

Environmental Justice Emerging Trends and Best Practices Guidebook

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Introduction

Purpose of Document

In the face of economic challenges, aging infrastructure, technological advances, and increasing environmental concerns, the Federal Highway Administration (FHWA) remains committed to educating staff at Federal transportation agencies, State Departments of Transportation (State DOTs), Metropolitan Planning Organizations (MPOs), and transit agencies, as well as the public, about the importance of environmental justice (EJ) in decisionmaking. The FHWA and the FTA are preparing new training products and materials. This document, *Environmental Justice in Transportation: Emerging Trends and Best Practices*, was prepared by the FHWA, in cooperation with the FTA, and focus on timely and relevant transportation issues. This case study document helps promote a deeper understanding of the responsibilities, opportunities, and benefits derived from addressing EJ in transportation planning and implementation.

This introduction summarizes the importance and role of EJ in transportation, followed by four topic papers that can be read individually or used together as part of a training program on EJ for transportation practitioners. The four topic chapters focus on foundational issues (transit and affordability, as it affects communities' access to opportunities-and public involvement) or emerging trends (livability, road pricing) and highlight noteworthy case studies and best practices that promote EJ in transportation decisionmaking. The United States Department of Transportation (U.S. DOT) guidance document directs the FHWA and the FTA to:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
- Ensure the full and fair participation by all potentially affected communities in the transportation decision making process.
- Prevent the denial of, reduction in or significant delay in the receipt of benefits by minority and low-income populations.

The topics in this document were selected for their relevance and emerging significance in transportation planning, based on a review of trends and current issues. The topic chapters demonstrate how EJ principles are being applied to meet mutually beneficial goals as defined by both practitioners and the communities served by the projects. Each chapter includes case study examples that are relevant to transportation practitioners and other stakeholders interested in promoting EJ.

This document addresses the following topics:

- **Transit and Affordability.** Transit is growing in popularity as people become increasingly concerned about the economy, traffic congestion, cost of transportation, and the environment. For people who cannot drive, access to public transportation is essential. Ensuring that all communities have access to safe, convenient, reliable, and affordable transportation continues to be a challenge. Within that overall context of access and mobility for all communities, this chapter discusses the emerging issue of the connection between transit and affordability, taking into account both transportation and housing and providing examples of tools

and best practices for improving the linkage between affordability, mobility, and access. Specifically, this chapter summarizes the application of a regional tool that helps planners and the public assess the affordability of housing by integrating transportation costs. It also presents a case study of a rail project that is enhancing an established rail corridor to improve access to traditionally underserved populations.

- **Public Involvement.** Before programs are developed and funds are requested the FHWA and the FTA require that the planning process be informed by a Public Involvement Plan. The outcome is a Participation Plan which is a requirement of the planning process. When programs receive Federal funding, transportation practitioners are required to prepare public involvement plans and solicit input from potentially affected communities. This practice is at the core of EJ; the intent of the practice is to avoid, minimize, or mitigate disproportionately high and adverse impacts and to equitably distribute the benefits and burdens of transportation projects and policy decisions as equitably as possible. To achieve this, many transportation planners meet and exceed the public involvement requirements. This chapter provides examples of strategies used to overcome cultural and linguistic barriers to effective participation, as well as analytical tools that transportation agencies can use to validate EJ issues reported by affected communities. In addition, the chapter provides examples of innovative visualization and social media technologies that practitioners are using to enhance public participation.
- **Livability.** This chapter demonstrates ways the effort to promote livable communities- the mission of the recently formed Partnership for Sustainable Communities, comprised of the U.S. Department of Transportation (DOT), the Department of Housing and Urban Development (HUD), and the Environmental Protection Agency (EPA), is inherently linked to the pursuit of EJ in transportation. This chapter highlights the Atlanta BeltLine, where core principles of EJ are being applied to shape an ambitious urban redevelopment project that also exemplifies how transportation projects can promote livability. This chapter demonstrates how two other livability projects, an urban transitway and a light-rail extension, have pursued the application of core EJ principles through preservation of affordable housing and provided training and employment to low-income and minority workers during construction.
- **Road Pricing Mechanisms.** This chapter explores road pricing as a potential solution to address challenges, such as growing traffic congestion, increasing emissions, and inadequate funding for transportation improvements. The chapter also discusses concerns about the potential economic effects of road pricing on disadvantaged communities-particularly low-income populations-and how these concerns have affected the acceptability of these programs. This chapter describes some problems of equity in implementing road pricing strategies. It offers solutions to achieve EJ derived from using comprehensive outreach to address EJ issues during planning and implementation. Examples include a discussion of challenges and successes of a high-occupancy toll lane conversion and a summary of best practices from an area wide congestion pricing proposal.

The following table lists the case studies presented in each topic chapter, and indicates the EJ principles exemplified by each case study. This table can help readers identify specific examples that pertain to transportation trends and concepts.

Summary of Case Studies: Organized by Topic Area and Geography

Topic Area and Case Studies	Geography						EJ Principles		
	West	Central	East	Urban	Suburban	Rural	EJP 1	EJP 2	EJP
1. Transit and Affordability									
Bay Area Housing and Transportation Affordability (San Francisco, CA)	X			X	X	X	X		X
Fairmount/Indigo Line (Boston, MA)			X	X			X	X	X
Austin's First Affordable Housing TOD (Austin, TX)		X		X			X		X
2. Public Involvement									
Buford Highway (Atlanta, GA)			X	X			X	X	
EJ Tool Kit, including the Accessibility map (Baltimore, MD)			X	X			X	X	
Innovative Uses of Digital Video, Social Media and Tools	X	X	X	X	X	X		X	
3. Livability									
Atlanta Beltline (Atlanta, GA)			X	X	X		X	X	X
Urban Transitway (Stamford, CT)			X	X			X		X
TriMet Yellow Line Extension (Portland, OR)	X			X	X		X	X	X
Green Impact Zone (Kansas City, MO)		X		X			X	X	X
4. Road Pricing Mechanisms									
New York City Congestion Pricing (New York City, NY)			X	X	X		X	X	X
Minneapolis (St. Paul I-394 HOT)		X		X	X		X	X	X

Topic Area and Case Studies	Geography						EJ Principles		
	West	Central	East	Urban	Suburban	Rural	EJP 1	EJP 2	EJP
lanes (Minneapolis, MN)									
I-15 HOT lanes (San Diego, CA)	X			X	X		X		
Proposed HOV to HOT lane conversions (Atlanta, GA; Dallas, TX; Los Angeles, CA)	X	X	X	X	X		X	X	X
Distance-based pricing experiment (Portland, OR)	X			X		X	X		
<p>LEGEND-DOT ENVIRONMENTAL JUSTICE PROGRAM</p> <p>Principle 1: Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.</p> <p>Principle 2: Ensure the full and fair participation by all potentially affected communities in the transportation decision making process.</p> <p>Principle 3: Prevent the denial of, reduction in or significant delay in the receipt of benefits by minority and low-income populations.</p>									

What Is Environmental Justice?

Effective and equitable transportation decisionmaking depends on understanding and properly addressing the unique needs of different socio-economic groups. The FHWA and the FTA remain committed to nondiscrimination and ensuring that every transportation project nationwide considers the human environment.

The Environmental Justice (EJ) Orders provide that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

Environmental justice is grounded in the practice of making sure that both benefits and burdens of transportation investments are shared as equitably as possible among all affected communities. Historically, low-income and minority communities have borne many negative effects of transportation projects and have gained few direct benefits. As a result, efforts to promote EJ in transportation focus on engaging these communities in transportation planning and investment decisions. With an awareness and active promotion of the principles of EJ in transportation decision making, practitioners can better mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.

Some practitioners have used the terms "social justice" or "equity" to refer to inclusive planning approaches that reach out to traditionally underrepresented populations, as well as

the mainstream public. This broader approach to public involvement is also fundamental to the principles established by the DOT-HUD-EPA, Sustainable Communities Partnership and U.S. DOT's Livability Initiative.¹ Specifically, efforts that aim to increase transportation choices, promote affordable housing, and support and value existing communities are directly aligned with the livability principles and should be leveraged in policy and community efforts to achieve greater success in meeting the goals of both initiatives.

Brief History of Environmental Justice

Efforts to promote nondiscrimination in policy and decisionmaking started gaining political traction in the late 19th century with the suffrage movement. The past 50 years have brought about significant legislation specifically directed at preventing discrimination and promoting equitable treatment of all people. Key legislation catalyzing this broader awareness has included the Civil Rights Act of 1964- Title VI, which prohibits discriminatory practices in programs receiving Federal funds-and the National Environmental Policy Act of 1969-which requires Federal agencies to analyze the effects of proposed actions that significantly affect the quality of human and natural environment. As understanding of EJ concerns grew, community activists expressed that minority and low-income neighborhoods for decades had largely borne the brunt of the negative effects of new freeways and received far fewer benefits from them. In the 1980s, grassroots protests against the disposal of toxic wastes and siting of polluting industries gained momentum. Research studies found that predominately poor and African-American communities were being targeted for placement of disposal sites. Undesirable and noxious facilities were routinely receiving permits from regulatory agencies to locate their plants in communities with a large proportion of people of color and low-income populations. The term "environmental racism" was first coined and defined by Dr. Benjamin Chavis of the United Church of Christ Commission for Racial Justice in 1987, and environmental justice was the name given to the movement to address environmental racism.

Environmental justice soon began to include a number of social equity concerns. Executive Order 12898 ("Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations") addressed environmental justice in existing programs at the Federal level. Now, in the early 21st century, concerns about the potential effects of climate change are increasing, especially for vulnerable communities that depend on alternative transportation modes while efforts to promote sustainable development are mounting. It is, therefore, essential that the core principles of EJ continue to play a major role in transportation decision making to improve human, economic, and environmental health in our communities.

Title VI of the Civil Rights Act prohibits discrimination based on race, color, and national origin. The Executive Order on Environmental Justice protects minority and low-income populations. Neither addresses discrimination based on age, ability, gender, or religion. These populations are protected by other nondiscrimination statutes. Collectively, all of these populations and the populations protected under Title VI of the Civil Rights of 1964 and the

¹ For more information, see: <http://www.dot.gov/affairs/2009/dot8009.htm>.

Executive Order on Environmental Justice are often referred to as "traditionally underserved," "traditionally underrepresented," or "vulnerable" populations.²

Executive Order 12898 and the DOT and FHWA Orders on Environmental Justice address people belonging to any of the following groups:

- **Black**-a person having origins in any of the black racial groups of Africa.
- **Hispanic**-a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.
- **Asian**-a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, or the Pacific Islands.
- **American Indian and Alaskan Native**-a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition.
- **Low-income**-a person whose household income (or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services (HHS) poverty guidelines.³

Environmental Justice and Transportation Concerns

Transportation planners can derive many benefits when they reach out to people and businesses potentially affected or served by transportation projects and involve them in planning efforts; not only does public involvement meet Federal requirements and support U.S. DOT priorities, such as safety, mobility, and livability, but it also can enhance project outcomes. Transportation projects and services can promote the economic and social vitality of neighborhoods, cities, tribal communities, and regions. At the same time, communities can prosper when they have good access to employment, shopping, and services.

Although freeways, rail lines, and major arterials can improve regional travel, connectivity, access, and mobility, poorly planned facilities can decrease connectivity and divide neighborhoods by creating real or perceived barriers to community interactions and local multimodal travel. Negative community impacts from transportation projects often are most acutely felt by low-income and minority populations. These groups frequently depend on friends and neighbors to share rides to work, school, child care, elder care, community activities, and other destinations. It is important to maintain the transportation connections between friends, neighbors, and local businesses, and access to parks, schools, medical clinics, and other community facilities because they are essential components of neighborhood life and community stability.

Improvements to public transit service can provide residents with greater access to jobs, schools, health care facilities, and shopping. Improved access may, in turn, increase property values. At the same time, communities through which transportation facilities (e.g., highways, fixed guideway transit) are built may gain greater mobility access, but may also suffer from construction disruptions and loss of existing homes and businesses. When poorly planned,

² To learn more about legislation that prohibits discrimination on the basis of disability, see: http://www.fhwa.dot.gov/environment/te/te_ADA.htm.

³ The functional definition of "low-income" can vary if a State has adopted a more inclusive income threshold than the HHS poverty level, and uses it routinely on all transportation projects.

transportation projects can also be visually unattractive, affecting the social and economic fabric of neighborhoods.

Environmental impacts can negatively affect the health of residents and natural systems.⁴ Vehicles release pollutants into the air that residents breathe. Vehicles also release pollutants on roads, which can then wash into lakes and streams, affecting water quality.⁵ Noise and vibration are two other types of environmental effects, especially associated with high-speed auto, freight, train, and airplane travel. Safety is yet another concern affecting all highways, roads, rail lines, sidewalks, and bike lanes. Roads can be dangerous to travel along and cross on foot or bicycle. Improvements to intersections, rail crossings, sidewalks (including lighting), crosswalks, and bicycle lanes can improve safety and accessibility for all types of travelers.⁶

Promoting Environmental Justice through Transportation Investments

By targeting transportation funding to support reinvestment in existing communities, agencies can build more choice, convenience, cost-effectiveness, and equity into the transportation system, while rectifying adverse community effects caused by previously developed facilities. Changing demographics and evolving markets are increasing the demand for compact, walkable neighborhoods that offer a range of housing and transportation choices. Coordinating transportation and housing plans and investments can help ensure that walking, biking, and traveling by transit are safe, convenient, and realistic choices for more people. Linking those investments with improved multimodal programming, management, and operations can help make transportation systems more accessible, efficient, and equitable.

In a time of economic challenges and fiscal constraint, limited transportation funds can be more effectively focused on projects that support economic revitalization and community development, while improving transportation and housing affordability and quality of life for all residents. The same may be true for towns and villages in rural areas, which are struggling to remain economically competitive, while also preserving community character and maintaining viable mobility options. Rural communities often present unique mobility challenges, such as greater driving distance between activities and destinations, fewer public transit options, and a lack of infrastructure for walking and wheeling. When a small town is divided by a State highway that serves as a main street, roadway capacity improvements can further limit transportation choice.⁷ Applying EJ and livability principles to roadway improvements, downtown redevelopment, and adjacent growth areas can help improve mobility and access to services and activities for all citizens. It can also help support long-term improvements to transit connections between communities.

Linking transportation investments to compact development and community revitalization strategies can also preserve natural and cultural resources, while reducing long-term infrastructure costs. Compact development requires less land, while shorter, narrower streets produce less stormwater runoff and cost less to build and maintain. Providing multimodal

⁴ See *Effective Methods for Environmental Justice Assessment* for discussion about general transportation impacts, available at: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_532.pdf

⁵ *Our Built and Natural Environments: A Technical Review of the Interactions between Land Use, Transportation, and Environmental Quality*, U.S. EPA, 2001, <http://www.epa.gov/smartgrowth/pdf/built.pdf>.

⁶ Strategic Highway Safety Plan, AASHTO, 1998, and NCHRP Project 17-18(3) Implementation Guides, <http://safety.transportation.org/about.aspx>.

⁷ *State Highways as Main Streets: A Study of Community Design and Visioning*, Washington State DOT, 2009 <http://66.132.139.69/uploads/wsdotmst.pdf>.

choices can reduce vehicle miles traveled (VMT) and greenhouse gas (GHG) emissions, serving as an effective climate change mitigation strategy, while also safeguarding communities that are most vulnerable to the potential effects of climate change on aging transportation infrastructure. In the process of ensuring that people of all ages have real choices to walk and wheel in the course of daily living, and making mobility choices amenable to a range of abilities, transportation practitioners can support active living and help improve health and quality of life for all populations. Rather than simply mitigating the impacts of transportation investments, fully incorporating environmental justice in transportation decisionmaking can help improve a community's human, social, and environmental health.

Civil Rights and Environmental Justice Timeline

1964	Title VI of the Civil Rights Act prohibits recipients of Federal financial assistance from discriminating based on race, color, or national origin.
1968	23 U.S.C. 140-Nondiscrimination (amended in 1991) refers to State employment assurances. Refers to race, color, creed, national original, or sex.
1969	The National Environmental Protection Act (NEPA) requires Federal agencies to analyze the environmental impacts of their actions. Agencies must account for impacts on populations and consult the public throughout their analyses.
1970	The Federal Highway Act of 1970 requires that adverse economic, social, and environmental impacts of federally supported highway projects be fully considered during project development and that final project decisions are made in the best overall public interest. The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 requires fair and equitable treatment of people displaced as a direct result of programs or projects undertaken by a Federal agency or with Federal financial assistance. Title VI Regulation 49 CFR 21, Nondiscrimination in federally assisted programs of the DOT was enacted to effectuate the provisions of Title VI of the Civil Rights Act of 1964 to the end that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving Federal financial assistance from the DOT.
1973	The Rehabilitation Act of 1973 prohibits discrimination on the basis of disability in programs conducted by Federal agencies, in programs receiving Federal financial assistance, in Federal employment, and in the employment practices of Federal contractors.
1975	The Age Discrimination Act of 1975 prohibits age discrimination in programs receiving Federal financial assistance.
1987	The Civil Rights Restoration Act of 1987 prohibits discrimination based on race, color, gender, national origin, age, or disability throughout an entire agency if any part of the agency receives Federal financial assistance.
1990	The Americans with Disabilities Act of 1990 (ADA) "extended many of the protections and remedies of the Civil Rights Act to persons with disabilities, and broadened the Rehabilitation Act's provisions to entities that do not receive Federal funds.
1991	Intermodal Surface Transportation Efficiency Act (ISTEA) "made major changes to transportation planning and policy. It created flexible funding, enhanced the role of MPOs, and strengthened the requirements for transportation planning and programming.
1992	The Office of Environmental Equity is established in the U.S. EPA. (The Office was later renamed the Office of Environmental Justice.) This office was supported by a work group on environmental equity, which produced a report on examining environmental inequalities. Along with this office, EPA implemented a new organizational infrastructure to integrate environmental justice into their policies, programs, and activities.
1993	National Environmental Justice Advisory Council. This council represents the first time that representatives of community, academia, industry, environmental, indigenous, as well as State, local, and tribal government groups, were gathered to discuss and suggest solutions to environmental justice problems.
1994	President Clinton signs Executive Order 12898, which requires Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their

	programs, policies and activities on minority and low-income populations.
1997	The U.S. DOT's Order on Environmental Justice (DOT Order 5610.2) establishes as DOT policy the full consideration of environmental justice principles throughout transportation planning and decision-making processes, and provides guidance to the operating administrations regarding implementation of these principles.
1998	FHWA's Order on Environmental Justice further specifies how highway projects should incorporate environmental justice in complying with EO 12898. It is intended to prevent and address disproportionately high and adverse effects on minority and low-income populations.
1999	FHWA and FTA issue a memorandum, "Implementing Title VI Requirements in Metropolitan and Statewide Planning," which provides clarification for field offices on how to ensure that environmental justice is considered during current and future planning certification reviews.
2001	President Clinton signs Executive Order 13166, which requires Federal agencies to develop systems by which people with a limited ability to communicate in English can access the services of those agencies. Title VI Legal Manual, U.S. Department of Justice, Civil Rights Division, issues manual intended to provide guidance on Title VI to Federal agencies and other interested entities.
2005	The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) is enacted; it places additional emphasis on environmental stewardship, the consideration of environmental issues as part of metropolitan and statewide transportation planning, and increases the importance of public participation in the planning process.

1. Transit and Affordability

Introduction

Transportation is second only to housing as the largest expenditure for most American households.⁸ High transportation costs can cause significant problems, particularly for low-income people. High costs can affect a person's discretionary budget, reduce economic opportunity, and increase stress, which in turn can lead to health and social problems. As transportation costs have risen and consciousness of environmental issues has increased, many Americans have rediscovered our urban centers and the more affordable public transportation options they offer. As a result, demand for housing near transit is expected to grow significantly over the next 20 years.⁹ This demand has implications for transportation practitioners, as minority and low-income people—who historically may have been disproportionately burdened by transportation projects—may again be at risk. Now more than ever, practitioners must coordinate investments in transit and housing to maximize project benefits and minimize adverse effects on vulnerable populations.

Coordinating transit and housing investments leverage numerous advantages. Transit becomes a more attractive option for commuters if they live nearby; in-city living becomes more desirable if homeowners know they have transportation choices other than driving to meet their daily needs. Coordinated investments help realize Federal and State policies that are increasingly encouraging compact community development, less driving, and more livable communities. Most importantly, coordinated transit, mixed-income housing, and mixed-use development protect those most in need: minority and low-income populations who have suffered disproportionately from policies that have neglected to link high capacity transportation with affordable housing choices. Transportation practitioners can promote environmental justice principles when they coordinate transit and housing efforts.

The average working family (one earning between \$20,000 and \$50,000) across 28 metro areas spends more than half of its income on housing and transportation combined.¹⁰ Since the 1950s, many Americans have moved to the suburbs in search of affordable housing. This "drive 'til you qualify" phenomenon—whereby homebuyers look farther out from their workplaces until they reach communities where they can afford to buy homes—was accepted by homebuyers as long as transportation costs were not taken into account. As these costs have risen, homebuyers have seen their budgets eaten away. Unlike monthly mortgage or rental payments, transportation expenses can be difficult to plan and track because they vary in amount and timing (e.g., monthly car payments, semi-annual insurance premiums, weekly fill-ups, and periodic automobile maintenance). As a result, people only grasp the true extent of these expenses after buying a home.¹¹ While the average U.S. household spends 19 percent of its income on transportation, households in location efficient neighborhoods with good transit access can spend approximately 9 percent. The pie charts show what transportation expenditures would be if housing were held constant.

⁸ Surface Transportation Policy Partnership. "From the Margins to the Mainstream: A Guide to Transportation Opportunities in Your Community." 2006.

⁹ Reconnecting America's Center for Transit-Oriented Development. "Realizing the Potential: Expanding Housing Opportunities Near Transit." April 2007.

¹⁰ Center for Housing Policy. "A Heavy Load: The Combined Housing and Transportation Burdens on Working Families." October 2006.

¹¹ Center for Neighborhood Technology. "Penny Wise, Pound Foolish." February 2010.

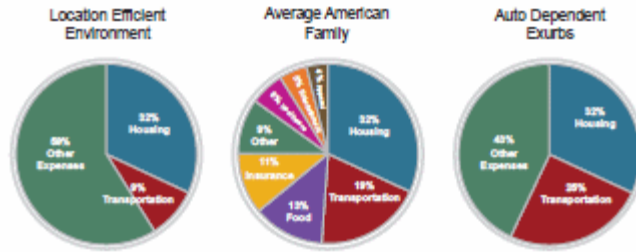


Figure 1. Typical Household Expenditures

Costs in Transit-Oriented vs. Auto-Oriented Neighborhoods

Expense Type	Location Efficient Environment	Average American Family	Auto Dependent Exu
Housing	32%	32%	32%
Transportation	9%	19%	25%
Other Expenses	59%	49%	43%

These savings can be critical for low-income households. Transportation costs consume an average of 9 percent of the household budget for high-income families, whereas low-income families can spend 55 percent or more of their budgets on transportation costs.¹² When practitioners use the latest planning tools available to analyze and communicate the true costs of housing and transportation, potential homebuyers and renters are empowered with more information about combined housing and transportation costs. Lower income households especially benefit because they can reevaluate what is truly "affordable" given their budgets. Housing policies that preserve affordability and prevent gentrification and disproportionate residential displacement (i.e., when rising property values and taxes force out lower income residents), and decrease displacement of homeowners all help to address and meet the needs of vulnerable populations.

When coordinating transit and housing investments, practitioners can and should promote full and equitable participation of all potentially affected communities in the transportation decisionmaking process. For example, typically, when a new route or expanded service is planned, planners focus on addressing the needs of residents and businesses in the vicinity. Coordinating transit and housing efforts can make more resources available. This includes funding (see Austin example),¹³ additional staffing and partners, additional outreach contacts, and public-private partnerships. These additional resources can help address project design and potential displacement while planning for future transit-oriented development (TOD), continued accessibility, and preservation of affordable housing options. While infusions of dollars and staff do not ensure that broader engagement of vulnerable populations will always take place, these additional resources and partner agency contacts can increase the likelihood of it being successful.

For those neighborhoods that are home to transit-dependent populations (i.e., where residents depend on public transit to get to work, school, and other daily destinations) access

¹² Reconnecting America's Center for Transit-Oriented Development. "Realizing the Potential: Expanding Housing Opportunities Near Transit." April 2007.

¹³ http://www.ci.austin.tx.us/housing/roi/m_station.htm

to transit is critical. Increasing transit options in tandem with adjacent housing options and improvements to the surrounding walking and wheeling¹⁴ network can increase transit equity. However, proximity to transit is not enough in itself. Funding is needed to maintain transit facilities, increase access for bicyclists and pedestrians, introduce new service, and improve service levels. Coordinated investments in transit and housing may provide additional resources to meet these continued needs.

Austin's First Affordable Housing TOD

M Station is the first affordable housing transit-oriented development (TOD) in Austin, TX. The \$24 million multifamily residential project sits next to a transit stop on Martin Luther King, Jr. Boulevard in East Austin, an area undergoing gentrification. The project reserves 60 percent of its units for families making less than \$36,650. Roughly 90 percent of units are designated for those at or below the median family income. M Station received a Texas Department of Housing and Community Affairs award of \$13 million in Federal tax credits, which makes the project possible.

Trends in Transit and Affordability

Interagency Partnership for Sustainable Communities: Six Livability Principles

1. Provide more transportation choices.
2. Promote equitable, affordable housing.
3. Enhance economic competitiveness.
4. Support existing communities.
5. Coordinate policies and leverage investment.
6. Value communities and neighborhoods.

Transit ridership is growing. People are becoming increasingly concerned about the economy and traffic congestion, and aware of options that increase health and active living and protect the environment. Transit is emerging as an attractive solution to today's challenges and a smart alternative to building additional highway capacity. From 1995 to 2008, transit ridership increased by 38 percent—a growth rate higher than the 14 percent increase in U.S. population and higher than the 21 percent growth in use of the Nation's highways over the same period.¹⁵ Transit is likely to become an even more popular choice in the future, as demographic trends and economic realities drive consumers to consider options other than driving.

The importance of integrating affordability considerations into transportation planning is gaining traction with policymakers. Affordability is increasingly being viewed as a measure of a community's livability. Livability refers to the environmental, economic and social quality of an area as perceived by residents, employees, customers, and visitors. According to the Federal Highway Administration (FHWA), "Livability is about tying the quality and location of transportation facilities to broader opportunities such as access to good jobs, affordable housing, quality schools, and safe streets."¹⁶ The trend today is to promote projects that

¹⁴ "Wheeling" is a universal term referring to using bicycles, wheelchairs, mobility scooters, strollers, skateboards, rollerblades, etc.

¹⁵ American Public Transportation Association. <http://www.apta.com/mediacenter/ptbenefits/Pages/FactSheet.aspx>.

¹⁶ WA Livability Initiative Web site, <http://www.fhwa.dot.gov/livability/>.

address housing, transportation, and the environment; and that encourage compact, sustainable, and livable communities.¹⁷

The new Sustainable Communities Partnership was created between the U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation (DOT), and U.S. Environmental Protection Agency (EPA). This DOT-HUD-EPA partnership prioritizes affordability in its six livability principles and will develop Federal affordability measures, which include housing, transportation, and other expenses that are affected by location choices. Although transportation costs now approach or exceed housing costs for many working families, Federal definitions of housing affordability do not recognize the strain of soaring transportation costs on homeowners and renters who live in areas isolated from work, school, shopping, and recreation opportunities and transportation choices-particularly transit. The Sustainable Communities Partnership will redefine affordability to reflect these costs, improve consideration of the cost of utilities for renters and homeowners, and provide consumers with enhanced information to help them make housing decisions.¹⁸

Challenges

The need for a more integrated connection between transportation and housing affordability is being identified and addressed by transportation practitioners and community organizations. Current transportation planning supports congestion management and freight transport, which, if not carefully considered during planning, could have a disproportionately adverse effect on disadvantaged communities. Historically, less policy emphasis has been placed on improving affordable modes of transport such as walking, cycling, and public transit, than on ensuring that affordable housing is available in compact, mixed-use communities with access to jobs, school, retail, and transportation choices.¹⁹ Although transit can be expensive to build, operate, and maintain, it helps support low-cost walking and wheeling, and can help lower overall household costs. Providing access to affordable and quality public transportation continues to present a challenge. With limited rights-of-way available, large-scale transit projects can be controversial and expensive. Transportation practitioners may also be unfamiliar with strategies for preserving and expanding the supply of affordable housing in inner city and older suburban neighborhoods that have access to transit. Limited dollars in a competitive funding environment can be a substantial challenge for proponents interested in increasing transit service while increasing affordable housing around it. When major transit investments have spurred new development, in the absence of adequate consideration of measures in advance to preserve the existing community, minority and low-income residents sometimes have faced loss of community and cultural facilities, as well as eviction or pressure to sell their homes, in the face of escalating property values and taxes. Practitioners often confront issues of gentrification or unanticipated displacement from the project footprint and/or ensuing development.

Community outreach to traditionally underserved communities continues to challenge planners. While some transportation agencies have specialized community outreach staff, not all are multilingual or have translation services available for planned events and conversations in the field. Moreover, some community members may be wary of project

¹⁷ Holstege, Sean. "Can you afford to live in your house?" *The Arizona Republic*. May 7, 2010.

¹⁸ DOT Secretary Ray LaHood, HUD Secretary Shaun Donovan, and EPA Administrator Lisa Jackson Announce Interagency Partnership for Sustainable Communities: Partnership sets forth six 'livability principles' to coordinate policy. Press Release. June 16, 2009.

¹⁹ Litman, Todd. "Transportation Affordability." Victoria Transport Policy Institute. August 7, 2009.

impacts and distrustful of agency staff. To ensure effective communication and community engagement, transportation planners are required to develop and use a documented participation plan that defines a process for providing citizens with an opportunity to engage in transportation plan and program development.

Finally, there has been criticism of smart growth in relation to affordability. Some opponents have suggested that concentrating growth in cities and towns to avoid sprawl can lead to higher household costs, an effect completely opposite of what was intended.²⁰ In some cases where transit service has spurred significant new TOD, the result can be that people with average incomes are unable to afford to buy homes in or near the new developments. This highlights the need for strategies that, at a minimum, set aside some portion of new development and surrounding households as affordable housing adjacent to transit and in surrounding households. Many homebuyers also prefer low-density development and are less inclined to relocate to areas with higher density housing, especially first-time parents of modest means. Recent studies find the presence of children in a household is linked to lower interest in transit-oriented neighborhoods.²¹ However, households with children are expected to be only 12 percent of the change in population for 2000-2025, and there is a significantly growing preference for higher density housing and smaller lots-as long as the development includes sidewalks, narrower connected streets, shops and services, parks, and a sense of community.²² High-density projects are also sometimes difficult to site, as residents of older neighborhoods sometimes oppose these projects for fear of changing the community culture. Coordinated investments in transit and housing need to foresee and consider all these challenges.

Case Studies

Case Study 1: Bay Area Housing and Transportation Affordability (San Francisco Bay Area, CA)

One tool practitioners and the public can use to analyze and communicate the integration of housing and transportation is the Housing + Transportation Affordability Index (H+TSM Index) created by the Center for Neighborhood Technology (CNT), with the support of its research partners in the Center for Transit Oriented Development (CTOD). The index measures the true affordability of housing by taking into account not just the annual cost of the mortgage or the rent, but also the estimated annual cost of transportation that will be required for typical daily needs based on that location.²³ While traditional measures of affordability focus only on housing costs, the H+T Index quantifies the balance that buyers and renters strike between housing and transportation expenses when choosing where to live, and makes the true cost of housing choices more transparent.²⁴ CNT suggests that the combined housing and transportation burden should be no more than 45 percent of household income.²⁵

²⁰ Cox, Wendell. "The Argument against Smart Growth." <http://www.planetizen.com/node/11>.

²¹ Lewis, Paul G. and Mark Baldassare. Journal of the American Planning Association. Volume 76, March 2, 2010. pp 219-237.

²² A.C. Nelson, "Longer View: Leadership in a new era," Journal of the American Planning Association, Volume, 72 (4), Fall 2006, page 395-397.

²³ Center for Neighborhood Technology. <http://htaindex.cnt.org/>.

²⁴ Center for Neighborhood Technology for the Metropolitan Transportation Commission. "Bay Area Housing and Transportation Affordability: A Closer Look." November 2009.

²⁵ Center for Neighborhood Technology. "Penny Wise, Pound Foolish." February 2010.

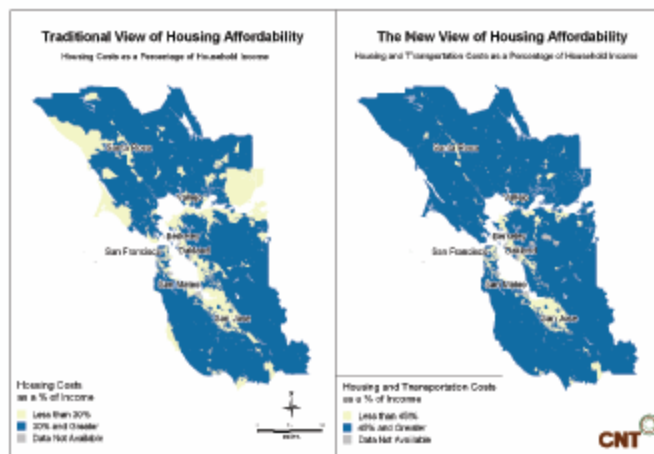


Figure 2. A New View of Housing Affordability

The Metropolitan Transportation Commission (MTC), the metropolitan planning organization (MPO) for the San Francisco Bay Area, asked CNT to apply the H+T Index to the Bay Area. MTC set a goal in its Transportation 2035 Plan to reduce the combined cost of housing and transportation as a share of household income by 10 percent from today's level for low- and moderately low-income households (households making less than \$60,000 per year in 1999 dollars, or the region's approximate median income). CNT looked at three communities: urban downtown Oakland, suburban San Mateo, and exurban Antioch.

CNT's data revealed that there are very few opportunities in the Bay Area for low-income households when housing and transportation costs are considered together. For low-income households earning less than \$35,000 per year in 1999, the combined cost of housing and transportation place the vast majority of the Bay Area out of reach. Less than 4 percent of the region's housing units are deemed affordable for low-income households; most of these are concentrated in eastern San Francisco and Oakland.²⁶ Low-income households were shown to dedicate 58 percent of their income to combined housing and transportation costs in Oakland, 56 percent in San Mateo, and 57 percent in Antioch. These are all above the report's recommended ceiling of 48 percent as well as CNT's own recommended ceiling of 45 percent. While housing costs were lower farther from the urban centers, transportation costs were higher.

²⁶ Center for Neighborhood Technology for the Metropolitan Transportation Commission. "Bay Area Housing and Transportation Affordability: A Closer Look." November 2009.

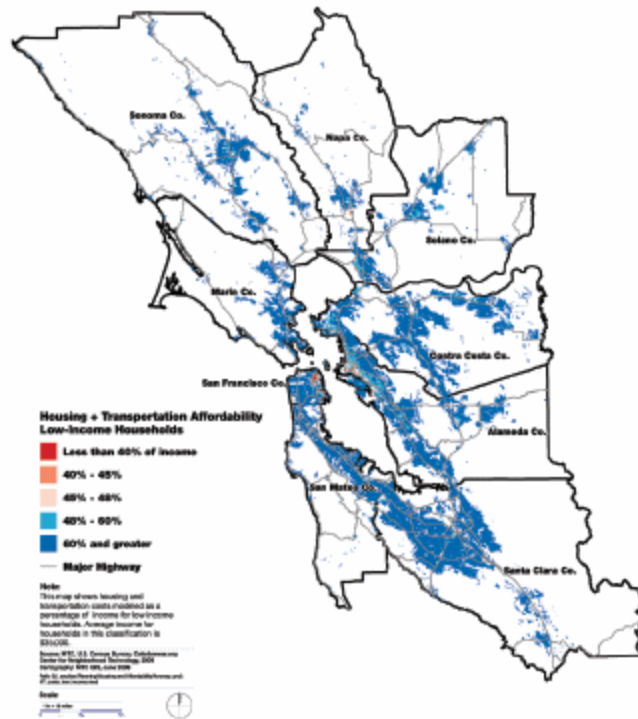


Figure 3. Location of Neighborhoods with Combined Housing and Transportation Costs Affordable to Low-Income Households

Source: Center for Neighborhood Technology for the Metropolitan Transportation Commission, 2009.³

CNT's analysis also shows that true affordability comes from living in compact, mixed-use, transit-rich communities where homes are located near shopping, schools, and work. Residents of these communities typically pay more for housing but own fewer cars, pay less for transportation, and thus dedicate less of their budgets to combined housing and transportation costs because of their proximity to transit and jobs. CNT estimates that better coordinated transit and housing investments could produce huge savings. For example, if just one-quarter of the homes permitted in the Bay Area between 1999 and 2006 provided transit access adequate to enable their occupants to reduce their car ownership by one car, \$132.5 million in disposable income would have been created in reduced car ownership costs alone.²⁷

MTC's use of the H+T Index makes the argument that housing policies should be based on the combined cost of housing and transportation. Neighborhood transportation costs should be disclosed to potential homebuyers. Comprehensive planning efforts by municipalities and regions should be improved. Finally, diversified public investments in transit and other infrastructure should be increased.²⁸

²⁷ Center for Neighborhood Technology for the Metropolitan Transportation Commission. "Bay Area Housing and Transportation Affordability: A Closer Look." November 2009.

²⁸ Pealer, Casius. "Transit Costs Undermine Housing Affordability." *Housing Finance News*. <http://www.housingfinance.com/news/ahf/041410-ahf-Transit-Costs-Undermine-Housing-Affordability.htm>.

Case Study 2: Fairmount/Indigo Line (Boston, MA)

The Massachusetts Bay Transportation Authority's Fairmount Branch, the only commuter rail line running entirely within the City of Boston, is ill-suited to the needs of the neighborhoods it runs through. Headways are 30 minutes during the peak, and 60 minutes or longer at all other times. Evening service is limited and there is no weekend service. The line stops at only three intermediate stations between South Station and its Readville terminal. In the most thickly settled section of the route-the Four Corners neighborhood-there is an almost three-mile gap between stations. This has raised environmental justice issues for the primarily low income and minority residents of the area, who are forced to host a diesel rail line they cannot use. The route passes without stopping at a key employment and shopping center (South Bay Center) and busy medical complex (Boston Medical Center). The line's poor level of service is particularly out of place given its location in the midst of the densely-populated, highly transit-dependent gap between the Red and Orange rapid transit lines-the largest section of the City not served by a subway. The corridor has a 63 percent minority population-a figure that rises to 91 percent in the section between Uphams Corner and Morton Street. Twenty-nine percent of households in the corridor do not own an automobile-a figure that rises to 40 percent between Uphams and Morton. Bus routes in the corridor are the most crowded in the system and corridor residents endure the longest commute times in the City.

The 9.2 mile line follows an historic railroad right of way that first supported train service as far back as 1855 and provided local service to as many as eleven stations until 1944. After a 35-year absence, passenger service was restored in 1979, when construction along the Southwest Corridor necessitated rerouting trains from the south through Dorchester. At this time there were no stations between Fairmount in Hyde Park and South Station. When construction was completed in 1987, most rail service was again reassigned to the mainline. Local neighborhood groups, led by the Dudley Street Neighborhood Initiative, pushed for and won continued service on the upgraded Dorchester track, with restored stations at Uphams Corner and Morton Street. However the full benefit of these stations has yet to be realized because of the line's poor level of service. A watershed moment came in 1999 when local community groups, led by the Greater Four Corners Action Coalition, put forth a new vision for the corridor. The plan recognized that additional stations alone would not meet the needs of the neighborhoods along the track and that an entirely new way of conceptualizing and operating the line was required. The coalition proposed that service would be repackaged as the "Indigo Line" in the model of the MBTA's rapid transit lines.



Figure 4. Fairmount Commuter Rail Line, Dorchester, MA

Source: Dorchester Bay Economic Development Corporation, 2010.4

While the service would continue to utilize commuter rail technology, it would be run as if it were a regular subway line. The result would be a rapid transit-commuter rail hybrid under the "Indigo Line" brand. Proposed improvements (spanning capital, operational, marketing and policy elements) included:

- Rapid Transit headways (10-15 minutes).
- Rapid Transit service hours (span & days).
- New stations at key neighborhood centers at Newmarket/South Bay Center, Four Corners, Talbot Ave/Codman Square and Blue Hill Ave/Mattapan Square.
- Rehabilitation of existing stations at Uphams Corner and Morton Street, with attention to passenger comfort & security (lighting, signage, wheelchair accessibility, architecture and furniture).
- Simplified fare structure (subway fares with free transfers to the Red Line at South Station).
- Display of Indigo Line route on the MBTA "spider" map and print media.



Figure 5. Improvements to the Fairmount Line Stations-Before and After

Source: Goody Clancy, 2006.5

In 2002, the MBTA committed \$37.3 million in the FTA formula funding for an upgrade of the Fairmount Line. The investment in the line's infrastructure consisted of the complete rehabilitation of the Uphams Corner and Morton Street stations, which opened in 2007, providing high level platforms, shelter from the elements, lighting and furniture, as well as the rehabilitation and replacement of six functionally obsolete bridges, and the construction of a new interlocking and signal system.

The initial investment by the FTA and the MBTA will leverage an additional \$135 million in local funding for the construction of four new stations at Newmarket/South Bay, Four Corners, Talbot Avenue, and Blue Hill Avenue. Once the project is complete, ridership is expected to jump from 2,800 per day to nearly 13,800 per day. A new Four Corners station is projected to be the highest ridership station in the entire commuter rail system, outside of North Station, South Station and Back Bay. At 1,090 boardings, a new Talbot Ave. station would be tied with Providence as the 12th highest ridership station.²⁹

In addition to stations and service upgrades, project proponents see a revitalization of corridor communities on the horizon. Developers, mostly community organizations, have bought or are planning to buy and rebuild as many as a dozen properties along the corridor. Four community development corporations (CDCs) are leading the effort: Dorchester Bay Economic Development Corporation, Codman Square Neighborhood Development Corporation, Mattapan Community Development Corporation, and Southwest Boston Community Development Corporation.



Figure 6. Proposed development of the "Indigo Café" at the Talbot Station.

Source: Goody Clancy, 2006.⁵

The CDCs are acquiring and redeveloping small sites along the corridor, and addressing gentrification concerns by focusing on projects that will maintain affordability. Projects typically involve apartments or condominiums, some with a retail component, and are designed to take advantage of their proximity to transportation into downtown Boston. For example, the new Dudley Village project offers 50 units of affordable rental housing and approximately 6,500 square feet of retail space. The CDCs are looking to spearhead smart growth and transit-oriented development, create or preserve 1,500 housing units, and develop 780,000 square feet of commercial space, adding roughly 1,300 jobs.

²⁹ KKO & Associates, L.L.C., Fairmount Line Feasibility Study-Final Report, Volume I, October 25, 2002.



Figure 7. Dudley Village Project: A Model "Urban Village" in Dorchester, MA

Source: Dorchester Bay Economic Development Corporation, 2010

More importantly, because the community has been involved in the project since early on in its development, avoiding or mitigating displacement has been an integral component of the project's planning. Often, an unintended consequence of transit oriented development is that, if successful, it prices the current residents out of their own neighborhoods. Here, the community groups have been acting proactively at the outset to make sure this does not happen by buying up underutilized parcels along the corridor now and developing the affordable and mixed income housing now so the people who grew up in the community can benefit from the investment in their community. In this vein, the Indigo Line can serve as a model for other communities across the country concerned about gentrification as a result of investments in public transportation. The plans for the Fairmount/Indigo Line also include creation of a 9-mile "Fairmount/Indigo Greenway." The greenway would use the transit line as a vehicle to connect small neighborhood parks, open space, and the Neponset River with a linear multiuse path. In February 2010, U.S. EPA designated the Fairmount Corridor as one of five sustainable communities pilots in the country. This recognition will bring assistance with planning, and capital for housing, jobs, transportation, and the environment that would not have been possible without the initial transit investment and, in turn, will support that investment in the future.

Conclusion

- **The cost of transportation is typically overlooked in everyday decisions and public policies related to housing, despite the fact that transportation expenses can cost as much as housing for some American households.** The cost of transportation is something that particularly affects low-income populations, who pay up to 55 percent of their incomes for housing and transportation.³⁰ Practitioners from MPOs, transit and housing agencies, and local and State governments who are looking to meet the needs of vulnerable populations should consider the cost of transportation and housing in their planning decisions. Federal agencies can encourage these approaches by providing tools and data, and coordination between Federal housing and transportation grant programs.

³⁰ Connecting America's Center for Transit-Oriented Development. "Realizing the Potential: Expanding Housing Opportunities Near Transit." April 2007.

- **Integrating transit planning with community development or affordable housing decisions provides many advantages.** MTC's use of the H+T Index in the Bay Area shows how the latest planning tools can be used to empower homebuyers, renters, and community planners and incentivize development of affordable housing near transit. Driving until you qualify is not nearly the attractive option it once was. The Fairmount/Indigo case study illustrates the advantages of engaging with CDCs to address affordability. The project shows how coordinating investments in transit and housing can not only benefit underserved populations with improved transit service but can lead to additional housing opportunities and economic development for a region as well.
- **Stakeholders are becoming better informed and more involved in transportation decision making.** Web-based tools such as the H+T Index are becoming more accessible to stakeholders. Community groups, like those discussed in the Fairmount/Indigo case study, are using such tools to better inform themselves and become more organized during the decision making process. As regions around the country coordinate their investments in transit and housing, they can expect their stakeholders to be well-informed and active.

2. Public Involvement

Introduction

Federal regulations and requirements under the ISTEA, TEA-21, SAFETEA-LU, and NEPA require early and continuous public involvement. Effective community engagement addresses the needs of and incorporates input from a broad spectrum of interested parties including residents, businesses, and transportation system users. Within the context of a broad public involvement process, transportation agencies need to focus extra effort on outreach to and engagement of traditionally underrepresented populations.

Full and fair participation of all potentially affected communities is one of the three core environmental justice (EJ) principles. Ensuring the participation of traditionally underrepresented communities in the transportation planning process allows communities to identify the benefits and burdens associated with the proposed activity, and suggest alternatives to mitigate impacts based on their concerns. This input helps transportation agencies comply with another core EJ principle—avoid, minimize, or mitigate disproportionately high and adverse impacts. As demonstrated through context-sensitive approaches, the most effective community engagement processes incorporate a broad range of community input long before planning and project-level decisions are made.³¹

Trends in Public Involvement/Community Engagement

Many transportation agencies have developed a wide range of innovative public involvement strategies to break down the barriers to public involvement. Examples include public meetings at the offices of trusted community-based organizations (CBOs) or common gathering locations like malls or senior/community centers. Also, transportation agencies regularly tailor public service announcements, (PSAs), a conventional mass media strategy, to reach out to underrepresented communities by broadcasting announcements in multiple languages through language-specific media outlets.

³¹ Designing a Public Engagement & Decision Making Program, www.contextsensitivesolutions.org/content/topics/process/involving-stakeholders/public-engagement.

Demographics of Internet Users

Percentage of Internet users by demographic details in national survey conducted by the Pew Research Center. Source: Pew Internet and American Life Project, 2009.	
	Internet Users
Total Adults	74%
Men	74%
Women	74%
Race/Ethnicity	
White, Non-Hispanic	76%
Black, Non-Hispanic	70%
Hispanic (English- and Spanish-speaking)	64%
Age	
18-29	93%
30-49	81%
50-64	70%
65+	38%
Household Income	
Less than \$30,000/yr.	60%
\$30,000-\$49,999	76%
\$50,000-\$74,999	83%
\$75,000+	94%
Educational Attainment	
Less than High School	39%
High School	63%
Some College	87%
College+	94%
Community Type	
Urban	74%
Suburban	77%
Rural	70%

While transportation agencies are encouraged to continue exploring innovations in emerging media and online tools, it is important that agencies also understand the limitations of high-tech tools and approaches. For example, although the Digital Divide is shrinking, it still exists to a degree. A national survey of adults conducted by the Pew Research Center's Internet & American Life Project finds that households at the lowest income and educational attainment brackets have limited access to the Internet. In addition, online activities amongst users vary significantly. The discrepancy suggests that despite the burgeoning options for sharing and receiving information, the simplest modes of online communication may reach the broadest

audience: email for providing information and receiving comments, simple Web sites that maximize hits on search engines, and accessibility so hardware sophistication or Internet connectivity do not hamper use.³² As such, agencies must not rely exclusively on the use of online tools for community outreach and participation.

Some agencies are exploring innovative advances in online technologies, particularly Web 2.0 (i.e., social media and social networking), to expand their outreach and engagement strategies. Examples of such efforts include those implemented by Bay Area Rapid Transit (BART), the Chicago Metropolitan Agency for Planning (CMAP), Denver's Regional Transportation District (RTD), and LA Metro:

- BART developed a Web-based communications system composed of the BART Web page, myBART, BARTtv, and SFBART's blog.³³ This Web-based system currently features news feeds, videos, and previously featured widgets (i.e. applications that are embedded into Web pages). SFBART's blog also offers a function allowing users to discuss a topic or entry of interest. The videos sometimes receive upwards of hundreds of views a day and address a range of issues e.g., (labor, environmental, ongoing construction, etc.). In addition, BART has a presence on Facebook TM and TwitterTM.³⁴



Figure 8. Travelling kiosk

Source: Chicago Metropolitan Agency for Planning, 2010.

- CMAP explored technological innovations in visualization and social networking tools as part of the public participation process for the 2040 Comprehensive Regional Plan. For example, CMAP organized interactive workshops during which participants used a scenario software tool and keypad polling to create their own detailed versions of 2040 and compare them with CMAP's proposed scenarios. CMAP supplemented these interactive workshops with traveling kiosks (see photo above) so that community members who were not able to attend the interactive workshops could participate at their convenience in a nearby, accessible neighborhood location. To maintain public excitement and engagement with the

³² Goodspeed, Robert (2008). Citizen Participation and the Internet in Urban Planning. Final Paper in Urban Studies and Planning Program. University of Maryland.

³³ For more information, see: <http://sfBART.posterous.com>.

³⁴ U.S. Department of Transportation, Federal Transit Administration, "Social Media and Social Networking Tools, Transportation Industry Public Involvement Applications and Practitioner Considerations" (unpublished manuscript currently under revision).

process, the agency created a blog,³⁵ featuring interviews of residents from the region.

- Denver's RTD uses YouTube™ to present information regarding its FasTracks transit expansion program. RTD reports a number of positive social equity features for using digital video as part of its outreach strategy, including use of visualization technology (e.g., pictures, maps, and graphics) to address language barriers and limit written information; ability to present the same material in an alternate language with proper planning; and availability of the digital videos at the convenience of the public.³⁶
- LA Metro developed a Facebook page that provides status updates on an Environmental Impact Statement (EIS) on the Metro Westside Subway Extension. The page is used to relay basic information about the project and the EIS process by providing updates, invitations to upcoming events, summaries of past events, and key contact information. LA Metro posts pictures and videos to the site and members have an opportunity to comment and discuss the posted materials.³⁷



Figure 9. Project map display

Source: Los Angeles, California Metro, 2010

By using traveling kiosks and online communications platforms like Facebook and YouTube, transportation agencies expand options for stakeholder participation: through an online interactive tool, users are encouraged to obtain information and provide input and feedback on meeting events and proposed meeting locations. This is an important development because community members have varying interests, access, and abilities to attend public meetings.³⁸ As such, the efforts to engage community members at their homes, worksites, or various neighborhood locations permits agencies to reach members of the public who are traditionally underrepresented at public meetings. These populations include, but are not

³⁵ For more information, see: <http://www.goto2040.org/blogs/blog.aspx>.

³⁶ U.S. Department of Transportation, Federal Transit Administration, "Innovative Uses of Digital Video" (unpublished manuscript currently under revision).

³⁷ U.S. Department of Transportation, Federal Transit Administration, "Social Media and Social Networking Tools, Transportation Industry Public Involvement Applications and Practitioner Considerations" (unpublished manuscript currently under revision).

³⁸ Goodspeed, Robert (2008). Citizen Participation and the Internet in Urban Planning. Final Paper in Urban Studies and Planning Program. University of Maryland.

limited to, low income, minority, Limited English Proficiency, youth (10-17 years old), young adult (18-35 years old), senior (65 years and older), and persons with disabilities populations.

Challenges

Effective public participation requires an organized, strategic, and culturally sensitive effort, since members of underrepresented or marginalized communities experience a variety of barriers to participation. For example, based on prior negative experiences working and interacting with public agencies and officials, individuals and communities are sometimes suspicious of an agency's outreach motives. Low income and minority communities also frequently experience language and literacy barriers, as well as differences in cultural mores and preferences in communication. In addition to these cultural barriers, accessibility for persons with disabilities can also pose major challenges to full community participation. Other common barriers include a lack of knowledge about the overall transportation planning process, an incomplete sense of the role and relevance of participation in the planning process, and skepticism that public comments and feedback have an impact on the outcome of planning processes.

Transportation agencies face additional challenges when implementing a participation process for a particular planning effort, including:

- **Identifying cultural barriers to participation and devising appropriate outreach strategies means to address the barriers.** A single project area can include more than one traditionally underrepresented or vulnerable community, each with its own unique cultural norms, language(s), and specific barriers to participation. The Buford Highway case study is presented in this chapter to highlight useful approaches to both identifying and addressing cultural barriers.
- **Validating community concerns articulated during the process.** In some cases, this includes creating analytical tools to understand the full scope of the EJ concerns articulated by the participating members of underrepresented communities. The experience of the Baltimore Regional Environmental Justice Toolkit Project (BREJTP) is presented in this chapter as an example of a bottom-up approach to both identify and validate EJ concerns. The project enhanced participation by working with community members to refine the analytical tools and obtain validation data.
- **Demonstrating that community concerns are valued and will be incorporated in activities, projects, and corrective actions.** Agencies can do this in a number of ways. For example, the Buford Highway case study (see below for further discussion) used "Informational Open Houses" to present revised project designs and obtain consensus that community concerns were adequately incorporated. In the BREJTP Project, the agency shared the validated findings in a community meeting and published the report online. The agency also successfully adopted mitigation measures for one of the communities involved in the BREJTP Project.

Case Studies

Case Study 1: Buford Highway (DeKalb County, GA)

Introduction

When DeKalb County, GA, announced the beginning of preliminary engineering on a sidewalk and streetscape plan to improve Buford Highway's appearance, the announcement generated a number of articles by pedestrian advocacy groups in the Atlanta Journal Constitution. The articles highlighted Buford Highway's pedestrian safety problems and questioned the use of funds for beautification rather than for improving pedestrian safety. Realizing that DeKalb County did not have resources available to address this larger undertaking, Georgia Department of Transportation (GDOT) proposed a joint initiative and provided additional funding to address Buford Highway's pedestrian safety issues.

When GDOT expanded the landscape improvement project to address pedestrian safety concerns, the new project design included a number of measures such as a continuous raised median to provide a refuge for pedestrians crossing Buford Highway at mid-block locations. When corridor merchants learned of these plans, many went to DeKalb County elected officials and expressed concerns that the median would limit left turns and restrict access to their businesses. Community advocacy groups identified similar median constructions on nearby Memorial Drive as a cause of that area's decline. Whether the decline resulted from the median improvements or other factors, many of the businesses on Memorial Drive had closed. DeKalb County officials advised GDOT that they would be unable to support the raised median concept without the backing of the merchants, and suggested that GDOT re-evaluate the design.

As part of the re-evaluation, GDOT initiated a public involvement process. Originally, the public participation effort called for a series of design charrettes, which are typically multiple-day, collaborative design workshops. However, the agency abandoned this idea due to the logistics of accommodating the wide array of communities (Latino, Chinese, Korean, and Vietnamese) and languages in the project area. In order to remedy issues and concerns brought forward by the community GDOT crafted an effective public participation process that was tailored to the cultural norms of each community., GDOT's contractor identified and surveyed community stakeholders, and using the information from the stakeholders, conversations with community members, anecdotes, and demographic information, designed two parallel public involvement plans. One of the plans aimed to engage Latino merchants and residents; the other targeted the Chinese, Korean, and Vietnamese community members. See further details on the two plans below.

Public Involvement Plans for Buford Highway

The following features were unique to the involvement plan for Latino merchants and residents:

1. **Language Related Consideration:** GDOT asked principals of three elementary schools near the corridor if their students could take home translated information about the events to their parents who may not read Spanish or English.

2. **Location, Timing, and Giveaways at Survey Events and Public Information Open House:** Two stores, Plaza Fiesta and Mercado del Pueblo, each hosted a survey event. Plaza Fiesta also hosted a public information open house. Both of these locations made the public feel safe to congregate and visit, had a family friendly atmosphere, and were convenient to transit.
 - Survey event and public information open house at Plaza Fiesta was held on a Sunday from 4:00 to 8:00 p.m., and the survey event for Mercado del Pueblos also was held on a Sunday from 2:00 to 6:00 p.m. Those times are when the stores draw the largest weekly crowds.
 - Giveaways, including soccer balls, were provided for children.

The following aspects were unique to the involvement plan for the **Chinese, Korean, and Vietnamese merchants:**

1. **Interview Meetings:** GDOT set up interviews to survey business owners and operators. The surveys were conducted by appointment at the business locations convenient for the business owners/operators. Appointments were made by a trusted source-an individual that was well known in the community and by the business owners/operators.
2. **Location and Timing of Public Information Open House:** The Center for Pan Asian Community Services hosted a public information open house on a Thursday from 10:00 a.m. to 7:00 p.m., at a location well known to the Korean, Chinese, and Vietnamese merchants, close to a subway stop and a bus stop, and able to accommodate a large crowd.
3. **Outreach and Invitations:** Members of the Chinese, Korean, and Vietnamese communities considered newspaper advertisements and flyers too informal and not culturally appropriate for an invitation to a public information open house. Therefore, GDOT created a phone tree for each community.
 - Interpreters telephoned community leaders, business owners and operators, friends and relatives who owned businesses and others in their individual communities to extend personal invitations to attend the public information open house.
 - In turn, these individuals called others, who also called others. In this way, everyone reached received a personal invitation to attend.



Figure 10. A Korean interpreter interviews the operator of one of the largest Korean grocery stores in Atlanta.

Source: PBS&J, 2010

GDOT incorporated recommendations from the special event survey and interviews into the project design and prepared display boards for two public information open house events. The project display boards in each language (Chinese, English, Korean, Spanish, and Vietnamese) featured:

- The list of issues identified by the public through surveys, and the improvements that were incorporated into the project design to address those issues.
- A visual rendering of the entire project area on a display board that was 4 feet by 16 feet long. The proposed improvements featured on the visual rendering included new signal locations, three medianette (a mid-block crossing area with flashing lights and distinct pavement in the roadway) locations, streetscape and landscape improvements, and raised median locations.
- To address language barriers, limit written information on the display, and help the public orient themselves, GDOT included photographs of landmarks at their locations on the corridor.

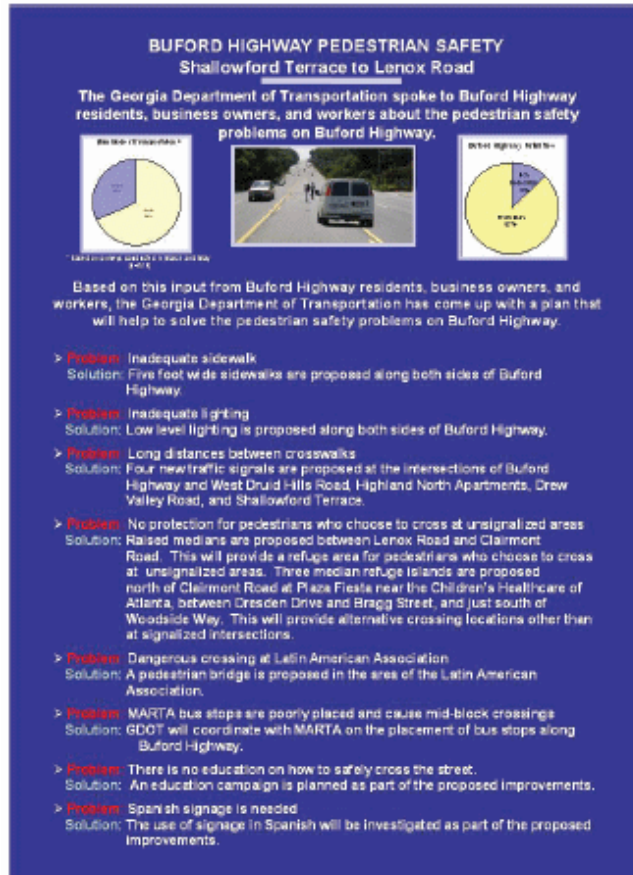


Figure 11. GDOT Poster



Figure 12. The Buford Highway project

Source: PBS&J, 2010

Comments received from the Plaza Fiesta and Center for Pan Asian Community Services public information open houses were analyzed and incorporated into the design plans. Phase

I was completed in January 2007 and construction on Phase 2 is scheduled to begin in the summer of 2012.

Outcomes

The project was transformed from a sidewalk and streetscape beautification project into a more comprehensive project that also addressed improving pedestrian safety. Some of the concerns raised and design solutions to address those concerns are listed below.

- Inadequate sidewalks: 5-foot-wide sidewalks along both sides of Buford Highway.
- Inadequate lighting: Pedestrian scale lighting along both sides of Buford Highway.
- Long distances between crosswalks: Four new traffic signals at intersection of West Druid Hills Road, Highland North Apartments, Drew Valley Road, and Shallowford Terrace.
- No protection for pedestrians crossing at unsignalized areas: Raised medians between Lenox Road and Clairmont Road. Three median refuge islands north of Clairmont Road at Plaza Fiesta near the Children's Healthcare of Atlanta, between Dresden Drive and Bragg Street, and just south of Woodside Way.
- Dangerous crossing at Latin American Association: A pedestrian bridge was proposed but due to engineering constraints, could not be incorporated into the final construction plans.
- Pedestrian signage needed in Spanish: Investigated as part of the proposed improvements. Recommendation implemented during the construction phase. Construction signs translated into Spanish.



Figure 13. GDOT Construction Signs in Spanish

Source: PBS&J, 2010

Lessons Learned

Incorporating stakeholders into the planning process is critical to developing culturally sensitive outreach and engagement events. Stakeholders located appropriate venues and times to meet with the target communities, identified interpreters that were well-known in the community, and provided materials and resources needed for the event. For example, the Plaza Fiesta representatives suggested the mall as a place to survey Latino customers on a Sunday between 4:00 and 8:00 p.m. because they knew more than 1,000 shoppers would be present. In addition, the mall provided four set-up spaces with tables and chairs, giveaways from mall merchants (e.g., toys, balloons, coloring books and crayons), eight bilingual interpreters, and translation of project materials into Spanish. A Latino member of the DeKalb County Police Force recommended small soccer balls for giveaways, since soccer is the national sport of Mexico.



Figure 14. GDOT Representatives

Source: PBS&J, 2010

In another example, for the Center for Pan Asian Community Services, a stakeholder identified critical cultural issues and proposed solutions to effectively engage community members. The center's executive director suggested surveying business owners/operators at their individual business locations to minimize inconvenience to them. The executive director knew that many business owners were concerned about interacting with Immigration and Naturalization Service and Internal Revenue Service personnel; therefore, it was imperative that owners/operators be contacted by someone they knew and trusted. The executive director agreed to provide Korean, Chinese, and Vietnamese interpreters who were well known within the corridor and business community. Each interpreter was responsible for making appointments with four business owners/operators, translating the survey, conducting the survey, and providing a summary of the survey results. In addition to the interpreters, a member of the staff from the Center for Pan Asian Community Services accompanied each interpreter. The center also agreed to translate project materials into each of the three languages.

CASE STUDY HIGHLIGHT

To serve Limited English Proficiency and low-literacy populations, the Buford Highway planners used multiple approaches, supplementing the conventional methods of making information available in multiple languages with visual aids, design considerations, and age-appropriate take home materials for school children. For example:

- Surveys were administered verbally by bilingual interpreters to minimize embarrassment, discomfort, stigmatization, and other feelings that often discourage participants who have literacy barriers.
- Take home materials developed for the three nearby elementary schools used age-appropriate grammar in both English and Spanish so that the school children could easily read and explain the materials to their parents.
- Before and after visualizations of possible design options were provided as handouts during survey events and interviews.
- Design displays and visual aids limited written information by incorporating photographs of landmarks so that the viewing public could orient themselves to the corridor.

Case Study 2: Baltimore Regional Environmental Justice Toolkit (BREJTP)

Introduction

The BREJTP project in Baltimore, MD, was designed to explore a community-based, bottom-up approach to addressing EJ issues in the transportation planning process. The goals of the project included:

- Understanding the EJ issues of participating communities.
- Exploring the analytical tools available to transportation planners to assess and incorporate concerns voiced by the underrepresented communities.
- Including community members in the development of the analytical tools and to familiarize members with the public participation process.

To implement these goals, the project devised a three-phase program. The first phase was a large-scale community outreach program to ascertain public concerns. The BREJTP project team conducted an intense public outreach effort to community groups and community leaders throughout the Baltimore region. Eight listening sessions were conducted from May 19, 2004 through June 9, 2004. After compiling the listening session findings, the project team conducted two community dialogues. The community dialogues were designed to allow participants to discuss EJ as it relates to transportation problems and to brainstorm solutions in small group breakout sessions. The breakout sessions were divided into four sub-group discussions. The BREJTP project team used these listening sessions to identify the key EJ concerns that the project would address.

The second phase, initiated in 2006, focused on developing analytical tools and methods for validating the range of EJ concerns articulated by underrepresented communities. Community participants from four selected communities worked with the project team to identify EJ

concerns and potential causes, validate the community experience by quantifying impacts, and seek solutions. The EJ concerns were:

- Health and property-value impacts related to the location and operation of a bus depot along Kirk Avenue.
- History of transit service changes that result in overall service reductions and poor service delivery in a predominately African-American, low-income community known as **Cherry Hill**.
- Pedestrian safety concerns related to changes in transit service at **Lexington Market** in Central Baltimore, a historic shopping destination frequented by lower income residents from surrounding communities.
- Fear of community disruption and displacement in response to a proposed rail line and transit-oriented development around an existing commuter rail station along the U.S. Route 40 corridor through West Baltimore. Fears were related to the community's experience with an abandoned highway project, commonly referred to as the "Highway to Nowhere," that divided West Baltimore in the 1960s.

Members of the four communities worked with planning specialists and agency officials to study the causes and impacts of the EJ concerns raised. Community members actively participated in planning the studies and gathering the data. Technical specialists on the study team compiled the data and developed the appropriate analysis tools. With results of the analysis in hand, community members could weight near-term and long-term solutions, and work with agency planning and programming processes to implement the results. The BREJTP project team presented the validated findings to community members in a community workshop in 2008 and published and posted a report to the Baltimore Metropolitan Council Web site.³⁹ Additional reports are also available on the project Web site.⁴⁰

The final phase, which is currently underway, is the development of practical, systematic, multi-user guidance on implementing a bottom-up approach for both practitioners and community members. This third phase envisions national dissemination of the toolkit for use in university curricula and practitioner training.

Outcomes

The listening sessions and community dialogues in Phase I of the BREJTP project identified a wide range of issues, implying that a broad base of analytical tools and measures would be required to validate the concerns identified and evaluating potential solutions. Investigations related to the four communities studied in Phase II confirmed that assessment. Each community required the BREJTP project team to assess available models and data sources and adapt existing models or develop new ones to complete the investigation.

As a result of the investigation, the BREJTP project team was able to confirm and in some cases, allay EJ concerns, help communities and transportation agencies address challenges identified, and suggest concrete follow-up actions. For example, MTA is locating hybrid buses at the Kirk Avenue bus yard instead of diesel fuel buses. In addition, new operational

³⁹ The Baltimore Metropolitan Council Web site available at www.baltometro.org/transportation-planning/comm-unity-workshop-on-ej-and-transportation.

⁴⁰ The project Web site is available at <http://ejkit.com>.

procedures are in place, and a new maintenance facility structure will replace the old structure. Another example is related transit access to Lexington Market. The BREJTP project team found that, despite reductions in bus service to the area, overall transit access to Lexington Market appears to have actually improved.

Scope of Analysis: Investigating Concerns of Four Communities in Baltimore, MD

Scope of analysis for the **Kirk Avenue Bus Yard (Midway Community)** included:

1. Nature of bus operations
 - Scale of operations at Kirk Avenue and change in scale or nature of activity over time, in comparison with other MTA bus depots
 - Markets served by routes supplied by buses stored at Kirk Avenue; relevance to Kirk Avenue neighborhood
2. Impact on neighborhood
 - Number of households/homes in proximity to the bus depot
 - Socio-demographic characteristics of households in surrounding vs. directly adjacent communities
 - Levels of home ownership, abandonments
 - Housing values, sale prices, turnover rates
 - Noise and pollution impacts
3. Mitigation history and alternatives
 - Mitigation actions that have been taken by MTA: nature, timing, objective, effectiveness
 - Other actions suggested but not taken, and why
 - Potential impacts of proposed new facility

Scope of analysis for the **Cherry Hill Community and Transit Access** included:

1. Assessment of changes in transit service
 - Nature of system changes when LRT system phased in
 - Change in route coverage and connectivity
 - Change in ease of access to transit within the community
2. Impact of changes on regional accessibility
 - Comparison of areas reachable by transit within 30, 45, and 60 minutes of travel time before and after system change
 - Comparative travel times to favorite destinations
 - Assessment of whether changes in service orientation reflect redistribution of land use and opportunities in the region
 - Number of jobs within 30, 45, and 60 minutes of transit travel times before and after

3. Changes in the community
 - Population: number, race, age, education, employment
 - Households: number, size, composition, income
 - Housing: number of units, size, ownership, vacancies, home values, rents
4. Transit service delivery
 - Reliability (on-time performance, showing up for appointments)
 - Condition and cleanliness of equipment and facilities
 - Driver professionalism, competence, orderliness on buses

Scope of analysis for the **West Baltimore "Highway to Nowhere" Community** included:

1. Characteristics of the communities in the U.S. 40 corridor
 - Segment the corridor into inner, middle, and outer corridor sections
 - Population size, characteristics of each segment
 - Housing condition, availability, home ownership
 - Changes over time
2. Transportation conditions in the corridor
 - Daily vehicle traffic volumes, congestion levels
 - Transit service and ridership in the corridor
 - Pedestrian environment, walkability
 - Changes over time
3. Benefits and burdens
 - Traffic congestion by segment, and origin of vehicle occupants
 - Vehicle emissions
 - Vehicle/pedestrian conflicts, accidents, injuries, fatalities
 - Changes in transit service (and accessibility) over time
 - Housing prices, vacancies, ownership adjacent to corridor

Scope of analysis for the **Lexington Market Pedestrian Safety** included:

1. Assessment of nature, magnitude, and impact of changes in bus stops
 - Bus routes for which stop locations changed
 - Location of new stops, appraisal of impact on access (time, distance, exposure)
 - Communities served by these routes, route ridership, average boardings/alightings at Lexington Market
 - Characteristics of riders: race, age, gender, income, origin community, trip purpose, frequency

- Stated effect on trip-making behavior
- 2. Assessment of vehicle/pedestrian conditions and conflicts in market vicinity
 - Peak hour vehicle volumes on adjacent streets, particularly those which bus riders would need to cross to access the relocated bus stops
 - Comparable pedestrian volumes in market area
 - Pedestrian accident statistics
- 3. Changes in regional transit accessibility
 - Change in accessibility to Lexington Market by transit, 1990 vs. 2000
 - Areas for which transit travel times have increased between 1990 and 2000

Source: U.S. EPA and FHWA, 2004.

Lessons Learned

Transportation agencies can demonstrate how community feedback and concerns impact project planning and design by adopting goal-oriented performance measures. These measures should reflect the concerns articulated by underrepresented communities so that the agency and community members can assess how the agency is doing relative to community concerns. From the experience of working with four communities, the BREJTP project team provides some examples of performance measures directly related to the concerns raised by the community.

The BREJTP project team also assessed at what stage in the planning process performance measures could be utilized. As cited in the EJ Toolkit Technical Document, the team envisioned four different applications:

- Investigating a current concern or issue outside of the standard planning process.
- Investigating a proposed project, typically in the context of assessing impacts or developing a mitigation plan.
- Investigating the metropolitan planning process, in the context of identifying and addressing longer term population needs, mitigating impacts, and achieving the comprehensive goals and objectives of the plan (typically, the long-range transportation plan).

Investigating programming activities, in which funding priorities and allocations are established, typically in conjunction with the regional Transportation Improvement Program.

The BREJTP project has published a report documenting the technical tools they employed for replication and adoption by interested transportation agencies. The project will also include these tools as part of the forthcoming procedures manual on a comprehensive community-based approach to EJ for transportation agencies and practitioners.

Community Driven Public Participation

Community Issues	Community Driven Public Participation		
	Goal	Objectives	Performance Measure Measures
Job Access	Economic Vitality and Competitiveness	Encourage Employment Opportunities in Urban Communities	Work opportunities within 15, 30, and 45 minutes by car and transit door-to-door. Percent of transit dependent riders who can access jobs with 45 minutes of fixed route of transit
Maintenance	Safety and Security (Motorized and Nonmotorized)	Stop the Use of Old Equipment in Low Income Neighborhoods	Percent and characteristic of out-of-service buses coming into an area Pedestrian/bicycle injuries and fatalities Vehicle crashes Age of fleet
Increased Accessibility	Increase Accessibility and Mobility Options	Access to Jobs	Proximity to transit Level of service Accessibility to health care facilities Accessibility to education facilities
Reduce Air and Noise Pollution	Protect Environment, Conserve Energy, and Improve Quality of Life	Clean Environment	Air pollution concentrations Incidence rates of respiratory disorders Number of households exposed to noise Asthma rates in communities adjacent to large transportation facilities
Improved Transit Route Structure	Enhance Connectivity and Integration Across Modes for People and Freight	Access to Shopping and Services	Location improved per million passenger miles
Need Assessment	Manage and Preserve Existing Transportation System	Advocate for Project Funding to Improve Local Conditions	Condition of roads and streets Condition of sidewalks Ratio of uncontested travel times between origins and destinations

Source: U.S. EPA and FHWA, 2004

Community Driven Public Participation

Performance Measures	Application					Analytical Method		
Economic Vitality and Competitiveness								
Accessibility to regional jobs	C	PL	F			RM	GIS	
Accessibility to entry-level/semi-skilled jobs		PL	F			RM	GIS	
Employer accessibility to workers		PL	F			RM	GIS	
Number of jobs by type and location		PL			DA		GIS	
Business receipts by location		PL			DA		GIS	
Property values by location								
Safety and Security for Motorized and Nonmotorized Travelers								
Pedestrian/bicycle injuries and fatalities	C	PL	F	PR	DA		GIS	
Vehicle crashes	C			PR	DA		GIS	
Increase Accessibility and Mobility Options								
Proximity to transit type (bus, rail, etc.)	C	PL	F	PR		RM	GIS	
Level of service (headways, days/hours of service)	C	PL	F	PR	DA	RM	GIS	
Average travel times for selected origin/destination pairs by mode	C	PL				RM	GIS	
Accessibility to regional educational institutions		PL	F				GIS	
Average age/condition of buses by area served	C		F		DA		GIS	
Protect Environment, Conserve Energy and Improve Quality of Life								
Number of households living within X feet of busy highway	C	PL	F	PR	DA		GIS	
Air pollution concentration by type of pollutant	C	PL		PR		RM	GIS	EM
Incidence of respiratory disorders	C	PL			DA		GIS	
Number of households exposed to noise exceeding X decibels	C	PL		PR	DA	RM	GIS	
Number of households living within X feet of a bus terminal	C	PL			DA		GIS	
Percent of buses servicing area that use alternative fuels	C	PL	F			RM	GIS	
Percent of takings, household displacement, access restrictions		PL	F	PR	DA		GIS	
Enhance Connectivity and Integration Across Modes								
Number of transfers required for transit trips between select origin/destination pairs	C	PL				RM	GIS	
Percent of travel time accounted for by transfers in select origin/destination pairs		PL				RM	GIS	
Manage Existing Transportation System for Maximum Efficiency								
Percent of congested to uncongested travel time between select origin/destination pairs		PL				RM	GIS	
Preserve the Existing Transportation System								

Performance Measures	Application			Analytical Method				
Condition of roads and streets		PL	F		DA		GIS	
Condition of sidewalks		PL	F		DA		GIS	
Funding Equity								
Transportation capital expenditures per capita		PL	F	PR	DA		GIS	
Transportation operating expenditures per capita		PL	F	PR	DA		GIS	
Identity of users benefitting from new project or program		PL	F	PR	DA		GIS	

Source: U.S. EPA and FHWA, 2004

LEGEND

C = Current Concern, **PL** = Planning, **F** = Programming, **PR** = Project, **DA** = Data Analysis, **RM** = Regional Travel Models, **GIS** = GIS-aided, **EM** = Emission Models

Conclusion

Community concerns are highly context specific and cannot be assumed or generalized across traditionally underrepresented communities. Transportation agencies may encounter multiple underrepresented communities within the same project area. Variations in the modes of transportation used may result in differing access to facilities and services and thus divergent needs. The populations may also have distinct cultural mores and preferences for communication that will require sensitively tailored public participation plans. As such, agencies need to explore a broad range of strategies to engage with and validate community concerns.

Community outreach should proactively engage underrepresented communities in their preferred settings, instead of expecting the community to come to the agency with feedback. Direct community outreach can enhance participation by visiting impacted community members, meeting one-on-one to solicit their feedback, holding special events, and convening meetings at non-traditional places. Innovations in technology can advance and extend agencies' outreach by offering community members who cannot participate in public meetings alternative options for obtaining information and providing feedback. However, technologically advanced outreach methods should not be used to the exclusion of other methods.

Transportation planners should address suspicion and skepticism directly by incorporating community concerns into planning and programming efforts. Transportation agencies must demonstrate how the concerns articulated by community members are explicitly addressed by project plans. Outreach materials should highlight community concerns as they have been articulated in the public participation process, and provide details about the agency's efforts to address community concerns and incorporate them into project plans and construction designs. These materials can be disseminated in a number of ways. As discussed in this chapter, agencies with an online presence use email newsletters, status updates on their Web sites, and videos. The Buford Highway case study created display boards of the revised plans featuring the measures adopted to address pedestrian concerns and exhibited them at open house information meetings. The BREJTP project team presented findings during community meetings at locations proposed by community members. They also included community members in the development and dissemination of the final report community

members helped to develop. In addition to incorporating mitigation and improvement suggestions, agencies can also involve community members in analyzing the concerns that they raise. As demonstrated, community members can be involved in selecting appropriate metrics for validating their concerns, as well as in gathering data.

3. Livability

Introduction

In June 2009, U.S. Secretary of Transportation Ray LaHood, U.S. Secretary of Housing and Urban Development Shaun Donovan, and U.S. EPA Administrator Lisa P. Jackson announced the new interagency **Partnership for Sustainable Communities**. The partnership's mission is to improve access to affordable housing, provide more transportation options, and decrease transportation costs, while protecting the environment and supporting existing communities. The partnership has established six livability principles (see text box). With regard to transportation, livability is about leveraging the quality, location, and type of transportation facilities and services to help achieve broader community goals such as access to good jobs, affordable housing, quality schools, and safe streets.

Although the concept of livable communities might be new to some, the transportation-related goals underlying the concept have been actively pursued for some time, albeit under different labels. These labels include smart growth, TOD, context-sensitive solutions, walkability, and new urbanism. Numerous existing Federal grants and programs support the pursuit of livability, and several more have been created recently.⁴¹

With its emphasis on improving existing communities and providing equitable, affordable transportation and housing, it is clear that livability incorporates many environmental justice goals. Each of the three Federal agencies participating in the partnership has developed its own approach to environmental justice. As the agencies explore how they can work jointly to advance community livability, they are also developing common frameworks for addressing environmental justice.

Trends in Livability

Livability Principles of the Federal Partnership for Sustainable Communities

1. Provide more transportation choices.
2. Promote equitable, affordable housing.
3. Enhance economic competitiveness.
4. Support existing communities.
5. Coordinate and leverage Federal policies and investment.
6. Value existing communities and neighborhoods.

For some time, advocates for social and environmental justice have argued that the auto-dependent development pattern of the post-World War II era (often described as "sprawl") has exacerbated social injustice. According to these advocates sprawl has accelerated the decline of urban infrastructure and has limited the access of inner city residents to suburban job centers and essential services such as health care and nutritious food.⁴² Additionally,

⁴¹ A listing of DOT's programs that support projects that enhance or relate to livability is available at <http://www.dot.gov/livability/grants-programs.html>.

⁴² For example, see Robert Bullard, Glenn Johnson, and Angel Torres (editors), *Highway Robbery: Transportation Racism and New Routes to Equity*, South End Press, 2004.

social justice advocates have expressed concern that efforts to redirect economic and residential development back to city centers could spur gentrification and displace low-income or minority residents without providing them with any economic, environmental, or social benefits. This criticism has been leveled against the smart growth movement in the past, and it remains a concern for transportation and community planners as they work to advance livability going forward.

Challenges

The primary environmental justice challenge inherent in promoting livability-focused projects is ensuring the projects directly benefit existing community residents and businesses, rather than simply displacing them. In particular, project sponsors should be concerned about how a project will affect the following:

- Residents who could be displaced by an increase in property values or a decrease in the availability of affordable housing.
- Members of traditionally underserved populations (including local residents) who are in need of job training and/or employment opportunities.

In addition, as with other public projects, there remains the ongoing need to solicit the input of the affected communities to learn their needs and concerns. The livability case study projects highlighted in this section are addressing these challenges in several ways, such as:

- Inclusion of transportation improvements that directly benefit traditionally underserved populations;
- Initiatives to preserve and increase the availability of affordable housing; and
- Efforts to involve traditionally underrepresented populations in the decision-making process.

Case Studies

Case Study 1: TriMet Yellow Line Extension (Portland, OR)

This case study of the extension of LRT shows how a transportation project can simultaneously promote community livability and environmental justice. The project enhanced public transit service to traditionally underserved communities and stimulated TOD. At the same time, the project went far beyond typical practices to provide economic benefits to DBEs and workers.⁴³

In 2000, the Tri-County Transportation District of Oregon (TriMet) began a 5.8-mile, \$350 million extension of the Yellow Line, part of the Portland area's Interstate MAX light rail system. This extension connected the racially and ethnically diverse communities from northern and northeastern Portland to downtown and to the rest of the MAX system. Through careful project design and implementation, TriMet was able to advance the principles of community livability and environmental justice.

⁴³ Under federal procurement law, the DBE program is open to all DBEs and cannot be restricted to only those DBEs located in the communities in which a federally funded transportation project is being built.

The project promoted community livability by:

- Providing more transportation choices to the residents of the existing communities of northern and northeastern Portland.
- Making it a design priority to transform Interstate Avenue into a pedestrian-friendly, multimodal urban street.
- Enhancing the economic competitiveness of communities by taking steps to prevent construction of the rail line from harming local businesses, many of which were owned by minorities or recent immigrants.
- Valuing the unique characteristics of the affected communities by commissioning local artists to create public art for each of the 10 new stations.

The Yellow Line extension advanced environmental justice in the broadest sense by improving public transportation options for low-income and minority residents of northern and northeastern Portland. At the time of the project's construction, the communities along the new rail alignment were 44 percent minority and had a 22 percent poverty rate, compared to 21 percent minority and 13 percent poverty rate citywide.⁴⁴

To mitigate the impacts of construction on existing businesses in the corridor, TriMet ensured continued access to businesses along the avenue and worked in three- and four-block segments to complete work as quickly as possible. In addition, TriMet, along with the city of Portland and Portland Development Commission, offered a variety of mitigation strategies, including low-interest loans, technical assistance, storefront improvement grants, and workshops. This effort also included an advertising campaign and a "lunch bus" that brought 14,000 people to restaurants on Interstate Avenue. By the time construction was completed in December 2004, more than 50 new businesses had opened on the street.⁴⁵



Figure 15. TriMet's Metropolitan Area Express (MAX)

Source: Tri-County Transportation District of Oregon, 2005

⁴⁴ TriMet, "Interstate MAX DBE & Workforce Story: Overcoming Barriers to Inclusion," 2005, p. 6, http://trimet.org/pdfs/business/DBE_Workforce_Story.pdf.

⁴⁵ TriMet, "Interstate MAX Yellow Line," May 2008, <http://trimet.org/pdfs/history/railfactsheet-interstate.pdf>, accessed June 18, 2010.

TriMet's Metropolitan Area Express (MAX) light-rail system serves 84 stations in the Portland metropolitan area. The Yellow line connects northern and northeastern Portland with downtown Portland and the rest of the MAX system.

Source: Tri-County Transportation District of Oregon, 2005.

TriMet set and exceeded ambitious goals for involvement of local DBEs and workers in the project. TriMet's goal was to have 16 percent of construction contract dollars go to DBE firms. To reach this goal, the agency took the following steps:

- Held listening sessions at the beginning of the project to learn about specific challenges DBE firms had faced on past public works projects.
- Divided large contracts into smaller scopes of work so that small firms and DBEs could be more competitive.
- Rotated DBE subcontractors within a scope of work.
- Provided technical and business assistance to DBEs and other small firms to help them build capacity to deliver the work.

These efforts resulted in 18 percent of contract dollars going to local DBE firms, totaling \$35 million, of which \$8.1 million went to DBEs located in northern and northeastern Portland.⁴⁶

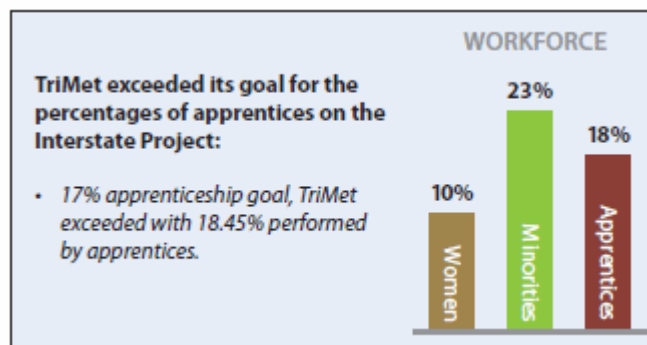


Figure 16. Distribution of Labor Bar Graph

Source: Tri-County Transportation District of Oregon, 2005

Distribution of Work Hours for Construction of the Yellow Line

Workforce Type	Percentage of total work hours for construction of TriMet's Yellow line
Women	10%
Minorities	23%
Apprentices	18%

To improve local workforce skills, TriMet required as part of a project labor agreement that the largest contractors and subcontractors have 17 percent of their project work performed by

⁴⁶ TriMet, "Interstate MAX DBE & Workforce Story: Overcoming Barriers to Inclusion," 2005, p. 6, http://trimet.org/pdfs/business/DBE_Workforce_Story.pdf.

apprentices. The agency also encouraged these companies to make good-faith efforts to employ a diverse workforce. TriMet contracted with the city of Portland's Workforce Training & Hiring Program to monitor contractors' success in meeting the apprenticeship goal. In the end, apprentices provided 18.45 percent of total hours, with minority and female apprentices providing 7.72 percent of total hours.⁴⁷

Case Study 2: Atlanta BeltLine (Atlanta, GA)

Although still mainly in the planning phase, the Atlanta BeltLine project merits examination because of how comprehensively it promises to promote livability in the Atlanta region. The multifaceted efforts to address environmental justice concerns are also noteworthy.

The Atlanta BeltLine is one of the largest and most comprehensive urban redevelopment efforts underway in the United States. After decades of growth characterized primarily by the addition of low-density suburbs, the project aims to direct some of the region's future growth within and around the BeltLine, 22 miles of historic rail lines that encircle the city's urban core. Inspired by a 1999 graduate-school thesis that proposed a new transit system along the BeltLine, the idea grew to include not only LRT but also parks and trails, neighborhood preservation and revitalization, Brownfields remediation, mixed-use development, and affordable housing.

The project was formally endorsed in 2005, when the Atlanta City Council, Fulton County Board of Commissioners, and Atlanta Public School Board of Education approved the BeltLine Redevelopment Plan and an associated tax allocation district. Although many components of the project are still in the planning phase, as of June 2010 some individual elements such as new trails and parks have been completed or are under construction.⁴⁸ The BeltLine project is expected to benefit some 100,000 Atlanta residents, or 25 percent of the city's total population, who live within walking distance of the BeltLine.

The transportation improvements proposed in the BeltLine project include:

- Twenty two miles of LRT that will connect to existing and proposed regional transit networks.
- More than 33 miles of multi-use trails, including a core 22-mile loop and 11 miles that will extend into surrounding neighborhoods to improve access to the BeltLine.

Improvements to the city's existing transportation network, such as new sidewalks, streetscapes, and intersection improvements that will help create a more cohesive urban street network

The livability features of this ambitious undertaking are numerous and have been noted by HUD Secretary Shaun Donovan on the White House's blog.⁴⁹ The project will direct significant public funds to existing neighborhoods in Atlanta's urban core, while providing more transportation choices to residents. It will promote equitable, affordable housing by investing

⁴⁷ TriMet, "Interstate MAX DBE & Workforce Story: Overcoming Barriers to Inclusion," 2005, p. 46, http://trimet.org/pdfs/business/DBE_Workforce_Story.pdf.

⁴⁸ Atlanta BeltLine, Inc., "BeltLine Projects Underway: May 2010," <http://beltline.org/Portals/26/Images/materials/blprojectsunderway.pdf>, accessed June 17, 2010.

⁴⁹ HUD Secretary Shaun Donovan, "Growing Our Communities Sustainably," White House blog, May 21, 2010, <http://www.whitehouse.gov/blog/2010/05/21/growing-our-communities-sustainably>.

\$240 million over 25 years to build as many as 5,600 new affordable workforce housing units within the BeltLine area.⁵⁰ It will promote economic competitiveness by redeveloping old industrial sites and other underutilized properties along the BeltLine. From the beginning, the project has valued the unique characteristics of neighborhoods and communities by soliciting and incorporating public input on all of its proposed features. Many of these neighborhoods have been historically underserved and underrepresented in transportation planning.

Many of the project's livability features also promote environmental justice. The new affordable housing units will be workforce units targeted to households with incomes typical of the service sector (including firefighters, police officers, teachers, and nurses). These units are intended to help prevent the displacement of working-class families if property values increase in communities near the BeltLine. As part of the effort to preserve affordable housing, project planners are working to establish a network of community land trusts in the project area. These trusts will keep homes affordable by separating the price of homes from the price of the land underneath them. The trusts buy and hold land permanently while allowing the homes themselves to be bought and sold by residents with limited incomes.⁵¹ While the BeltLine project is focusing on workforce housing, other city support is available for very low- and low-income housing, which will take advantage of the BeltLine's enhanced transportation choices.

Through remediation and redevelopment of Brownfields sites, the project will improve public health and the environment while providing more economic opportunities for inner city residents. To promote more equitable growth across the city, redevelopment plans are being organized around 12 activity centers located around the BeltLine.



Figure 17. Proposed Atlanta BeltLine

Source: Atlanta BeltLine, Inc., 2010

⁵⁰ Affordable "workforce" housing is usually considered moderate-income housing (e.g., at least 30% of area median income). According to Beltline officials, other affordable housing programs are available to assist Atlanta residents with incomes below this threshold.

⁵¹ Personal communication with Beth McMillan, Atlanta BeltLine Office of Community Engagement, June 17, 2010. For more information on community land trusts, visit the website of the National Community Land Trust Network at: <http://www.cltnetwork.org/>.



Figure 18. Atlanta BeltLine Project Map

Source: Metropolitan Atlanta Rapid Transit Authority, 2009

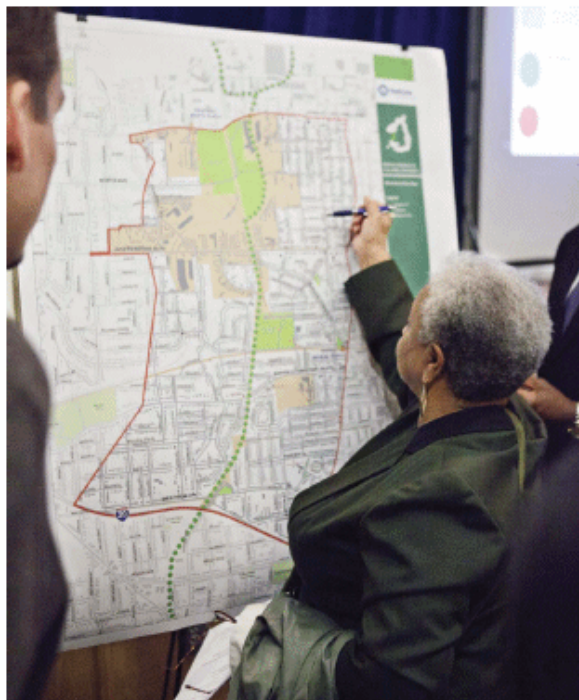


Figure 19. Workshop Participant Marking Up a Map

Source: Martin, 2008

The broader impact of the BeltLine project on regional economic and social disparities has been considered in the BeltLine Equitable Development Plan, which sets guiding principles to ensure the project achieves physical connectivity among Atlanta's neighborhoods while meeting the needs of the diverse people and communities that share the BeltLine.⁵² A major component of the development plan is to provide community benefits such as long-term job opportunities for existing and new residents. To help accomplish this, construction contractors receiving funds raised through the tax allocation district will be required to take certain steps to interview local qualified candidates, and to make good-faith efforts to meet targets for the percentage of work hours allocated to people residing near the BeltLine.⁵³ A job training program is being put in place to prepare BeltLine neighborhood residents for upcoming job opportunities.

Extensive efforts have been taken to solicit public input on the different components of the project. The BeltLine Redevelopment Plan was developed after extensive public input, with more than 1,600 participants attending more than 26 public meetings. In addition, Atlanta BeltLine, Inc., the entity created by the Atlanta Development Authority to coordinate planning and implementation of the project, is using a five-part community engagement strategy to keep Atlanta residents informed and actively engaged. Some features of the framework are mandated by the Atlanta City Council. The five components of the framework are:

1. Tax Allocation District Advisory Committee.
2. BeltLine Affordable Housing Advisory Board.
3. Quarterly public briefings that are recorded and shown on the city of Atlanta's cable channel.
4. Creation of the Community Engagement Advocate Office within Atlanta BeltLine, Inc.
5. Five study groups, each one focused on a different portion of the BeltLine project area, to provide community input over the life of the planning and implementation processes.

Milwaukee, WI, was recently designated an Environmental Justice Showcase Community by EPA in recognition of its efforts to redevelop the 30th Street Industrial Corridor, which centers on a former rail line. The corridor is in north-central Milwaukee and is home to low-income communities of color.

Working with Federal, State, and local partners, the city seeks to improve the human, environmental, and economic health of neighborhoods along the corridor by redeveloping Brownfields, implementing "green" stormwater management practices, improving local roads, attracting new businesses, and providing workforce training. For more information on this project, see: <http://www.mkedcd.org/30thstreet/>.

⁵² <http://www.beltline.org/Implementation/EquitableDevelopment/tabid/3860/Default.aspx>

⁵³ For more information about his program, see: <http://www.beltline.org/Portals/26/PDF/FAQ%20and%20FSEA%20for%20Website%20-%20community%20benefits.pdf>.

Case Study 3: Urban Transitway (Stamford, CT)



Figure 20. Phase II Map of the Stamford Urban Transitway

Source: City of Stamford, 2009

The Stamford Urban Transitway project in Connecticut demonstrates how transportation infrastructure projects can improve transportation choices for regional commuters while also improving choices and living conditions for adjacent communities.

As currently configured, I-95 and the Metro North Railroad separate downtown Stamford from its 323-acre south waterfront area, and significantly impede utilization of the critical Stamford Intermodal Transportation Center (SITC). SITC is one of the busiest transit stations in the country, with more than 20,000 daily weekday commuters, 225 daily commuter trains, more than 1,000 daily commuter bus trips, and paratransit shuttles, establishing it as an entry portal for commuters using the LaGuardia, John F. Kennedy, Jr., and Newark airports in and around New York City.⁵⁴

For years, I-95 has also served as a de facto dividing line, separating the more affluent areas of northern Stamford from disadvantaged neighborhoods in the southern waterfront area. The southern waterfront is one of the poorest neighborhoods in the metropolitan area, with median income ten percent lower than Stamford as a whole. More than 75 percent of residents in the area earn a low income, with nearly 30 percent living below the poverty line. More than 12 percent (1,300 households) do not own vehicles.⁵⁵

To improve access to SITC from I-95 and surrounding neighborhoods, and to spur redevelopment of the southern waterfront, the city of Stamford is constructing the Stamford Urban Transitway. The transitway will include dedicated bus lanes, high-occupancy vehicle (HOV) lanes, bicycle/pedestrian routes, intelligent transportation system (ITS) technologies, and multi-use vehicle lanes. The first phase of the transitway was started in 2007, with a major portion of new roadway completed and opened in July 2009. Phase II is now underway, including final design and engineering, environmental permitting and approvals, and right-of-way acquisition.

⁵⁴ City of Stamford, CT, Request for U.S. DOT TIGER Discretionary Grant for the Stamford Urban Transitway, Sept. 15, 2009, p. 2.

⁵⁵ Stamford Urban Transitway TIGER grant application, p. 15.



Figure 21. Picture of New Green Affordable Housing Near SITC

Source: Jonathan Rose Companies
Photo Credit: Ruggero Vanni.

The transit way's livability components include:

- Providing additional transportation choices for commuters, residents, and other travelers by allowing better access and use of SITC, and improved neighborhood access.
- Spurring development of hundreds of units of affordable housing.
- Enhancing the economic competitiveness of Stamford and supporting existing communities by serving as a catalyst for redevelopment of Brownfields near the southern waterfront.

The development occurring near the transitway is also consistent with the environmental aspects of livability. Stamford already requires new private buildings to meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) standards. The city's first green affordable housing development has been built one block from SITC, incorporating features that will reduce residents' long-term energy and maintenance costs. Harbor Point, the major development planned in Stamford's southern waterfront, has earned Gold certification under the new LEED-Neighborhood Development standard. The streets in Harbor Point are designed for lower traffic speeds and to be friendly to pedestrians and bicyclists. Stamford is also connecting the development around the transitway with a 3-mile urban park that is being developed along the Mill River.

As with the other projects highlighted in this section, the transitway's livability features will contribute to the pursuit of environmental justice. In addition to easing access for commuters to SITC, the transitway will improve access for nearby low-income residents to transit services. Because city requirements dictate that 10 percent of all new housing units must be affordable, under current plans the result will be 400 new units of affordable housing.

To benefit local low-income workers, Stamford has required hiring preferences for local workers, best-practice hiring practices for qualified low-income people, and use of apprenticeship programs. The city is also facilitating participation of DBEs in accordance with

Federal regulations. By following these practices during construction of the first phase of the transitway, the city utilized DBEs for \$4 million, or 11 percent, of the first phase, meeting the State's DBE benchmark. A similar effort in Kansas City, MO, the Green Impact Zone, is working to improve the environmental sustainability of an urban neighborhood.

Kansas City's Green Impact Zone⁵⁶

The Green Impact Zone is a cooperative effort to use Federal stimulus funds to jump-start the transformation of a 150-square block area of Kansas City, MO, that has experienced severe abandonment and economic decline. Roughly 40 percent of its properties consist of vacant lots or structures, and the median home value is less than \$30,000. The ultimate goal is to create a community that is environmentally, economically, and socially sustainable. The Green Impact Zone is adjacent to the Blue Valley Industrial District, where the city of Kansas City and the Federal Government have recently spent more than \$300 million in flood control and Brownfields mitigation to create jobs and spur economic development and redevelopment.



Figure 22. A rain garden at 49th and Volker in Troostwood Commons

Source: Green Impact Zone/Mid-America Regional Council. May, 2010

Creating a rain garden at 49th and Volker in Troostwood Commons is one of the programs being promoted by the zone's Sowers of Sustainability Program.

The Green Impact Zone initiative integrates plans and investment related to workforce and economic development, community outreach, youth development, infrastructure, mobility, housing, and energy efficiency. For example, the project aims to improve the housing of every existing resident, in part through weatherization, energy audits, and energy efficiency incentives. Plans call for hiring and training local residents to assist with home weatherization.

In February 2010, the Kansas City region was awarded \$50 million from DOT's Transportation Investment Generating Economic Recovery grant program. These funds will be used for basic street and sidewalk repairs, bus stop improvements, and traffic signal upgrades and synchronization in key transit and pedestrian corridors in the target area. TIGER funds will also pay for new expanded and enhanced regional bus and bus rapid transit

⁵⁶ Source: <http://www.greenimpactzone.org/About/index.aspx>

services that will help connect the Green Impact Zone and other urban neighborhoods to the rest of the region.

Underlying all work will be a neighborhood outreach program that builds on the existing, well-organized neighborhood associations. Many of the zone programs and investments are focused on supporting specific priorities set by the individual neighborhoods. These priorities include reclaiming abandoned buildings and lots for housing, parks, and food services.

Conclusion

The projects described here advance environmental justice on several fronts:

- **Economic Opportunities for DBEs.** In each of the cases, the projects complied or are complying with Federal mandates regarding use of DBEs. However, as shown in Portland, Oregon, more can be done with contracting to increase the involvement of DBEs.
- **Job Opportunities for Vulnerable Populations.** The highlighted projects provide job opportunities for residents of the affected communities by encouraging contractors to give consideration to qualified local applicants. They go further by providing job training or making use of apprenticeship programs.
- **Affordable Housing.** Considered alone, transportation projects may have a neutral or even adverse impact on the availability of affordable housing. However, when projects are part of a broader effort to improve the livability of a community, there is greater potential for positive housing outcomes. The Atlanta and Stamford projects show how project plans can preserve and increase the supply of affordable housing.
- **Participation of Vulnerable Populations in Decision making.** Federal and State laws require transportation planners to engage the public at various stages in the project planning and implementation process. As addressed elsewhere in this guidebook, this issue takes on special importance when dealing with vulnerable populations. The Atlanta and Kansas City projects are notable for their levels of public involvement, especially from underserved neighborhood residents, in the broader redevelopment efforts that are supported by transportation projects.

4. Road Pricing Mechanisms

Introduction

Goals Addressed by Road Pricing Mechanisms

The Nation's transportation system faces many major challenges, including growing traffic congestion; inadequate funding; and emerging concerns such as air pollution, global climate change and its potential impacts on transportation infrastructure, and sustainable development. Road pricing has potential to help address many of these critical challenges. It has begun to attract attention as a policy option for managing transportation demand and improving transportation system performance. However, experience from several proposed and implemented projects shows that concerns regarding the impact of road pricing on disadvantaged communities, particularly low-income populations, have often arisen. This chapter describes some of the issues raised, along with potential solutions to achieve environmental justice by addressing these concerns during planning, outreach, and implementation of road pricing strategies.

As a policy that is typically applicable at the local and regional levels, road pricing involves charging drivers to access and use roads. In addition to supporting roadway operations, the fees charged to drivers are meant to offset the social and environmental costs of using their vehicles. These include the costs of travel delays for other road users due to congestion, the costs of air pollution and greenhouse gas emissions, the health costs resulting from exposure to pollutants and road accidents, and the effects of diminished quality of life in congested areas. Vehicle ownership and licensing fees, dedicated road taxes, gas taxes, and user tolls are often used to fund the construction and maintenance of roads, but not to cover the social costs associated with their use. These costs are not perceived by drivers and are often left out of project evaluations and impact studies. Charging fees in proportion to use of roads, especially in locations prone to high congestion, is one way to address these issues. Road pricing is akin in principle to pricing practices in other infrastructure sectors, for instance, charging higher rates for airline travel or electricity use in peak hours.

As highway congestion increases throughout the United States, it not only impacts travel time and costs for travelers, but also freight transportation, which in turn impacts local and regional economies and the costs for goods and services. By pricing travel to more accurately account for its full costs, travelers make more informed decisions, having a positive impact on both personal travel and goods movement. Road pricing strategies thus help to reduce congestion and vehicle emissions in the following ways:

- By providing incentives to shift trips to off-peak times or less congested routes.
- Reducing vehicle-miles traveled by encouraging mode shift from single occupancy vehicles to transit, carpools, walking, and cycling.
- Improving the reliability of highway system performance.
- Supporting transit improvements through revenues from road pricing programs.

Despite notable successes in implementing road pricing, the adoption of promising strategies has been somewhat slow. This is in part due to public opposition to paying for using roads, the newness of the concept in the context of transportation finance, and equity concerns

regarding potential adverse effects on low-income people and local businesses, especially where there is a lack of transportation alternatives to driving. Road pricing programs around the world demonstrate the importance of conducting focused and intensive public engagement effort that precedes and accompanies implementation of the programs.

Environmental Justice Concerns Related to Road Pricing Projects

Consideration of equity issues-such as who bears the burden of road pricing charges, who benefits from improved mobility, and how the revenues are used-is critical to ensure that road pricing programs effectively achieve environmental justice. Because some "free" roads or roads without pricing may cut through disadvantaged or minority communities, environmental justice issues may also arise with respect to the external effects of road pricing programs such as traffic diversion, higher congestion, and increased pollution in these communities. If vulnerable populations are located at the periphery of pricing zones, quality of life in these areas could suffer due to increased traffic from travelers trying to park their cars to avoid driving into the pricing zone. Finally, social exclusion can be an issue if low-income drivers experience barriers to using pricing projects by low-income drivers, such as lack of access to the technology or equipment that users must have to participate in the program.

Four dimensions of equity in relation to road pricing related to road pricing

- **Income equity.** Relates to the disproportionate impacts of road pricing on low-income populations.
- **Geographic or spatial equity.** Relates to disproportionate road pricing impacts on people who live and work in certain affected locations.
- **Modal equity.** Relates to disproportionate road pricing impacts based on travel modes; the concept typically distinguishes between transit users and auto users.
- **Equity in participation.** Relates to the extent to which all groups can participate and have their interests considered in the planning and project implementation process.

Minority and low-income populations are usually more affected by the negative impacts of congestion-related travel delays and reduced reliability because they are more likely to use buses that face roadway congestion caused primarily by automobiles. By providing incentives to reduce driving, road pricing can help reduce delays and thus mitigate the effects of congestion for these populations. Minority and low-income populations are also more likely to be employed in blue-collar or otherwise inflexible jobs where delays in getting to work could mean lost income. By offering more reliable trips, road pricing provides improved travel choices to these populations.

While road pricing has the potential to meet the needs of disadvantaged communities, pricing strategies also have the potential to violate environmental justice principles if not implemented with thorough consideration of equity impacts. The perceived "cost" of a toll or congestion charge in proportion to income is higher for a low-income traveler. In the absence of alternative free routes that could be used by these travelers, concerns regarding monetary egalitarianism could arise because low-income people may continue to be stuck in traffic while the wealthy are able to pay for and use the priced roads or lanes. For this reason, high-occupancy toll (HOT) lanes, implemented in several regions by introducing pricing on former high-occupancy vehicle (HOV) lanes, sometimes encounter criticism as "Lexus Lanes" that

cater to the wealthy and impose unfair burdens on the poor. In spite of these income equity issues, road pricing has been shown to compare favorably with traditional transportation taxation such as gasoline and sales taxes that are considered more regressive for low-income populations.⁵⁷

In addition to the charge itself, low-income populations can sometimes be excluded from accessing the technology required to use priced roads. This occurs because of the need for drivers to own transponders that are typically purchased in advance. Transponders must also be linked to reliable bank or credit card accounts that can be used to deduct charges; at least 20 percent of U.S. households do not have credit cards and 10 percent do not have bank accounts.⁵⁸ Toll discounts are also typically offered to people who use transponders as opposed to those who pay in cash at toll booths.

Some forms of road pricing, such as area-wide pricing or cordon pricing, involve charging drivers fees for entering and driving within a congested "charging zone," typically the downtown area of a city. Such plans have been implemented in London and Stockholm and were recently proposed in New York City and San Francisco. This type of pricing scheme, however, also raises environmental justice concerns about geographic equity regarding where people live and work. If low-income populations live in areas that are not well-served by transit and need to commute to jobs in the charging zone, they might face an unfair burden from the charge. Another geographic equity issue arises with respect to urban and rural populations when charges are assessed on the basis of distance traveled. For instance, a pilot program to implement "mileage fees" in Portland, Oregon, raised these concerns because the travel behavior of rural populations is distinct from urban populations in that they usually drive longer distances and would thus be charged a greater amount with a mileage fee.

Modal equity relates to ensuring that users of all modes are treated fairly and transit riders are not disadvantaged either due to congestion effects prior to implementation of road pricing or after it. There are concerns that conversion of HOV lanes to HOT lanes-the form of road pricing most commonly seen in the United States-might negatively impact transit riders because of the potential increase in single-occupancy vehicle (SOV) traffic on the HOT lanes. If more SOV drivers choose to pay and use the HOT lanes, it could reduce the reliability of transit service in the lanes that were originally created to prevent exactly this impact on HOVs. As a mitigation strategy, revenue from road pricing programs can be invested in improving transit service and operations in pricing corridors or zones. In the case of road pricing, modal equity correlates closely with income equity because transit users in the United States are often from low-income and minority communities.

Distance-Based Road Pricing Pilot In Portland, OR

A new, more sophisticated form of pricing was implemented on a trial basis in Portland, OR. Although seen as an innovative strategy for mitigating congestion, equity issues became evident due to differences in travel behavior of urban and rural travelers. Specifically, rural populations would be potentially disadvantaged by the policy because they drive longer distances and would pay higher tolls.

⁵⁷ FHWA (2008), "Income-Based Equity Impacts of Congestion Pricing-A Primer", p. 6, available at http://ops.fhwa.dot.gov/publications/fhwahop08040/cp_prim5_00.htm. Accessed June 18, 2010.

⁵⁸ Parkany (2005), "Environmental Justice Issues Related to Transponder Ownership and Road Pricing," paper presented at TRB Annual Meeting, Washington, DC, 2005.

Solutions to Mitigate Environmental Justice Concerns

The equity impacts discussed above can and must be mitigated through careful design of pricing programs. This involves introducing features such as:

- Transit, vanpools, or other options as alternatives in locations not served by transit.
- Upper limits on road pricing.
- Exemptions or discounts for persons who are disadvantaged people such as those whose earnings are below a certain income level and people with disabilities.
- Limits on the number of priced crossings in a period for cordon charges.
- Allowances for unlimited use of priced facilities in certain periods, typically off-peak hours and holidays.

The most common forms of mitigating income-equity concerns with road pricing proposals to date are reinvestment of road pricing revenues in transit service expansion and use of exemptions or rebates to provide monetary compensation to low-income populations. Progressive schemes can be designed depending on how road pricing revenues are distributed and the presence of non-toll options (as with HOT lanes) for those who prefer to use them.

Finally, inviting participation from all communities and stakeholders potentially affected by a road pricing project and ensuring that people have full opportunity to participate in developing pricing plans is important to address environmental justice concerns and principles. Participation should be encouraged throughout the planning and National Environmental Policy Act (NEPA) process, and during project implementation and evaluation.

Trends in Road Pricing

Evolution of Road Pricing Programs in the United States

Although tolls were used extensively in the United States in the first five and a half decades of the 20th century, and helped build and operate some of the original toll roads centuries ago, fuel taxes ultimately became the preferred method of financing the roadway system because of the relationship between road use and fuel use.⁵⁹ Because vehicle ownership and driving are pervasive today, road pricing is opposed by members of the public who view roads as a public good, the use of which should not be taxed. However, the fuel tax is increasingly unable to keep up with growing transportation needs as travelers shift to more fuel-efficient vehicles and the costs of petroleum-based materials used for roadway construction continue to rise. Thus, growing costs create concerns about the future effectiveness of the gas tax as a source of revenue. One of the greatest challenges in coming years will be preserving, operating, and enhancing the Nation's transportation system in an era of limited funding, expanding needs, and increasing costs. Road pricing, therefore, offers a potential new option as a source of funding for local and regional transportation investments.

In addition to the need to address the challenges discussed above, implementation of road pricing is becoming more feasible due to development of new electronic technologies that ease the adoption of sophisticated pricing measures and eliminate the need for manual toll

⁵⁹ Ungemah, D. (2007), "This Land Is Your Land, This Land Is My Land: Addressing Equity and Fairness in Tolling and Pricing," paper presented at TRB Annual Conference, 2007, Washington, DC.

connection. Thus, the concept of road pricing has been moving from the realm of academic research and economic and policy analysis to actual, implemented projects implemented at the local and regional levels. The pilot testing of various road pricing approaches has also spurred greater understanding of potential benefits and impacts.

An important impetus to the growth of road pricing in the United States has been the Federal Value Pricing Pilot Program (VPPP). First authorized more than a decade ago as the Congestion Pricing Pilot Program under the *Intermodal Surface Transportation Efficiency Act of 1991*, VPPP has evolved over time and been re-authorized under the *Transportation Equity Act for the 21st Century* and the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users*. As a pilot program, one of VPPP's goals is to encourage States, local governments, and other public entities to test innovative pricing approaches, demonstrate their potential, and assess their effectiveness.

DOT has recently given greater attention to innovative congestion management strategies as part of its new National Strategy to Reduce Congestion on American's Transportation Network. This major initiative, launched in May 2006, is designed to have measurable effects on traffic congestion across the Nation. Road pricing is a key element of this strategy and is being supported through Urban Partnership Agreements (UPAs). The strategy was followed by the Congestion Reduction Demonstration (CRD) program in 2007. Both initiatives were designed to address congestion problems, with particular emphasis on establishing partnerships with major urban areas to make significant reductions in roadway congestion by using congestion pricing as a key strategy. There are currently six urban partner cities-Miami, FL; Atlanta, GA; Minneapolis, MN; Seattle, WA; San Francisco, CA; and Los Angeles, CA. New York City was originally designated an urban partner but lost that status in April 2008 after it failed to obtain the State legislative authority needed to implement congestion pricing.

A wide range of pricing approaches is being considered by transportation agencies at the State and local levels, and the approaches are eligible for funding under Federal programs such as VPPP, UPA, and CRD, including:

- Value-priced express lanes, in which incentives are used to manage congestion during peak travel periods to ensure the lanes are fully utilized yet, remain uncongested.
- Cordon pricing and other forms of area pricing, in which fees are paid by motorists who cross a cordon line or drive in a particular designated area (fees may vary by time of day or only apply during peak periods).
- FAIR (Fast and Intertwined Regular) lanes, in which tolls are implemented on one or more general-purpose lanes of a multilane facility, and toll credits are provided to users of adjacent lanes that could be used as toll payments on days when these drivers choose to use the express lanes.
- Implementing tolls on new highway capacity, including public-private partnership projects.
- Variable tolls (congestion pricing) on existing or newly built toll facilities.
- Truck-only toll facilities.

- Conversion of HOV lanes to HOT lanes, where low-occupancy vehicles are charged tolls (either at preset variable prices or real-time market prices) while HOVs are allowed to use the lanes free or at a discounted toll rate.
- Distance-based pricing strategies, including mileage fees and pay-as-you-drive insurance.
- Variable pricing of parking facilities, particularly those in congested locations, based on time of day, market pricing of employer-provided parking, and parking "cash out" strategies.

In the United States, the focus has been on conversion of HOV lanes to HOT lanes, and new-capacity HOT lane projects. In addition, some road pricing projects have introduced variable pricing on existing toll facilities and new express road segments. These forms of road pricing tend to raise fewer equity concerns by allowing drivers to choose the priced lanes for making time-sensitive trips, while retaining the option to use the parallel free lanes for other trips.

A few experimental road pricing projects have introduced pay-as-you-drive insurance charges and congestion charges varying by location and time. Finally, other strategies such as variable parking pricing have been implemented in the United States.

Overseas, downtown area-wide road pricing schemes have been implemented in London, Stockholm, and Singapore, and are under consideration in other cities and nations of the European Union. Several Norwegian cities have had regional cordon charges in place since the 1990s. Road pricing is also operational on several French Motorways. Singapore has implemented road pricing on its regional expressway network, while Germany and Austria have implemented truck pricing on their national road network. These projects have shown initial success in managing traffic more effectively, raising revenue for system investment, advancing greater travel reliability for roadway users, creating new travel options, and addressing some of the environmental concerns. However, in some cases such as the area-wide London Congestion Charging scheme, there has been continuing controversy about the environmental justice implications. Although transit services were significantly increased in the city and discounts were offered to residents of the zone, the adverse impacts on small businesses located in the Western Extension of the zone have led to a decision by the Mayor to abolish the charge in that location. In the United States, area-wide pricing was proposed in New York City in 2007 and San Francisco in 2008, with both proposals failing to move forward, partly due to equity concerns.

HOT Lanes on I-15 in San Diego

The I-15 FasTrak lanes represent one of the earliest examples of road pricing in the United States, where charges vary by the level of congestion. The project resulted in significant travel time savings and greater travel time reliability. As a result of FasTrak's longtime operation, there is substantial data available on long-term equity impacts. FasTrak has been used as a reference case to discuss equity impacts in almost all recent and ongoing HOT lane projects.

A survey conducted in 2001 showed support for FasTrak was high across all income groups, with the lowest income group expressing as much support as the highest income group (about 80 percent). Most I-15 users believed the project to be fair to travelers in both the main lanes and the express lanes. Also, there were very few differences in attitudes about the

fairness of the lanes based on ethnicity or income. These concerns arose in the first year of the project, but they diminished with time with more use of the facility by people across income groups. However, half of respondents said tolling of SOV drivers was unfair double taxation (FasTrak customers less so than other corridor users) for roads that had already been paid for. To provide travel alternatives and mitigate potential equity issues, revenues from the project are partly being used for visible transit enhancements in the form of a new express bus service.

Equity Assessment of Road Pricing Programs

A region that is considering implementation of road pricing should undertake studies to measure and assess potential impacts on disadvantaged communities at an early stage in the planning process. Not only must this information be shared during communications with decision makers and the public, but it is also important for purposes of NEPA documentation during planning and environmental review. Also, lessons regarding the acceptability of road pricing strategies show that it is important to reference data on equity impacts of successful road pricing programs during public outreach.

Assessing the income equity (also termed vertical equity) of a road pricing scheme requires analysis at several different levels—primarily involving the likely economic and time impacts on households in disadvantaged communities. Economic impacts include the expenses incurred by a typical low-income household in paying the road user charges per year, the share of income spent on these charges, and how consumption of other goods and services might be affected by the loss of this income. Time impacts include the time savings for low-income households as a result of congestion charges or the increase in travel time they would face if they shifted to public transportation or to longer or more congested routes that do not have pricing. These economic and time impacts for low-income households must then be compared with those for middle and high-income households. To assess the environmental justice impact of road pricing programs in a holistic way, the differences between households at the same income level (or horizontal equity issues) must also be taken into account. Because people from low-income households do not all have similar travel behaviors, they often will be affected differently by road pricing programs. For example, low-income commuters who drive will be affected more than those who walk or bike to work.⁶⁰ Or, those with flexible work schedules who can alter their travel time will be affected less than those with more rigid work hours.

In addition, assessments of the locations where disadvantaged communities primarily live and work and their travel patterns must be done to ensure that the road pricing scheme is not likely to result in spatial inequity.

Implementing agencies must ensure that the payment methods, deposits, and service fees required by transponder programs will not disproportionately affect access to priced facilities by disadvantaged people. Finally, an analysis must be done of the way in which the revenues of a road pricing scheme will be used, to determine whether low-income households will be helped or harmed.

⁶⁰ Plotnick, R., J. Romich, J. Thacker, and M. Dunbar (2009). "Analyzing the Impact of Highway Tolls on Low-Income Persons: An Application to the Puget Sound Region of Washington State," paper prepared for the Research Conference of the Association for Public Policy Analysis and Management, Washington, DC, November 2009.

Proposed HOV to HOT lane conversions on I-85 in Atlanta, I-10 and I-210 in Los Angeles, and SH 121 and other planned projects in Dallas.

The following projects demonstrate a common form of road pricing in the U.S.-HOV to HOT lane conversion-and all involve similar environmental justice (EJ) concerns. The HOT lanes in Atlanta and LA are being built with a grant from the U.S. DOT's Congestion Reduction Demonstration Initiative. In Atlanta, concerns about HOT lanes providing greater benefits to wealthier people are leading to a more stringent focus on the equity analysis and proposed transit improvements in the corridor so that all users will be able to benefit from transportation investments. In Dallas, in-depth EJ analysis was done for all HOT lane projects during the long range planning process, using job accessibility through transit and auto as measures and levels of congestion on roadways used mostly by protected class populations. In LA, EJ concerns are being addressed by emphasizing the multimodal aspect of the project that provides advantages to lower income groups through transit improvements. LA Metro is also constantly communicating with potentially affected EJ community groups and involving them in planning efforts. One of the ways the agency is doing this is by ensuring that all information about the project is provided in several languages for the minority populations in the area, usually through their daily newspapers.

Environmental Justice Regional Toll Analysis

Existing Toll Facilities
Year 2030 - AM Peak Period
Traffic Survey Zone Trip Origins

Legend

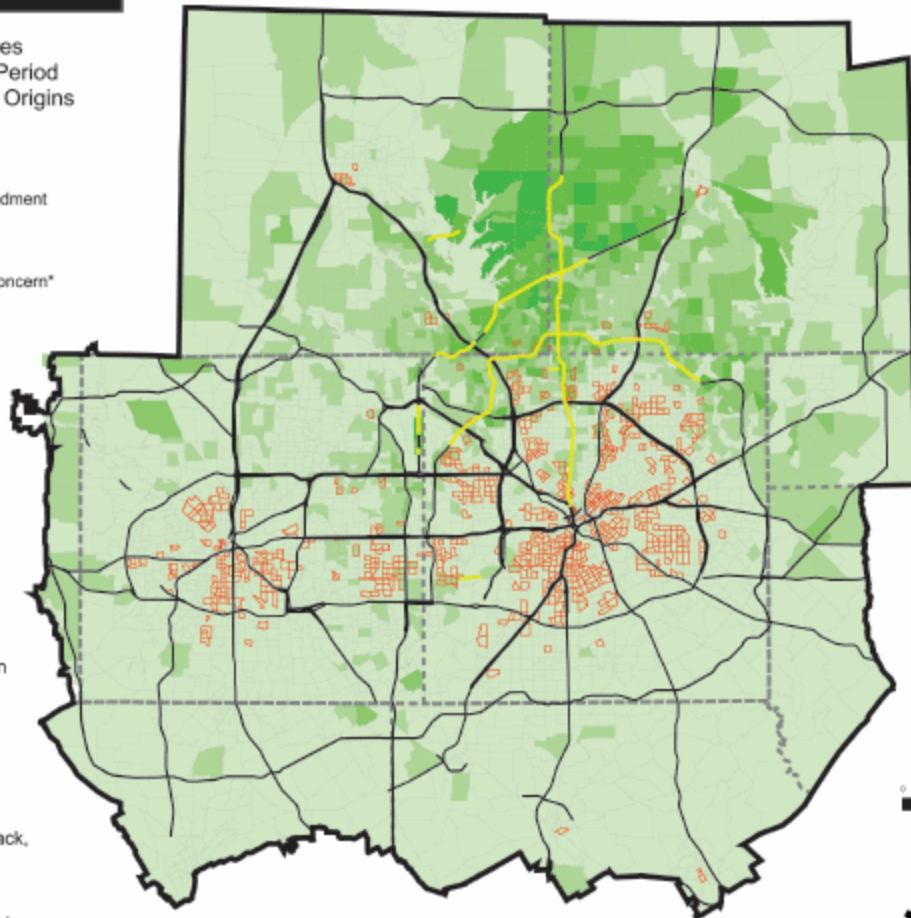
- Mobility 2030 - 2009 Amendment Freeway/Tollway Network
- Existing Toll Facilities
- Communities of Highest Concern*
- ⋯ County Boundaries
- ▭ MPA Boundary

Number of Trips

- 0 - 50
- 51 - 150
- 151 - 350
- 351 - 950
- 951 - 3400

* Communities of Highest Concern for environmental justice analysis are based on the total protected population in each Traffic Survey Zone (TSZ) relative to the total area (square mile) of the corresponding TSZ.

Protected Populations include: Black, Asian, American Indian, Hispanic, Age 65 and Over, Disabled, Female Head of Household, and Below Poverty Line. Data is based on Census 2000 information.



June 2009



Figure 23. Environmental Justice Regional Toll Analysis for the Dallas-Fort Worth Area

Source: North Central Texas Council of Governments, 2009.

Challenges

The case studies presented in the next section point to some key challenges related to equity for disadvantaged populations that may be affected by road pricing programs. These include:

- Public perception of inequity for disadvantaged populations can affect the acceptability of road pricing programs; in the case of conversion of HOV lanes to HOT lanes, this has been referred to as the perception of "Lexus Lanes" that only benefit the wealthy rather than all users of the corridor. Low-income users may potentially become worse off from road pricing programs if they have to choose

other less expensive times, routes, or modes for their trips to avoid paying the charge.

- Ensuring a road pricing plan receives political support is often difficult because it is considered a risky policy and there is often a lack of visible and supportive political champions.
- Privacy concerns have been raised related to using cameras to record vehicle movements and assess road pricing fees.
- The issue of geographic equity may arise with respect to the locations where low-income people live and work, and the possibility they might bear an unfair burden of the congestion charge without receiving much benefit of congestion reduction.
- The issue of modal equity could arise due to concerns about loss of accessibility and service to transit riders and carpoolers from additional traffic in lanes that originally used to benefit HOVs.
- The redistribution of revenue needs to involve multiple modes and transportation agencies to ensure that low-income people are not disproportionately burdened and are not denied equal access to the benefits of fast, reliable trips.
- The transponder-based technology currently common in road pricing programs presents a barrier to access of priced facilities by low-income households that might not have reliable bank or credit card accounts. For instance, access to and use of several priced facilities such as the I-15 lanes in San Diego, the MnPASS lanes in Minneapolis, and the SR 91 lanes in Orange County, CA, is only possible for those who can purchase transponders and pay in advance. This can sometimes be problematic for low-income travelers.
- In the case of cordon or area-wide pricing programs, neighborhoods surrounding the pricing zone might suffer from increased congestion and pollution as travelers try to bypass the zone to use alternative free routes or park just outside the zone. In addition, people from locations outside the pricing zone who commute to jobs located in the pricing zone might be adversely impacted.

Case Studies

Case Study 1: Area-Wide Congestion Pricing Proposal (New York City, NY)

Introduction

Traffic congestion has long been an issue for all vehicles traveling in New York City's Manhattan. Civic, business, environmental, and labor groups have all been concerned with the impact of congestion on the city. In 2007, the Mayor unveiled a congestion pricing scheme within a more comprehensive sustainability plan called PlaNYC. The proposal called for a congestion pricing strategy that would charge drivers a fee for entering a defined part of the city (a section of Manhattan) facing high congestion. This proposal was the first area-wide road pricing scheme for a major North American city. Public input on issues of simplicity of the scheme, equity, cost, use of revenues, and parking impacts led to modifications of the Mayor's plan. There was an extensive outreach and public education program to help the public, interested groups, and elected officials understand the benefits of congestion pricing transit improvements made with the pricing revenues.

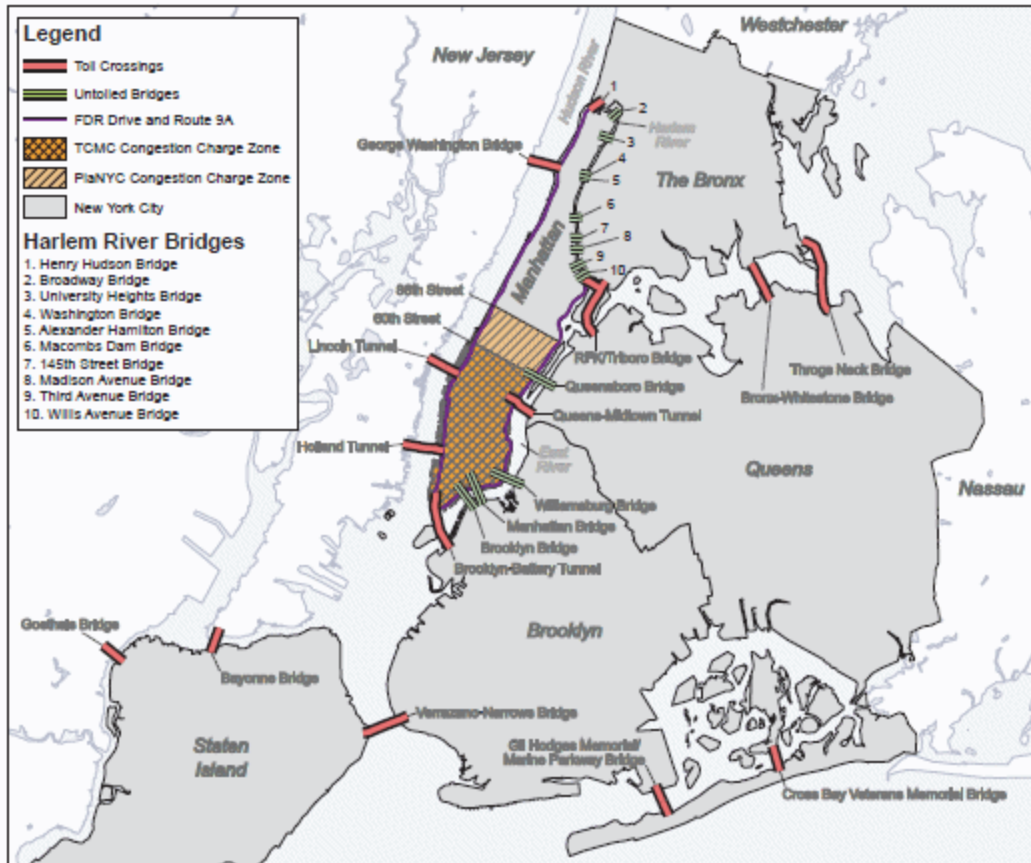


Figure 24. Proposed congestion pricing plan for New York City

Source: Transport Policy, 2010
Photo Credit: Bruce Schaller

While political discussions about the proposal were underway, NYCDOT and the Metropolitan Transportation Authority (MTA), which operates subway, bus, and commuter rail service in New York City and the surrounding suburbs, applied for funding from DOT's Urban Partnership Agreement Program to implement congestion pricing and use the revenue for complementary transit improvements. In August 2007, the program awarded \$350 million to NYCDOT and MTA to implement the congestion pricing project by March 31, 2009, contingent on the Legislature granting pricing authority by April 2008.

Outcomes

Public support for a strategy to address the congestion issue pressured the Legislature to create the Traffic Congestion Mitigation Commission in July 2007. The commission was charged with evaluating both pricing and nonpricing approaches to address traffic congestion and make a recommendation to the Legislature by January 2008. Over the next several months, the commission held public hearings and considered alternatives and variations on the Mayor's proposed strategy, finally recommending a modified version of the area-wide pricing concept. Drivers on currently tolled bridges into the city would be required to pay only the difference between the congestion charge and the bridge toll. Opponents to congestion pricing often cited issues of geographic equity, such as the fact that New Jersey commuters

would pay very little because the congestion charge would almost entirely offset the bridge tolls, while low-income commuters from Queens, Brooklyn, and the Bronx (outer boroughs of New York City) who had no other option but to drive into Manhattan for work would pay the full fee because they used the free bridges to enter Manhattan. Interregional equity and burdens on interstate commerce were other factors cited by opponents. NYCDOT tried to address concerns that congestion pricing would hurt low-income neighborhoods by stressing the transit improvements that would benefit from the congestion pricing plan. Further, the agency highlighted data that showed that low-income groups depend heavily on transit and typically do not drive into Manhattan. NYCDOT also emphasized that revenue from such a plan was to go into a fund specifically for transit improvements.

In the end, while the City Council adopted a resolution to support the commission's recommended congestion pricing plan and the Senate was expected to adopt the plan, the State Assembly blocked the vote on the congestion pricing bill just as the April 2008 deadline for the Urban Partnership Agreement Program's condition for legislative approval passed. However, it is believed that the proposal might be revived in the future, given the continuing budget problems faced by MTA and the critical need for a new source of revenue to fund transit in the city.

Lessons Learned

Public involvement from the inception of the proposal helped fuel public support and provided insight for addressing equity issues with the outer boroughs and New Jersey commuters. The congestion pricing idea gained support from key constituencies, members of the general public, and some elected officials because of the vision and top-level leadership provided by City Hall, coupled with an extensive public outreach and education campaign and strong advocacy from the civic community. Equally important, the proposal was part of a far-reaching plan that tied transportation to broad sustainability goals, it was shaped by intensive public discussion, and the Federal Government would help fund expanded transit services. The Mayor's presence as an influential champion for the project helped push the proposal to the forefront of the city's considerations.

Case Study 2: I-394 HOT Lane Conversion (Minneapolis-St. Paul, MN)

Introduction

With studies estimating \$1 billion lost each year because of urban traffic congestion and predicting that congested freeway lanes would more than double in 25 years, Minnesota officials realized that congestion was an important issue to address.⁶¹ After a task force funded by a value-pricing grant from the University of Minnesota's Humphrey Institute recommended that the Minnesota Department of Transportation (MnDOT) convert an underutilized HOV lane to a HOT lane on an 11-mile corridor on I-394, the State Legislature passed legislation in 2003 to create the I-394 MnPASS Express Lanes. The lanes opened May 16, 2005, as Minnesota's first HOT lane project. The main objectives included greater corridor capacity and throughput, reduced congestion, creation of a new travel option for solo drivers willing to pay a toll, and improved transit service in the corridor. The goals were achieved through "dynamic pricing" (varying with congestion levels as often as every 3

⁶¹ Congestion in the Twin Cities: Who's Paying the Price - A Summary Report, Workshop held November 28-29, 2000, in Minneapolis, MN, Center for Transportation Studies.

minutes) while maintaining adequate speeds for transit and carpools. During development of the MnPASS lanes, MnDOT was careful to constantly communicate and engage with the public since it had learned from a prior failed attempt at road pricing that public perception can greatly impact a project's outcome. MnDOT hired a communications consultant and created a task force of government, business, and stakeholder representatives. The outreach process also led to changes to the project that helped increase public support.

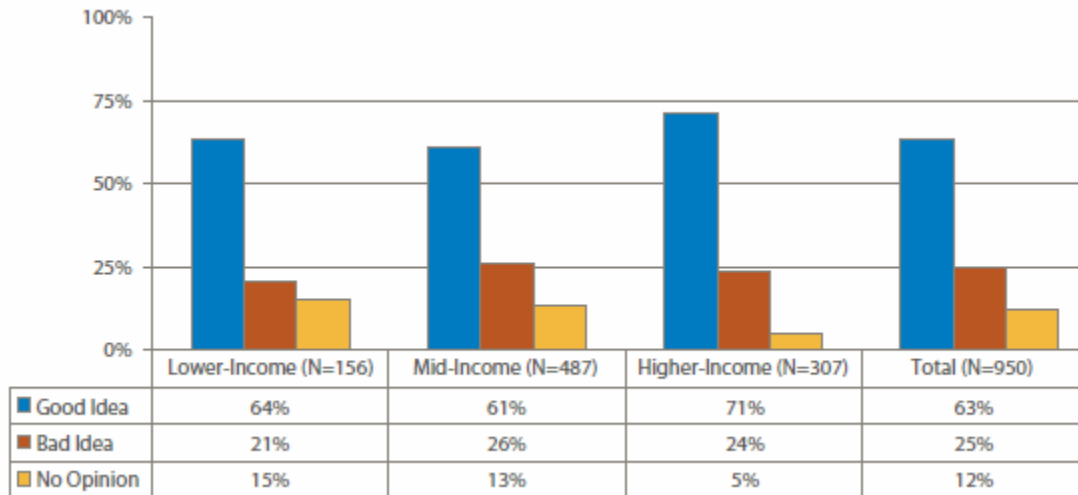


Figure 25. Minnesota DOT's MnPass Poll Results

Source: Munnich and Buckeye, 2007

MnPass Poll Results: Opinion on Allowing Solo Drivers to Use Carpool Lanes, by Household Income

	Lower-Income (N=156)	Mid-Income (N=87)	Higher-Income (N=307)	Total (N=950)
Good Idea	64%	61%	71%	63%
Bad Idea	21%	26%	24%	25%
No Opinion	15%	13%	5%	12%



Figure 26. MnPASS Express Lanes (HOT lanes) on I-394

Source: Minnesota DOT, 2010

Outcomes

The I-394 HOT lane project involved a long-running public outreach process. The first proposal in 1997 for HOT lanes failed because public perception was that only the wealthy would benefit. Advocates were able to change public opinion for the 2003 I-394 HOT proposal by emphasizing that all income groups value the time savings and greater reliability for certain trips due to implementing HOT lanes. This change in perception was due mostly to the realization that there was a lack of education or communication about HOT lanes. Post-implementation surveys found that drivers support having the option to pay to use the MnPASS lanes and do not find they unfairly target certain socioeconomic classes.

By making use of carpools free, the MnPASS lanes have also preserved the option for people of all incomes to benefit from faster transit.⁶² Evaluation surveys for I-394 found that the lanes were benefiting transit and there was not much effect on HOVs/carpools. Currently, 5 years since the opening of the MnPASS lanes, about 19,000 customers use the expanded MnPASS Express Lane network, a 97 percent increase compared to the year the lanes first opened and a 51 percent increase over the past year. Transit/HOV ridership on the Express Lanes network is up 10.5 percent during the last year compared to the year prior. Customer satisfaction with the lanes in terms of time savings and reliability is also high.

Lessons Learned

Constant monitoring of project impacts and communication of results to the public allows the project to address modal equity and prevent loss of accessibility and service to transit riders and carpools, due to the additional traffic in the lanes that used to benefit HOVs. The effect of HOT lanes on transit was a key public concern, which was alleviated through

⁶² Lee W. Munnich, Jr., and Kenneth R. Buckeye, "I-394 MnPASS High-Occupancy Toll Lanes: Planning and Operational Issues and Outcomes (Lessons Learned in Year 1)," *Transportation Research Record (TRR): Journal of the Transportation Research Board*, No. 1996, Transportation Research Board of the National Academies, Washington, DC, 2007, p. 56.

communication efforts to relay research findings of studies done in other areas, along with results after the project was implemented.

Supporters of the project pointed out that the congestion-reduction effects would benefit everyone in the corridor, not just those using the MnPASS lanes. They also noted that studies of the implemented project showed that congestion has been reduced along the entire corridor, improving traffic conditions for all travelers, regardless of income level. Changing public perception of the toll lanes as "Lexus Lanes" (benefiting the wealthy) requires lucid public communication on how revenues can be used to benefit all corridor users, not just a particular group. Speeds at or near the posted limits are successfully maintained by dynamic pricing that varies with demand. Time savings and greater reliability have resulted in strong support for the project.

CASE STUDY HIGHLIGHT

The I-394 MnPASS team drew extensively on the experience of the I-15 project in San Diego in designing their project, as well as in providing information to the community task force and to citizens about how value pricing works. Similarly, the team drew on the experience of other HOT lane projects in designing an evaluation plan for the MnPASS project. Members of the project team continue to meet regularly with representatives of other value pricing projects through Transportation Research Board meetings and workshops, as well as through phone conferences and site visits to projects.

Conclusion

Some lessons can be learned from the road pricing programs currently in effect around the Nation. The case studies provide detailed examples of how key challenges were addressed.

Road pricing strategies are most effectively communicated and implemented as part of a package of complementary strategies. This includes strategies that focus on transit improvements, reducing vehicle-miles traveled and emissions, and a regional goal of sustainability.

Thorough analysis must be done to show that disadvantaged populations, including low-income and minority communities, will not be disproportionately burdened by a road pricing scheme and that the policy is the least discriminatory alternative. There are some reports from San Diego and Minneapolis that high-income travelers are more likely to own transponders, use HOT lanes, and benefit from faster trips than low-income travelers. However, with reinvestment of revenues in significantly improved transit services and other travel alternatives, these effects have been mitigated to some extent. In some instances, low-income drivers value the new, reliable travel option as much as high-income drivers. Data from the Twin Cities region show that while the MnPASS lanes in Minneapolis are actually used by a larger proportion of high-income drivers than low-income drivers, all drivers value the option of having higher speeds and reliability on the HOT lanes when needed.

Potential adverse impacts on low-income populations can be alleviated through introduction of discounts, rebates, and exemptions in road pricing programs. The revenues from road pricing can be redistributed for this purpose. For example, in London, residents of the pricing zone receive significant discounts, and rebates for low-income drivers are increasingly being used in HOT projects. Impacts on communities located at the periphery of pricing zones must

also be considered. The area-wide pricing proposal in New York City included strategies to mitigate equity impacts and ensure that certain residents and businesses do not bear disproportionately higher economic burdens due to their locations.

Public communication and engagement of all segments of the population, especially vulnerable and potentially affected communities, must be a critical part of the planning process for road pricing programs. Before and during the planning stage, communication must include evidence from existing road pricing programs. After implementation, project impacts must be constantly monitored and communicated to the public. It is important to create awareness among the public and decisionmakers about the problem of congestion and its effects on productivity, health, and quality of life, as was done in New York City.

The technology used for road pricing must not exclude disadvantaged sections of the population. In some HOT lanes projects, transponders required to use the priced lanes have been provided free to drivers. However, other concerns, such as the requirement of advance payment of charges from bank and credit card accounts, might be problematic for low-income households; therefore, payment options (such as through cash) must also be established for those traveling infrequently on priced lanes.

Acronyms and Abbreviations

ADA:	Americans with Disabilities Act
BREJTP:	Baltimore Regional Environmental Justice Toolkit Project
BART:	Bay Area Rapid Transit
CDC:	Community Development Corporation
CMAP:	Chicago Metropolitan Agency for Planning
CNT:	Center for Neighborhood Technology
CTOD:	Center for Transit Oriented Development
DBE:	Disadvantaged Business Enterprises
DOT:	United States Department of Transportation
EIS:	Environmental Impact Statement
EJ:	Environmental Justice
EPA:	United States Environmental Protection Agency
FHWA:	Federal Highway Administration
FTA:	Federal Transit Administration
GDOT:	Georgia Department of Transportation
GHG:	Greenhouse Gas Emissions
HHS:	U.S. Department of Health and Human Services
HOV:	High-Occupancy Vehicle
H+TSM:	Index Housing + Transportation Affordability Index
HUD:	U.S. Department of Housing and Urban Development
ISTEA:	Intermodal Surface Transportation Efficiency Act
ITS:	Intelligent Transportation System
LEED:	Leadership in Energy and Environmental Design
LEP:	Limited English Proficiency
MPO:	Metropolitan Planning Organization
MTA:	Metropolitan Transportation Authority
MTC:	Metropolitan Transportation Commission
NEPA:	National Environmental Protection Act
RDT:	Denver's Regional Transportation District
SAFETEA-LU:	The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SITC:	Stamford Intermodal Transportation Center
SOV:	Single-Occupancy Vehicle

TOD: Transit-Oriented Development
VMT: Vehicle Miles Traveled
VPPP: Value Pricing Pilot Program