan Areas. *Transportation Research Record 812*, TRB, National Academy Press, Washington, D.C., 1981, pp. 9–12.

41. Otto, D., and C. Anderson. *The Economic Impact of Rural Highway Bypasses: Iowa and Minnesota Case Studies.* Midwest Transportation Center, Iowa State University, Ames, Iowa, Jan. 1995.

42. Burress, D. *Impacts of Highway Bypasses on Kansas Towns.* Prepared for the Kansas Department of Transportation. Institute for Public Policy and Business Research, University of Kansas, Lawrence, Kans., 1996.

43. Payne-Maxie Consultants, Blayney-Dyett. *Land Use and Urban Development Impacts of Beltways.* Final Report. U.S. Department of Transportation and U.S. Department of Housing and Urban Development, Washington, D.C., Oct. 1980.

44. Sierra Club. Urban Sprawl. 1999. http://sierraclub.org.

45. Smart Growth Network Organization. Smart Growth. 1999. http://www.smartgrowth.org.

46. Chesapeake Bay Foundation. Growth, Sprawl, and the Bay: Simple Facts about Growth and Land Use. 1999. http://www.smartgrowth.org/library/cbf_simplefact.html. Accessed March 5, 1999.

47. *Managing Colorado's Future: A Guidebook for Integrating Land Use, Transportation and Air Quality Planning*. Report. Prepared for the State of Colorado. Community Matters, Inc.; Center for Resource Management; Cutler and Stanfield, L.L.P.; and Gerstenberger Associates, March 1997. http://www.state.co.us/smartgrowth/smrtprog.htm. Accessed Dec. 2, 1998.

48. Uneven Development: Outer Suburbs and Exurbs. In *The Technological Reshaping of Metropolitan America.* Office of Technology Assessment, Congress of the United States, Washington, D.C., 1995.

49. Gurwitt, R. The Quest for Common Ground. *Governing*, June 1998, pp. 16–18, 21–22.

50. Kelly, E. D. *Managing Community Growth: Policies, Techniques and Impacts*. Praeger, Westport, Conn., 1993.

51. Ehrenhalt, A. The Czar of Gridlock. *Governing*, May 1999, pp. 20–27.

52. Langdon, P. In Search of a Center. *Governing*, June 1998, pp. 24–27.

53. Lindquist, E. Moving Toward Sustainability: Transforming a Comprehensive Land Use and Transportation Plan. In *Transportation Research Record 1617*, TRB, National Research Council, Washington D.C., 1998, pp. 1–9.

54. Perlman, E. Downtown: The live-in Solution. *Governing*, June 1998, pp. 28–32.

55. *Community Development: Extent of Federal Influence on Urban Sprawl Is Unclear.* Report to Congressional Requesters Senators C. Levin and J. Jeffords, GAO/RCED-99-87. U.S. General Accounting Office, Washington, D.C., April 1999. http://www.gao.gov.

56. *Expanding Metropolitan Highways: Implications for Air Quality and Energy Use.* Special Report 245. TRB, National Research Council, Washington, D.C., 1995.

57. Haveman, J. Gore Proposal Aims at Urban Sprawl. *Washington Post*, Jan. 11, 1999, p. A2. http://www.washingtonpost.com/wp-srv/politics/campaigns/wh2000/stories/gore011199.htm.

58. President Clinton's Land Legacy Initiative: Legislative Proposals. 1999. http://www.whitehouse.gov/CEQ/landslegacy2.html.

59. Remarks by the President and the Vice President on Announcement of the Lands Legacy Initiative. Remarks made at the U.S. National Arboretum, Washington D.C., Jan. 12, 1999. http://www.pub.whitehouse.gov/uri-res/I2R?urn:pdi://oma.eop.gov.us/1999/1/13/2.text.1.

60. Transportation and Community System Preservation Pilot Program Briefing. FHWA 30-99. Office of Public Affairs, U.S. Department of Transportation, Washington, D.C., May 3, 1999. http://www.dot.gov/briefing.htm.

61. National Wildlife Federation. Population and Urban Sprawl Fact Sheet. Nov. 1997. http://www.nwf.org/nwf/international/pop/sprawl.html. Accessed Sept. 9, 1998.

62. *Transportation and Delaware's Future, Statewide Long-Range Transportation Plan*. Delaware Department of Transportation, Jan. 1997.

63. Moore, T. Oregon's Growth Management: What's Working… What Isn't… So What? In *Transportation, Land Use, and Air Quality: Making the Connection,* edited by S. Easa and D. Samdahl. Proceedings of a Specialty Conference, Portland, Oreg., May 17–20, 1998. American Society of Civil Engineers, 1998. pp. 355–367.

64. Ehrenhalt, A. The Great Wall of Portland. *Governing*, May 1997, pp. 20–24.

65. Frank, L. D., and R. T. Dunphy. Smart Growth and Transportation. 1999. http://www.uli.org/pubs/UrbLand/dunphysgt/dunphysgt.htm. Accessed July 2, 1999.

66. New Jersey Office of State Planning. State Planning Act of 1985: Summary. http://www.state.nj.us/osp/doc/law/osplaws1.htm. Accessed June 29, 1999.

67. The State Planning Act. 52:18A 196 et seq. Legislature of the State of New Jersey, 1985.

68. New Jersey Office of State Planning. Summary of the New Jersey State Development and Redevelopment Plan. http://www.state.nj.us/osp/plan/sdrpsumm.htm. Accessed July 2, 1999.

69. 1000 Friends of Florida. Grappling with Growth: Florida Confronts the Future. http://www.ficus.usf.edu/orgs/1000fof/PUBS/plantomorrow/contents.htm. Accessed June 3, 1999.

70. Murphy, M. Property Rights and Growth Management in Florida: Balancing Opportunity and Responsibility in a Changing Political Climate. http://www.law.pace.edu/landuse/flo.html. Accessed June 9, 1999.

71. American Planning Association, Growing Smart. Statutory Summary for the State of Vermont. http://www.planning.org/plnginfo/GROWSMAR/summary/vermont.pdf. Accessed July 25, 1999.

72. Vermont Statutes Online. Title 24 Municipal and County Government, Chapter 117 Municipal and Regional Planning Development. http://www.leg.state.vt.us/statutes/title24/chapt117.htm. Accessed July 9, 1999.

73. National Conference of State Legislatures. State Incentive-Based Growth Management Laws. http://204.131.235.67/programs/ensr/growthdata.cfm. Accessed July 31, 1999.

74. Vermont Department of Education. Act 60 Ushers in New Era of Planning. *Vermont Times*, Nov. 5, 1997. http://www.state.vt.us/educ/110697f.htm.

75. Vermont Property Owners' Report. Special Report on Act 60. http://www.vermontproperty.com/act60.html. Accessed June 18, 1999.

76. Salisbury, B. Smart Growth Movement Sprouts in Maryland. *St. Paul Pioneer Press*, Feb. 21, 1999.

77. Dresser, M., and M. G. Hare. Deletion of Projects Criticized: State Delegate Says Transportation Officials Don't See Quality of Life. *Baltimore Sun's Online Edition*, Feb. 10, 1999. http://www.sunspot.net.

78. Campbell, F. Smart Growth, Stupid Policy. *Regulation*, Spring 1999, pp. 10–12.

79. Froehlich, M. Smart Growth: Why Local Governments Are Taking a New Approach to Managing Their Communities. *Public Management*, May 1998, pp. 5–9.

80. O'Toole, R. A Critique of Neo-traditionalism. *The Thoreau Institute*, 1998. http://www.ti.org/neotrad.html. Accessed Dec. 2, 1998.

81. Congress for the New Urbanism. New Urbanism/Neo-Traditional Development. 1998. http://www.cnu.org.

82. Ewing, R., C. Heflin, M. Deanna, and D. R. Porter. *Best Development Practices, Doing the Right Thing and Making Money at the Same Time*. Florida Atlantic University/Florida International University, April 1996.

83. Handy, S. L. Urban Form and Pedestrian Choices: Study of Austin Neighborhoods. In *Transportation Research Record 1152*, TRB, National Academy Press, Washington, D.C., 1996, pp. 135–144.

84. O'Donnel, T. A. Development: It Does Not Take a Village. *Des Moines Register*, July 30, 1998, pp. 10S, 8S.

85. Penn, M. Taming the Suburban Wasteland. *On Wisconsin*, Winter 1998, Vol. 99, No. 6, pp. 28–34, 54.

86. Edelman, M. A. Extension Public Policy Economist, Iowa State University Extension to Communities. Oct. 98–Jan. 99. http://www.exnet.iastate.edu/newsrel/.

87. *Growth Management of Cities and Protection of Farmland: Proposal for Legislation*. Iowa Legislature's Commission on Urban Planning, Nov. 30, 1998.

88. Staley, S. R. *The Sprawling of America: In Defense of the Dynamic City.* Policy Study 251. Reason Public Policy Institute, Jan. 1999.

89. Carlson, D., and D. Billen. Transportation Corridor Management: Are We Linking Transportation and Land Use Yet? 1996. http://www.gspa.washington.edu/ippm/pub/96transportation/execsum.html. Accessed Sept. 2, 1998.

90. Dunphy, R. T. Understanding the Decision-Makers: Policy Requirement for Land Use Modeling. *Improvement Program Land Use Modeling Conference Proceedings*, Feb. 19–21, 1995.

91. *The Transportation, Economic, and Land-Use System: A State-of-the-Art Transportation Information System for the Twenty-first Century*. New Jersey Institute of Technology, National Center for Industrial Productivity, Rutgers University, Center for Urban Policy Research, and New Jersey Transportation Planning Authority, 1997.

92. Parsons, Brinckerhoff, Quade and Douglas, Inc. *Land Use Impacts of Transportation: A Guidebook*. NCHRP Report 423A. National Academy Press, Washington, D.C., 1999.

93. *Trip Generation Manual*. Institute of Traffic Engineers, Washington, D.C.

94. Greene, S. Cityshape: Communicating and Evaluating Community Design. *Journal of the American Planning Association*, Vol. 58, No. 2, Spring 1992, pp. 177–189.

APPENDIX: INTERNET SITES

American Planning Association. http://www.planning.org/bookstore.
This site by the American Planning Association allows the user to search for books by groups (e.g., textbooks and bestsellers), broad subject (e.g., land use law, growth management, and urban design), format (e.g., hard cover and videotape), and/or keyword (e.g., author, title, and ISBN)

Center for Excellence for Sustainable Development. http://www.sustainable.doe.gov.
This site by the Center for Excellence for Sustainable Development links to a number of resources relating to land use planning, transportation, green buildings, municipal energy, sustainable business, disaster planning, measuring progress, rural issues, and resource efficiency. Each area discusses public involvement, the role of information, useful tools, success stories, codes/ordinances, articles/publications, and education materials, among others.

Housing Density, Urban Sprawl, and Growth Management. Sponsored by the Department of Housing and Urban Development (HUD) and the Federal Housing Administration (FHA). http://www.teleport.com/~mrtom/hdens.html.
This web page links to sites around the world that relate to how housing density fits into plans to coordinate and manage growth. Market, developer, neighborhood, and governmental understanding of what higher density housing is, what it looks like, and how it is working elsewhere are all first steps in determining its appropriateness in a local context.

Lambert, M. Highlights of State Efforts Toward Growth Management. Brookings Center on Urban and Metropolitan Policy, May 1997. http://www.brook.edu/es/urban/growthmanag.htm.
This report chronicles various states efforts toward growth management. It is intended to be a work in progress and will be continually updated.

Maryland Department of Housing and Community Development. http://www.dhcd.state.md.us/smart.htm.
This site by the Maryland Department of Housing and Community Development links to a number of resources relating to homeownership in existing neighborhoods, communities and economic diversity, business and downtown revitalization, and preserving and promoting Maryland's heritage.

Minnesota For An Energy-Efficient Economy. Evaluation of Urban Growth in Minnesota: Economic and Environmental Costs and Benefits. http://www.me3.org/projects/sprawl/lcmrprogram.html.
The research evaluates the benefits, costs, and environmental impacts of two alternative metropolitan growth patterns and document citizens' values and goals relative to these developments.

Models and Guidelines for Managing Maryland's Growth. Sponsored by the State of Maryland Office of Planning. http://www.op.state.md.us/planning/m&gnew.html.

This site lists and describes a number of publications that are available relating to smart growth and urban growth boundaries, among other things.

Sierra Club. http://sierraclub.org.
This site by the Sierra Club links is searchable and links to a number of materials relating to the environment, including land use and urban sprawl. This site is unique in that it includes activist and editorial columns, providing for a large "discussion."

Smart-Growth Network. http://www.smartgrowth.org.
This site, the Smartgrowth Network, links to issues surrounding smart growth including State initiatives and a calendar of events. The page http://smartgrowth.sustainable.org/topics/smartcities.html allows users to search different links relating to fiscal impacts and resources, infrastructure, regional relationships, sprawl, and transportation.

Sprawl Resource Guide. Sponsored by PlannersWeb: the Planning Commissioners Journal. http://www.plannersweb.com/sprawl/sprawl5.html.
This site links to multiple sites, papers, and research relating to strategies for dealing with urban sprawl.

Sustainable Communities Network. Sponsored by Concern, Inc., and the Community Sustainable Research Institute. http://www.sustainable.org/index.html.
This site has links relating to creating community, smart growth, growing a sustainable economy, protecting natural resources, governing sustainability, and living sustainability. It also includes a calendar of events and case studies of community initiatives across the United States.