CONFERENCE PROCEEDINGS 32

Smart Growth and Transportation

Issues and Lessons Learned

Report of a Conference

September 8–10, 2002
Baltimore, Maryland

Sponsored by
Maryland State Highway Administration
Morgan State University
Association of Metropolitan Planning Organizations
American Association of State Highway and Transportation Officials
Federal Transit Administration
Federal Highway Administration

TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

TRANSPORTATION
RESEARCH BOARD
WASHINGTON, D.C.
2005
www.TRB.org

Transportation Research Board Conference Proceedings 32
ISSN 1073-1652
ISBN 0-309-09496-8

Subscriber Category
IA planning and administration

Transportation Research Board publications are available by ordering individual publications directly from the TRB Business Office, through the Internet at www.TRB.org or national-academies.org/trb, or by annual subscription through organizational or individual affiliation with TRB. Affiliates and library subscribers are eligible for substantial discounts. For further information, contact the Transportation Research Board Business Office, 500 Fifth Street, NW, Washington, DC 20001 (telephone 202-334-3213; fax 202-334-2519; or e-mail TRBsales@nas.edu).

Printed in the United States of America.

The conference was sponsored by the Maryland State Highway Administration, Morgan State University, the Association of Metropolitan Planning Organizations, the American Association of State Highway and Transportation Officials, and the Federal Transit Administration and the Federal Highway Administration of the U.S. Department of Transportation.

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

The **National Academy of Sciences** is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. On the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Bruce M. Alberts is president of the National Academy of Sciences.

The **National Academy of Engineering** was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. William A. Wulf is president of the National Academy of Engineering.

The **Institute of Medicine** was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, on its own initiative, to identify issues of medical care, research, and education. Dr. Harvey V. Fineberg is president of the Institute of Medicine.

The **National Research Council** was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both the Academies and the Institute of Medicine. Dr. Bruce M. Alberts and Dr. William A. Wulf are chair and vice chair, respectively, of the National Research Council.

The **Transportation Research Board** is a division of the National Research Council, which serves the National Academy of Sciences and the National Academy of Engineering. The Board's mission is to promote innovation and progress in transportation through research. In an objective and interdisciplinary setting, the Board facilitates the sharing of information on transportation practice and policy by researchers and practitioners; stimulates research and offers research management services that promote technical excellence; provides expert advice on transportation policy and programs; and disseminates research results broadly and encourages their implementation. The Board's varied activities annually engage more than 5,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation. **www.TRB.org**

www.national-academies.org

Contents

PREFACE ix

EXECUTIVE SUMMARY 1

OPENING REMARKS 4
Charles Howard, *Washington State Department of Transportation*

WHY: WHY SMART GROWTH IS A TRANSPORTATION ISSUE

Introduction 9
Anne Canby, *Cambridge Systematics*

Transportation Trends and Smart Growth 11
Alan Pisarski, *Independent Consultant*

Development Pattern Trends and Smart Growth 19
Gregg Logan, *Robert Charles Lesser & Company*

Land Use and Transportation Interactions 28
Reid Ewing, *Rutgers University*

Discussion 33

Working Definition of Smart Growth 36
Charles Howard, *Washington State Department of Transportation*

WHAT: WHAT DOES A SMART GROWTH TRANSPORTATION SYSTEM LOOK LIKE?

Introduction 39
Mary McCumber, *Puget Sound Regional Council*

Recent Transportation and Land Use Planning Experiences in Charlottesville, Virginia 40
Harrison Bright Rue, *Jefferson Planning District Commission*

Big and Small Things in the Bay Area 47
Steve Heminger, *Metropolitan Transportation Commission*

Smart Growth Transportation System in Seattle, Washington 52
Mary McCumber, *Puget Sound Regional Council*

Achieving Functional Mobility 54
Frank Moretti, *Road Information Program*

Discussion 56

KEYNOTE PRESENTATION

Introduction 63
John Porcari, *Maryland Department of Transportation*

Presentation 64
Parris N. Glendening, *Governor, State of Maryland*

WHERE: HOW DOES SMART GROWTH DIFFER WITH LOCATION?

Introduction 71
Charles Howard, *Washington State Department of Transportation*

Smart Transportation in Chicago 72
Luann Hamilton, *Chicago Department of Transportation*

Smart Transportation in the Puget Sound Region 77
Michael Cummings, *Washington State Department of Transportation*

Smart Transportation in Marana, Arizona 81
Jim DeGrood, *Town of Marana, Arizona*

Discussion 84

WHERE: HOW DO SMART GROWTH TRANSPORTATION SYSTEMS AND INSTITUTIONAL ARRANGEMENTS VARY WITH LOCATION?

Introduction 91
Tom Downs, *National Center for Smart Growth Education and Research, University of Maryland*

Smart Transportation in Maryland 93
Neil Pedersen, *Maryland State Highway Administration*

Smart Transportation in Las Vegas, Nevada 97
Jacob Snow, *Regional Transportation Commission of Southern Nevada*

Whose Future Is It, Anyway? The Essential Public Process 102
Robert Grow, *Envision Utah*

Smart Transportation in Portland, Oregon 108
Tom Kloster, *Portland Metro*

Discussion 113

WHO: WHO MUST BE INVOLVED TO ACHIEVE A SMART GROWTH TRANSPORTATION SYSTEM AND WHAT ARE THE INSTITUTIONAL OBSTACLES?

Introduction 119
John Horsley, *American Association of State Highway and Transportation Officials*

Incentives for Smart Growth in Maryland 121
John Porcari, *Maryland Department of Transportation*

Selling "Quality of Life" in Kentucky 123
Jim Codell, *Kentucky Transportation Cabinet*

Smart Transportation and Land Use: The New American Dream 125
Robert Dunphy, *Urban Land Institute*

Metropolitan Planning Organization Perspective on Smart Growth, Land Use, and Transportation 127
Ron Kirby, *Metropolitan Washington Council of Governments*

Discussion 130

HOW: HOW CAN TRANSPORTATION AGENCIES SUPPORT SMART GROWTH? WHAT TOOLS ARE AVAILABLE?

Introduction 135
Effie Stallsmith, *Office of Planning, Federal Transit Administration*

Examples of Smart Transportation Projects 137
Sam Seskin, *Parsons Brinckerhoff Quade & Douglas, Inc.*

The Many Transit "Connections" in Boulder, Colorado 144
Tracey Winfree, *City of Boulder*

Smart Highway Experience in New Jersey 148
James Lewis, *New Jersey Department of Transportation*

Hands-On Case Study 152
Catherine Rice, *Maryland State Highway Administration*

CONFERENCE WRAP-UP

Why 157
Brian Bochner, *Texas Transportation Institute*

What 158
Robert Dunphy, *Urban Land Institute*

Where 159
Alexander Taft, *Association of Metropolitan Planning Organizations*

Where and Who.....161
Mary Kay Santore, *U.S. Environmental Protection Agency*

How.....163
Catherine Rice, *Maryland State Highway Administration*

Conference Closing.....164
Charles Howard, *Washington State Department of Transportation*

BREAKOUT SESSIONS

What a Smart Growth Transportation System Looks Like: Breakout Session Report.....167

The Different Transportation Looks of Smart Growth: Breakout Session Report 170

PARTICIPANTS 173

Preface

The role of today's transportation professionals is much wider than providing capacity to meet current and future vehicle demands. Engineers and planners must help in defining and providing a transportation system that supports diverse local, regional, state, and national communities and goals. Many communities have adopted "smart growth" strategies to develop in compact, mixed-use, and multimodal ways. How can transportation policy makers and frontline professionals support such diverse goals? These proceedings summarize the highlights of a conference—Providing a Transportation System to Support Smart Growth: Issues, Practice, and Implementation—designed to address this question.

The conference was held September 8–10, 2002, in Baltimore, Maryland. The conference was organized by two Transportation Research Board (TRB) committees: the Statewide Multimodal Transportation Planning Committee and the Transportation and Land Development Committee. The conference was cosponsored by the Maryland State Highway Administration, Morgan State University, the Federal Transit Administration, the Federal Highway Administration, the Association of Metropolitan Planning Organizations, and the American Association of State Highway and Transportation Officials. The conference would not have been possible without the financial and institutional support of the Federal Highway Administration.

Committee Acknowledgment

Two TRB standing committees initiated and supported this conference: the Statewide Multimodal Transportation Planning Committee and the Transportation and Land Development Committee (see boxes, p. x). The conference planning committee was composed of members of these two committees, transportation professionals from all levels of government, and staff from nonprofit organizations working in the smart growth arena (see list, p. ii). The contributions of the conference planning committee were critical to the success of this event.

Staff Acknowledgment

The committee acknowledges the work of many individuals who contributed to the conference and the development of this report. Kimberly Fisher, Transportation Planner and Environmental Specialist, TRB, worked with the committee to plan the conference, under the guidance of the committee and the supervision of Mark Norman, TRB's Director of Technical Activities. Brie Schwartz, Administrative Assistant, worked with the presenters and other reviewers to prepare the final report. Freda Morgan, Senior Program Associate, with Reginald Gillum, Meetings Coordinator, provided support during the conference and later helped coordinate the report. Suzanne Schneider, Associate Executive Director of TRB, managed the report review process.

Thanks are extended to Liisa Ecola and other ICF Consulting, Inc., staff for their work in assembling and organizing the report. The presentations, discussions, and summaries of the views expressed by conference speakers, panelists, and participants are intended to provide a

record of the conference. The views expressed do not necessarily reflect those of the conference planning committee, TRB, the National Research Council (NRC), or the sponsors of the conference.

This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by NRC's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that assist the institution in making the published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. The committee wishes to thank the following individuals for their review of this report: Jonathan L. Gifford, George Mason University, Arlington, Virginia; Diane E. Gusky, Tennessee Department of Transportation; Kenneth J. Leonard, Wisconsin Department of Transportation; John S. Miller, Virginia Transportation Research Council, Charlottesville; and Douglas R. Porter, Growth Management Institute, Chevy Chase, Maryland. Although these reviewers provided many constructive comments and suggestions, they were not asked to endorse the report's finding and conclusions, nor did they see the final draft before its release.

The review of this report was overseen by Lester A. Hoel, University of Virginia, Charlottesville. Appointed by NRC, he was responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of the report rests entirely with the authoring committee and the institution.

Executive Summary

The questions concerning smart growth are as varied as its definition. They include the following:

1. What exactly is smart growth? Does it mean no growth, stopping Wal-Mart, and limiting growth to the inner city and suburbs? Or should all new development be high density, mixed use, with transit service?
2. How much impact can smart growth have on travel patterns or the total miles traveled by a household or in an entire region?
3. Will the public choose to live, work, and shop in the types of development called for in smart growth initiatives?
4. What are the underlying goals of smart growth? Can current programs achieve these goals?

Despite continuing debates about such questions, states, regions, and local governments are adopting smart growth programs, principles, and goals. The public and decision makers are calling for transportation systems, funding, projects, and plans to support smart growth. Transportation professionals and the agencies they work for are trying to respond. To do so, they must identify the characteristics of smart growth–supportive transportation systems, and then they must determine how they can provide such systems while continuing to achieve their traditional goals of transportation system stewardship and enhancement of mobility.

Two Transportation Research Board committees, the Statewide Multimodal Transportation Planning Committee and the Transportation and Land Development Committee, collaborated to organize a conference on how transportation professionals can provide transportation systems to support smart growth programs. A conference planning committee was formed (the members are listed on page ii). The committee did not want the conference to engage in the smart growth debate. Numerous conferences, workshops, and meetings are held every year that focus on some aspect of that debate. Instead, the committee decided that the conference would start with the acceptance of smart growth principles (see Box 1; a more detailed description of these principles is provided later).

BOX 1
Principles of Smart Growth

- Create a range of housing opportunities and choices.
- Create walkable neighborhoods.
- Encourage community and stakeholder collaboration.
- Foster distinctive, attractive places with a strong sense of place.
- Make development decisions predictable, fair, and cost-effective.
- Mix land uses.
- Preserve open space, farmland, natural beauty, and critical environmental areas.
- Provide a variety of transportation choices.
- Strengthen development and direct it toward existing communities.
- Take advantage of compact building design.

This decision was meant not to minimize the value of the many smart growth debates but instead to focus on an immediate need in the transportation community.

In September 2002, more than 130 transportation and planning professionals met in Baltimore, Maryland, for a Conference on Providing a Transportation System to Support Smart Growth: Issues, Practice, and Implementation. The conference was organized around five main questions:

- *Why*: Why is smart growth a transportation issue?
- *What*: What does a smart growth transportation system look like?
- *Where*: How does smart growth differ with location (urban infill, suburban redevelopment, and fringe growth)? How do institutional arrangements vary by location?
- *Who*: Who must be involved to achieve a smart growth transportation system, and what institutional obstacles exist?
- *How*: How can transportation agencies support smart growth? What are the available tools?

The conference planning committee, speakers, and attendees represented a broad range of agencies, views, and geographic locations (the attendees are listed at the end of these proceedings). Included were smart growth advocates and skeptics; transit agencies and highway agencies; national, state, regional, and local agencies; those advocating change in the transportation system and those struggling to accomplish the change; and so forth. Overarching conclusions from such a diverse group are understandably few and far between. Nevertheless, two conclusions appeared to pervade the conference, although they were not voted on or endorsed.

Transportation is inextricably linked to land use and, therefore, to programs such as smart growth.

This almost, but not quite, went without saying in the conference. As Charles Howard stated in his conference closing statement, "Transportation *is* a land use. And land use *is* a transportation strategy. . . . It is incumbent on us to . . . move the transportation planning process into a new era and actually link [transportation and land use] and make some rational decisions about land use in transportation."

Transportation systems that support smart growth are much more nuanced than is typically discussed.

Smart transportation systems include all modes—automobile, transit, and nonmotorized. Reducing the discussion to "transit versus highway" ignores the need for both to provide mobility. Smart facility design—roadway design was mentioned most often—is also critical. Designs that provide safe and aesthetic pedestrian and bicycle transportation are crucial.

Beyond these overarching themes, many important points were raised in response to the initial five questions.

- *Why*: Why is smart growth a transportation issue?

Alan Pisarski and Gregg Logan started the conference by describing relationships and current trends in population growth, residential and commercial development, travel, demographic characteristics, and commuting patterns. Current trends combined with changes in the U.S. population lead both to believe that many of the basic trends and patterns will continue into the future—for example, the demand for automobile travel and the dispersion of development to the suburbs. However, both saw market trends that tend to favor smart growth development.

Reid Ewing summarized a number of research studies supporting his statement that "land use planning is a form of long-term travel demand management." In particular, he focused on the finding that households take a fairly constant number of trips regardless of the type of area they live in, but the length of the trips and the percentage of automobile trips decline as the population density increases.

All of the presentations in this session emphasized the strong connections between land use and transportation and the importance of integrating the planning for them. The National Association of Home Builders survey finding (Logan's presentation) that roughly one-third of the public might be interested in acquiring housing in in-town locations was mentioned frequently during the remainder of the conference.

- *What*: What does a smart growth transportation system look like?

Two terms used in this session were frequently heard during the following conference discussion: "orderly dispersion" and "functional mobility." "Orderly dispersion" recognizes that growth will continue to occur but the goal must be to guide the development and the accompanying transportation system improvements to optimize the use of the current transportation system and new system investments. "Functional mobility" recognizes that "build your way out of congestion" has been a great rally cry but has never been a reasonable goal. The real goal is to maintain a level of mobility so that the community still works—freight can move, employers still want to locate in the community, and residents still want to live there.

The session speakers all focused on the fact that smart transportation is not just about reducing vehicle congestion but also about providing choice of travel

modes, convenient travel by multiple modes, shorter distances between activities, and better accessibility.

- *Where*: How does smart growth differ with location (urban infill, suburban redevelopment, and fringe growth)? How do institutional arrangements vary by location?

The two sessions covering the "where" questions included examples of smart growth and smart growth transportation in areas with very different histories and levels of urbanization. The driving forces behind smart growth, the definition of smart growth, and the institutional arrangements differed among the areas. However, many of the smart transportation features are remarkably similar: encouraging development near existing transport service; providing alternatives to the automobile and making those options safe and desirable; protecting or increasing roadway connectivity, particularly arterial roadways; managing the existing facilities; and working closely with the community and decision makers.

- *Who*: Who must be involved to achieve a smart growth transportation system, and what institutional obstacles exist?

The speakers in the sessions discussed how smart growth and smart transportation systems are possible in a variety of administrative or institutional settings. Smart transportation can be one of the most popular state programs with elected officials. Neighborhood conservation projects, downtown beautification projects, and road improvements that incorporate context-sensitive design features are all positive smart transportation projects that provide good "ribbon-cutting" opportunities for local officials. In addition, many of these projects can be completed quickly. A more detailed discussion of context-sensitive design may be found in Sam Seskin's presentation.

Several of the speakers in this session (and in other sessions) reminded the conference attendees of two fundamental goals in smart transportation: (*a*) more choices in transportation and housing and (*b*) the development of land and the provision of complementary transportation service. Neither of these goals is hard to sell to the public or decision makers.

- *How*: How can transportation agencies support smart growth? What are the available tools?

This session focused on the practical topic of the types of tools available to transportation agencies to accomplish smart transportation. The tools discussed spanned a wide range of areas and included many aspects of transportation design, traffic calming, transit service design, highway design, the management of access, and planning for community bypasses. Examples of tools were found in rural areas, small towns, suburban communities, urban areas, and reclaimed industrial areas.

One central theme ran through all the presentations: the importance of working with the community to design transportation improvements.

The Conference on Providing a Transportation System to Support Smart Growth was considered a success by the organizers and participants. There was a sense that many ideas and practical tools had been discussed.

Opening Remarks

Charles Howard, *Washington State Department of Transportation*

During the next several days we will explore the topic of transportation and smart growth and look at better defining what parts of transportation support smart growth.

Welcome to the Smart Growth Conference and thank you for coming to Baltimore. The members of the conference planning committee are Brian Bochner, Texas Transportation Institute; Bob Dunphy, Urban Land Institute; Jackie Grimshaw, Center for Neighborhood Technology, Chicago, Illinois; Mary McCumber, Puget Sound Regional Council; Frank Moretti, Road Information Program; Catherine Ross, Georgia Regional Transportation Authority, Atlanta; and Sam Seskin, Parsons Brinckerhoff.

Liaison members of the conference planning committee include Anne Canby, Cambridge Systematics; Andrew Farkas, Morgan State University; Chris Forinash, U.S. Environmental Protection Agency; Charlie Goodman, Federal Transit Administration; Roy Kienitz, Maryland Department of Planning; Neil Pedersen, Maryland State Highway Administration; and Alex Taft, Association of Metropolitan Planning Organizations.

All of the committee members worked hard to help put these conference sessions together.

I also thank the sponsoring organizations. This conference is sponsored by the U.S. Department of Transportation, the Maryland Department of Transportation, the Association of Metropolitan Planning Organizations, the American Association of State Highway and Transportation Officials, and Morgan State University. Two committees of the Transportation Research Board, the Statewide Multimodal Transportation Planning Committee and the Transportation and Land Development Committee, organized the conference.

The purpose of the conference is to define transportation elements that support the goals of smart growth. The definition will be developed through the experiences of transportation professionals, meaning all of you who are attending the conference from across the country. The other purpose is to share that definition with the broader transportation and smart growth communities.

In putting together the conference, the committee asked five questions: why, what, where, who, and how? That is what the sessions of the conference are meant to cover.

"Why" addresses the question of why smart growth is a transportation issue. This session will set the stage for the remainder of the conference.

"What" gets to the definition of the transportation elements that support smart growth. That will be the purpose of the session tomorrow morning, and we'll have two presenters, Steve Heminger from the Bay Area and Harrison Bright Rue from Charlottesville, Virginia.

Tomorrow afternoon we will focus on "where," recognizing that for the different types of development taking place—urban infill, suburban redevelopment, and fringe growth—transportation and growth needs are different. Transportation that supports smart growth

necessarily needs to recognize and serve those differences. We will explore these dimensions with three case studies.

On Tuesday morning, we will be looking at "who," the institutions at the state, regional, and local levels that are necessary in supplying transportation that is supportive of smart growth. We will also look at state and metropolitan planning processes and how well they support smart growth.

Finally, Tuesday afternoon we are going to look at tools—the "how"—that people are using across the country to address smart growth in transportation.

Why

Why Smart Growth Is a Transportation Issue

Introduction

Anne Canby, *Cambridge Systematics*

First, many in our business are not yet ready to acknowledge or recognize that transportation is, in fact, an essential element in land use. For years, we have tended to say, "It's not my job." I think those days are probably over.

Second, and because of that, I think we have a huge opportunity. We in the transportation business need to offer ideas about what land use plans and zoning ordinances ought to look like to make transportation work better. For years, we have been told (and I just got it 10 days ago from a county planning director), "We plan, you build." I think that dynamic needs to change, and I think we have an opportunity. They won't like it, but we should lay out different types of land uses in terms of what transportation improvements would be needed.

Third, I think we can recognize that some of the things we've done in the past have not helped the issue of congestion and have, in fact, added to it and helped fragment some of our communities. My motto for this is, do no harm and don't create your next problem. Quite often, we're really good at that.

Next is the importance of having a vision in your community—this is very, very critical. A lot of people outside our business as well as inside don't pay enough attention to it. It is important because it provides a foundation to move forward in a much more collaborative and coordinated fashion. You can build on that. If you have a vision you can lay out for your whole area—whether your state, region, city, or whatever—develop a set of metrics: here is where we are today, here is where we will be if we keep doing what we are doing. Then you can start looking at some scenarios. When Ron Kirby presents on Tuesday morning, I'm hoping he talks about some of the work that is going on here in the Metropolitan Washington Council of Governments, and Mary McCumber will probably have some thoughts on that subject when she makes her presentation.

In our business, it boils down to really understanding trip choice. There are some fundamental differences in transitioning to a new system, because we are living with such an automobile-oriented design in terms of development as well as transportation that you can't just lay transit on top of it. It requires a much broader array of customer considerations. Pedestrians and their needs become very important. Development patterns and site design become very important, and these are not things we traditionally think about. Transit demands a different mind-set when you're looking at land use.

Finally, many communities all over the country are focusing energy and investment where they want activities to occur, and this can do wonders to leverage private investment. Baltimore is a perfect example. All of this matters because the market (and you're going to hear about that in a few minutes) is changing on us tremendously. Rick Rosan, President of Urban Land Institute, used a figure a couple of months ago when we were on a panel together. He said that by 2010, childless households in the United States will make up 70 percent of our population. That got my attention. That is a huge number.

The National Association of Realtors had Anton Nelessen do a visual preference survey. He makes the

point that about 60 percent of the people surveyed do not like the current pattern of developing housing subdivisions separated from everything else, with all the commercial buildings lined up along the arterials in an automobile-only environment. We have that design to excess in every community we live in. But this is not a product that our customers are in love with. I think the opportunities to change are there.

Health and exercise: Recently, just last week, the Institute of Medicine said we need an hour of exercise a day. We have basically designed exercise out of our lives, unless you go to the gym or the pool. We could rethink that issue, and I think that is going to be a growing issue as well. The percentage of people in this country who are obese is shocking—30 percent—and that is not just fat, that is obese.

Another issue is the economy and jobs. Several months ago Governor Patton of Kentucky was speaking to a conference on historic preservation, and he made the point, which I think is also very telling, about jobs. People are going to live where they have the kinds of attractions and amenities and environment that appeal to them. Employers are going to come to them because that is the nature of the workforce as we look ahead. The state has a program called Renaissance Kentucky, which focuses on Kentucky's downtowns, and I hope Jim Codell, Secretary of the Transportation Cabinet, will talk about that on Tuesday morning. The governor said we need to take advantage of our unique assets because that's part of what makes people want to come to my state instead of yours. He is aware of this, and I think a lot of other governors are as well.

Finally, I come to cost. We are about to enter what I call the "wailing period," otherwise known as reauthorization, about money. I was looking over the Transportation Research Board publication *Costs of Sprawl—2000*. Anton Nelessen also referenced this. A figure he cited startled me. He said that if we were able to increase both the density of our nonresidential uses and the floor–area ratio—the density by 20 percent and the floor–area ratio by 10 percent—we could save almost 190,000 lane miles and $110 billion between now and 2025. That is worth thinking about.

Let me now introduce what I think will be a great panel. The first speaker is Alan Pisarski, who wrote *Commuting in America* and has just finished the third edition of the Bottom Line Report for the American Association of State Highway and Transportation Officials. He did it for the Intermodal Surface Transportation Efficiency Act, the Transportation Equity Act for the 21st Century, and now whatever we are going to call the third rendition. He is "Mr. Numbers" in our business.

Second is Gregg Logan, who is a Managing Director of Robert Charles Lesser, a real estate development services firm that does a lot of land use and development analysis for the development community. He has some very interesting things to tell us.

Finally, Reid Ewing, who is the Director of the Voorhees Transportation Center at Rutgers and the Research Director for the Surface Transportation Policy Project and is involved with Smart Growth America, will close with some thoughts on what smart growth ought to be from his perspective.

Transportation Trends and Smart Growth

Alan Pisarski, *Independent Consultant*

I am happy to be here in Baltimore to talk about transportation trends and smart growth. I will start with the need to talk about transportation broadly. We often say we are going to talk about transportation, and we forget about freight and start talking about passengers. If we say we are going to talk about passengers, we talk about commuting instead of other passenger travel, and then we get into a fight about transit versus highways and think we are talking about transportation. My point is there is a whole array of activities and things to think about and how they fit into the context of the discussion.

Figure 1 elucidates the first point about the share of total travel that belongs to commuting. Trip growth [these data are from the Nationwide Personal Transportation Survey (NPTS)] has occurred in all of the different trip purposes. Work trip commuting has grown, of course, through the baby boomers. But other areas of activity have grown even more substantially.

Figure 2 shows similar information from census data. I have a question mark on that, because in *Commuting in America 2*, my closing thought was that driving alone had just about peaked, that transit, carpooling, and walking had hit the bottom, some kind of base level, and I was wrong. Driving alone has continued to grow. Carpooling has continued to decline. Transit is trying to hold on at about 5 percent. It actually lost about a 0.5 percent share. Walking continues to decline. But the pattern is very different.

Let me be a little more explicit about this. The change from 1980 to 1990 is shown in Figure 3. We added about 18 million total workers, and the number driving

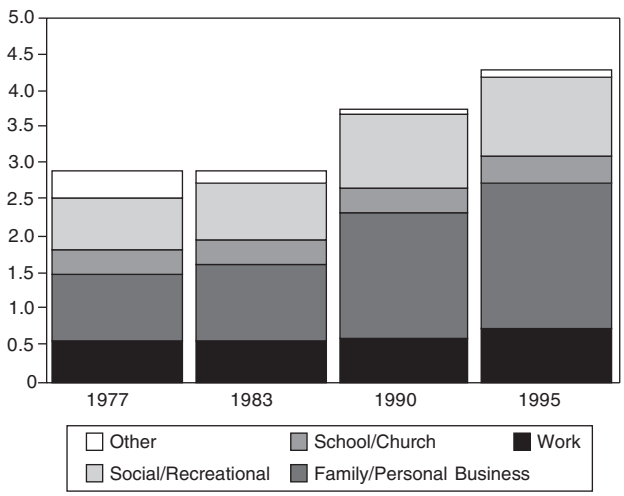

FIGURE 1 Daily trips per person by purpose.

	1990	2000
All workers	100%	100%
Drive alone	73%	76%
Carpool	13%	12%
Transit	5%	5%
Taxi	0%	0%
Motorcycle	0%	0%
Bicycle	0%	0%
Other	1%	1%
Walked only	4%	3%
Work at home	3%	3%

- SOV 75.7% versus 73.2%
- Transit sort of holds at 5%
- Carpool declines again
- Walking also declines
- Work at home gains some
- SOV growth almost exceeds growth in number of workers as in 1990

FIGURE 2 Work trip modal trends—more of the same?

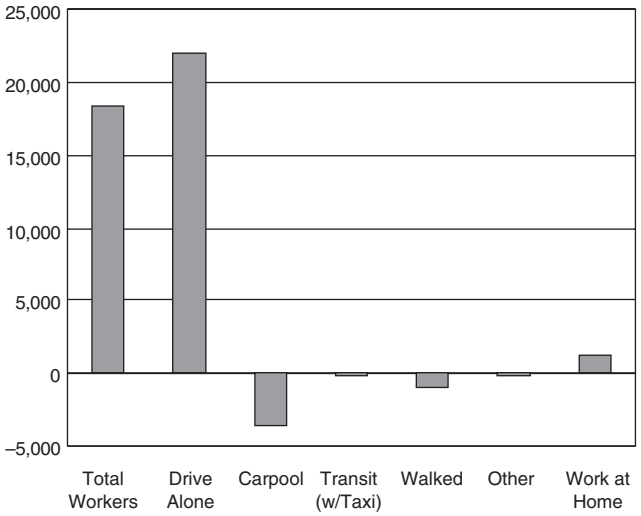

FIGURE 3 Net modal change, 1980–1990 (thousands).

alone rose by about 22 million. So the growth in the number of people driving alone in that decade exceeded the growth in the number of workers. All of those new workers effectively wanted to drive alone. A large number of other workers stopped carpooling and walking and went into the single-occupant vehicle (SOV). If I had this chart for almost any major metropolitan area in America, it would have looked almost identical. Maybe two or three metropolitan areas had slight variations—some had done a little better on carpooling and some had gained on transit—but fundamentally, this was the national pattern.

This time around, 1990 to 2000, it is much more variable. If you look at the national patterns, they are quite similar to the previous survey. Drive alone does not exceed the number of workers because carpooling grew a little. The real point is if you look around the nation, there is considerable variation. There are states that increased in transit. There are metropolitan areas that increased in transit. There are areas that increased significantly in carpooling. So you can't say that we have a national uniform pattern. I think one of the positive things is that we are beginning to see significant variation among areas. But Figure 4 still shows the 40-year trend. This is the national trend, and nobody ever likes to see it, but this is America's long-term trend.

Let me talk now in more general terms of what we were like and what was happening in this past century. These, to me, were the dominant aspects of our trends in the last century. The point that needs to be reiterated and isn't discussed often enough is that we have come through a really tough time. We have come through an explosion in the number of workers as a result of the baby boomers and women joining the labor force in extraordinary numbers. Figure 5 shows the change in age distribution of the population over the 1995–2005

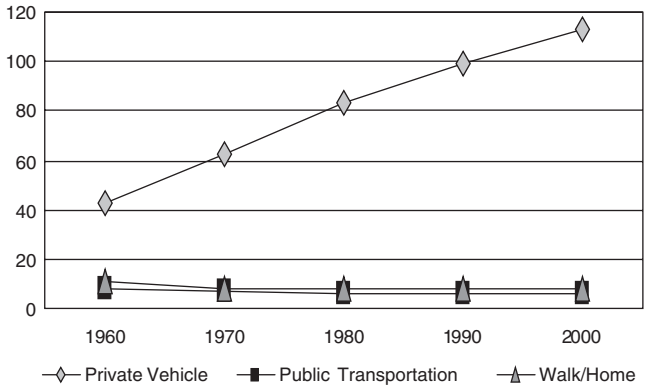

FIGURE 4 Forty-year trend in mode use (millions of commuters).

period, and there is an extraordinary flow of baby boomers through the age cohort structure. It is a classic case of the boa constrictor swallowing a pig that is working its way through the system. Think 2010, when the first of the baby boomers hit 65, and you understand where we have been. We have been through an extraordinary period that overwhelmed a lot of our resources.

The future is more stable in many respects than the past, and some examples of the trends I think are significant are shown in Figure 6. The most important is lower population growth. We can talk about what the census showed, but basically, and particularly in the saturation areas, the future is not going to have the virulent growth that we have seen in the past. That doesn't mean that some places aren't still going to catch it—Atlanta, Las Vegas, and so forth. But Figure 7 shows one example of what I'm talking about. Fewer workers mean fewer commuters, and this figure shows the pattern of new workers added to the workforce. We added considerably fewer workers in the decade ending in 2000 than we had in the bubble from 1970 to 1990.

There are "forces of change" that I think are going to be operating on us over the next 25 to 30 years. The first is what I call a "democratization of mobility"—the arrival of minority groups and immigrant populations into a high-mobility society. Second, immigration is still going to be a significant, in fact dramatic, force. Third, this terrible problem we have in America called "affluence" will always be, I hope, an influence on our behavior and activities. Fourth is a lack of skilled workers—something that Anne Canby mentioned and that we need to focus on considerably. The last is what I call "dispersal technologies" (technologies that allow people to live further apart).

The point we need to make as background to all of our discussions is this: if transportation is always about time and distance, in many respects we can say that distance is no longer the massive factor it used to

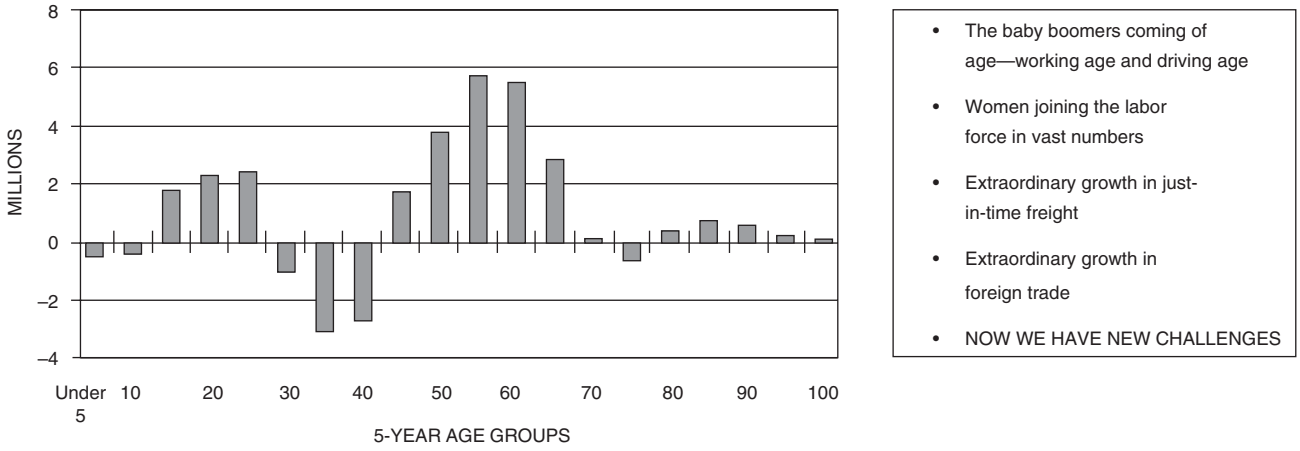

FIGURE 5 Age distribution changes in U.S. population, 1995–2005, and related trends.

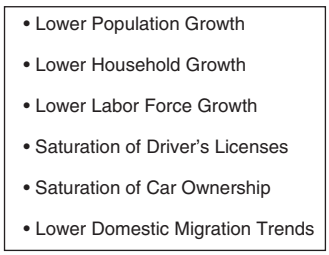

FIGURE 6 The future is more stable than the past.

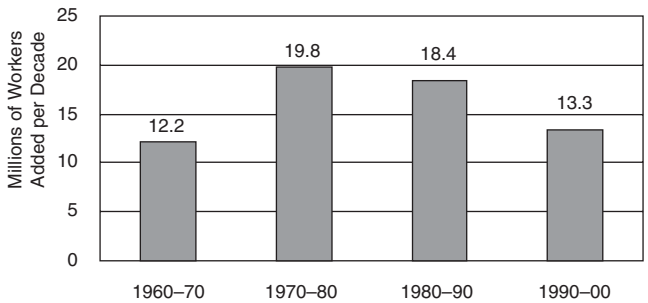

FIGURE 7 Fewer workers = fewer commuters.

be. Time is now the driver, particularly on the passenger side and particularly among women, but on the freight side as well. Time is the immense factor that governs so many different choices and explains the continuing shift to the SOV.

Figure 8 shows the 100-year trend in automobile ownership. We started at 200 people per car in 1910, and 5 years later we were down to 40. By the mid-1930s, everybody in America could be in an automobile. By 1955, they could be in the front seat. Today, the adults and cars are about equivalent, except that we are not quite at saturation. These are 1990 data, because the 2000 data are not available yet. In New York, Philadelphia, Boston, and some of the other major cities, there are significant percentages of zero-car households, particularly among certain groups. The Baltimore/Washington area is in the 35 to 40 percent range. The black population without vehicles is a very high segment of the population. Figure 9 shows the distribution of zero-car households among population groups. The proportion of zero-car households among Hispanics is similar to the proportion among African Americans, although it is not quite as dramatic. This is highly correlated with size of metropolitan area, particularly among the black population; it is less so for the white population. Even in rural areas, 17 percent of black households do not own vehicles. That represents a massive potential reservoir of vehicle ownership.

The modal choices by racial group in suburbs, center cities, and nonmetropolitan areas show basically the same pattern, with the black and Hispanic populations lagging the white population by about 10 percent (see Figure 10). We can speculate about where that is going in the future.

I mentioned immigration. Figure 11 has this rather extraordinary shape to it, indicating the dramatic effect of immigration in the United States today. That chart

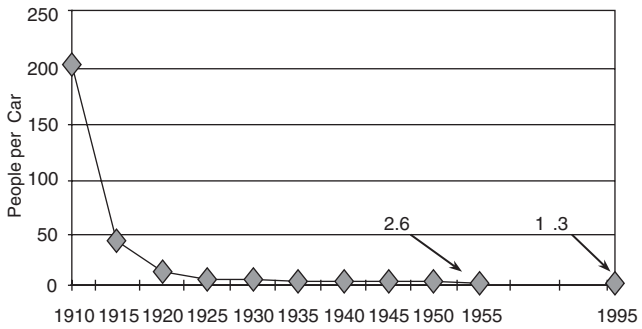

FIGURE 8 We are at vehicle saturation: population-to-vehicle ratio, 1900–1995.

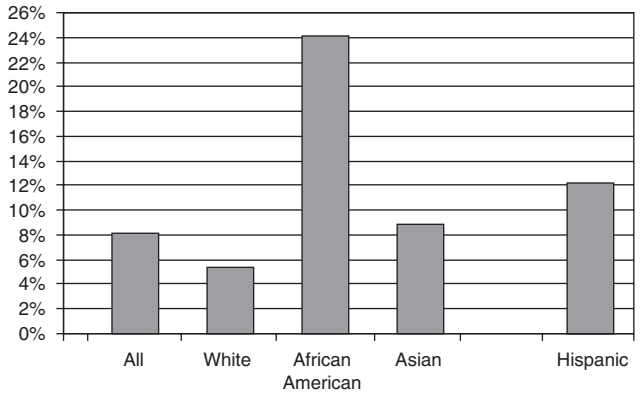

FIGURE 9 Percentage of households with no vehicle among racial and ethnic groups.

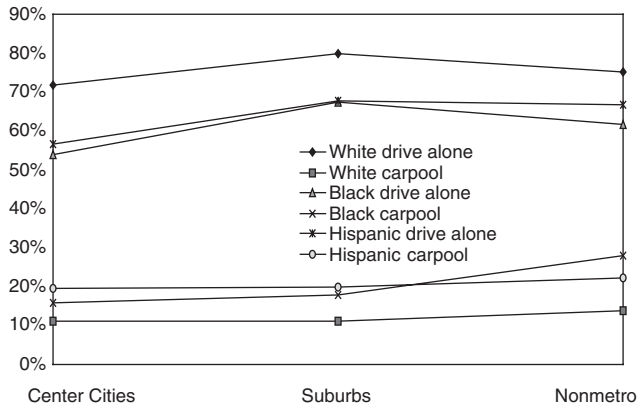

FIGURE 10 Private vehicle use by race and ethnicity.

turned out to be wrong. It actually looked like this after the 2000 census (see Figure 12). They found 5 million additional people. I think what happened is that most of those people have been here for 30 years and the census just recently "found" them. I really have trouble believing that this dramatic growth rate occurred only within the past few years. But I think that is a factor that needs to be considered. Where those people are and where they are going to live are critical.

I mentioned affluence. Figure 13 shows annual trips per household by household income (this is from the 1995 NPTS). The use of SOVs for commuting rises at every income level up to about $25,000. At the highest incomes, most people drive alone, except for high use of commuter rail, particularly around New York, Chicago, and other high-income places.

If we wanted to talk about anything in smart growth, we could spend a whole day on why work trip length increases with income. From the supply side, lower-paying jobs are ubiquitous, while higher-paying jobs are rarer. On the demand side, high-income households have more choices, including where to work and live, and the ability to act on their preferences.

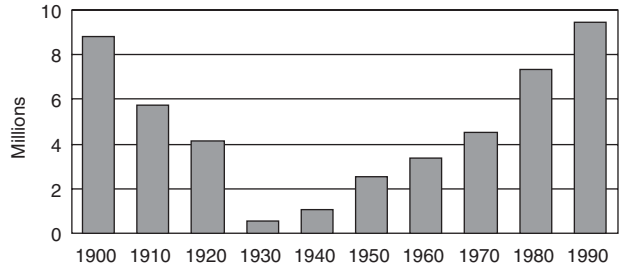

FIGURE 11 We are a nation of immigrants—again.

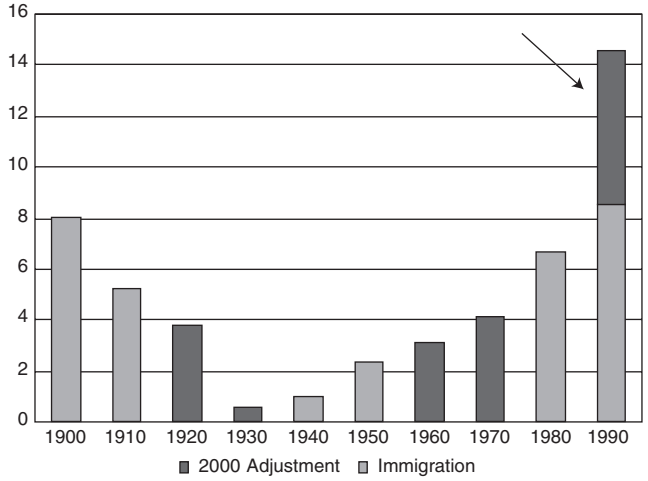

FIGURE 12 A "small" adjustment.

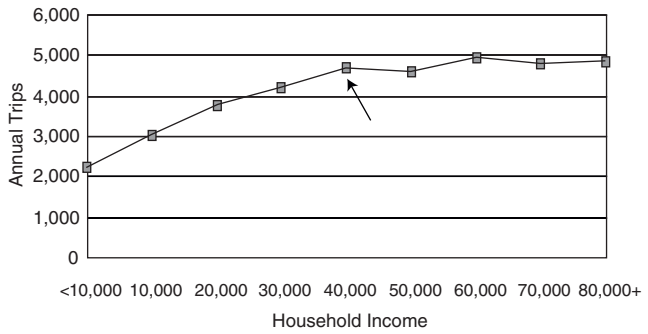

FIGURE 13 Annual trips per household by household income, 1995.

Figure 14 shows the national commuting pattern within and outside of metropolitan areas in 1990. (Again, 2000 data are not available.) This was the standard: the dominant historical suburb-to-city pattern had become a suburb-to-suburb circumferential flow. The historical pattern had really slowed. But, in fact, this is a partial picture. Figure 15 shows the important details. The fact that this bears some resemblance to Washington, D.C., and Baltimore is not exactly accidental. There were dramatic levels of growth from the suburbs of one metropolitan area to the suburbs of another metropolitan area, from

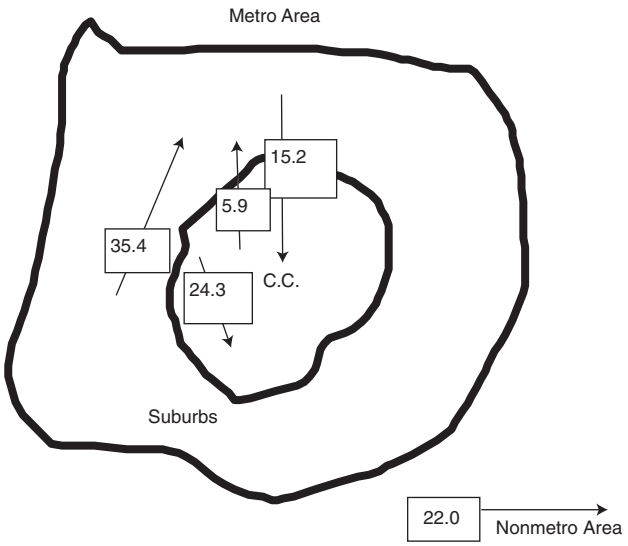

FIGURE 14 Multiregional work flows, 1990 (millions of workers). C.C. = central city.

central cities of one metropolitan area to central cities of another metropolitan area, and in flows from rural areas. The new census data showed that the state with the largest travel time increase was West Virginia. This is not because of those horrible congestion problems in downtown Wheeling. It is because as jobs in the Washington and Pittsburgh suburbs move farther out, West Virginia people are commuting to the Pittsburgh and Washington metropolitan areas. Vermont and New Hampshire had tremendous increases in travel time for the same reason.

Figure 16 is based on the 1990 census. I would love to compare this with 2000 data when they become available. This shows counties with 25 percent or more of their workers commuting outside the county. I think it is a dramatic pattern.

I put Figure 17 together for *Commuting in America*. Although this is a bit simplistic, it is a useful way to understand what is happening. The chart compares the number of jobs in Fairfax County, the top bar, with the number of employed people who live in the county, on the bottom. If everybody who has a job and lives in Fairfax worked in Fairfax, only 50,000 people would have to be exported every day. But they don't. The middle bar shows the people who actually live and work in Fairfax County. One-half million people flow in and out every day. So one of the issues is the *ratio* between jobs and workers, and the other issue is the *match* between the jobs and the workers. The same comparison for Arlington County shows that its workers do not seem to match the skills required for jobs in the county. Prince George's County, in Maryland, also tends to lack that match of skills. Although there are jobs and workers, the workers who live there leave the county to work, while other people come in to fill the jobs.

The implications for planning are more subtle and perhaps more sophisticated than we know how to deal with. In Figure 18, if the jobs-to-workers ratio is above the line, the jurisdiction is a city. It has more jobs than workers. The question is how these jurisdictions respond, and how many people they are able to keep in their county for work, which produces shorter work trip lengths.

The issue is going to be critical for the 50 metropolitan areas with population exceeding 1 million. We had extraordinary growth in the number of such areas.

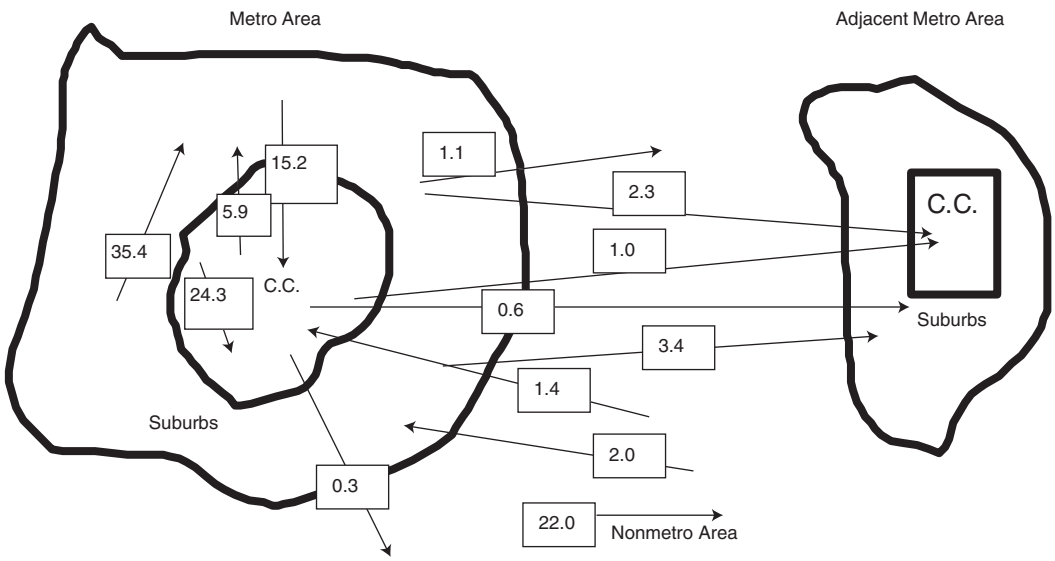

FIGURE 15 Multiregional work flows, 1990, showing adjacent metropolitan area (millions of workers). C.C. = central city.

FIGURE 16 Percentage of workers working outside county of residence, 1990. (Source: Bureau of the Census, U.S. Department of Commerce.)

Approximately 60 percent of our population live in these 50 areas. Another 20 percent live in metropolitan areas with populations under 1 million, and another 20 percent, or 60 million people, live in rural areas.

Obviously, some of these metropolitan areas have seen extraordinary growth. Figure 19 shows the patterns of growth. The areas over 5 million are actually losing a little share to the smaller areas. It will be interesting to see what the final census data show.

I want to talk a little about the question of trip length that I raised earlier. Trip length is the elucidation of the relationship between transportation and land

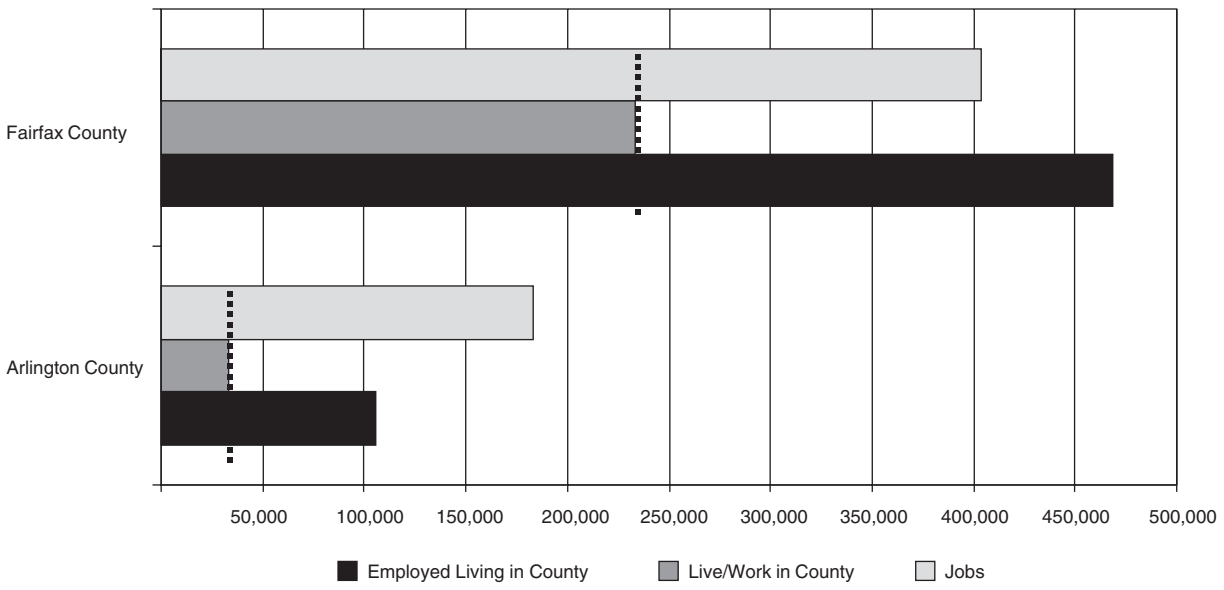

FIGURE 17 Job–worker balance in two Virginia counties, 1990.

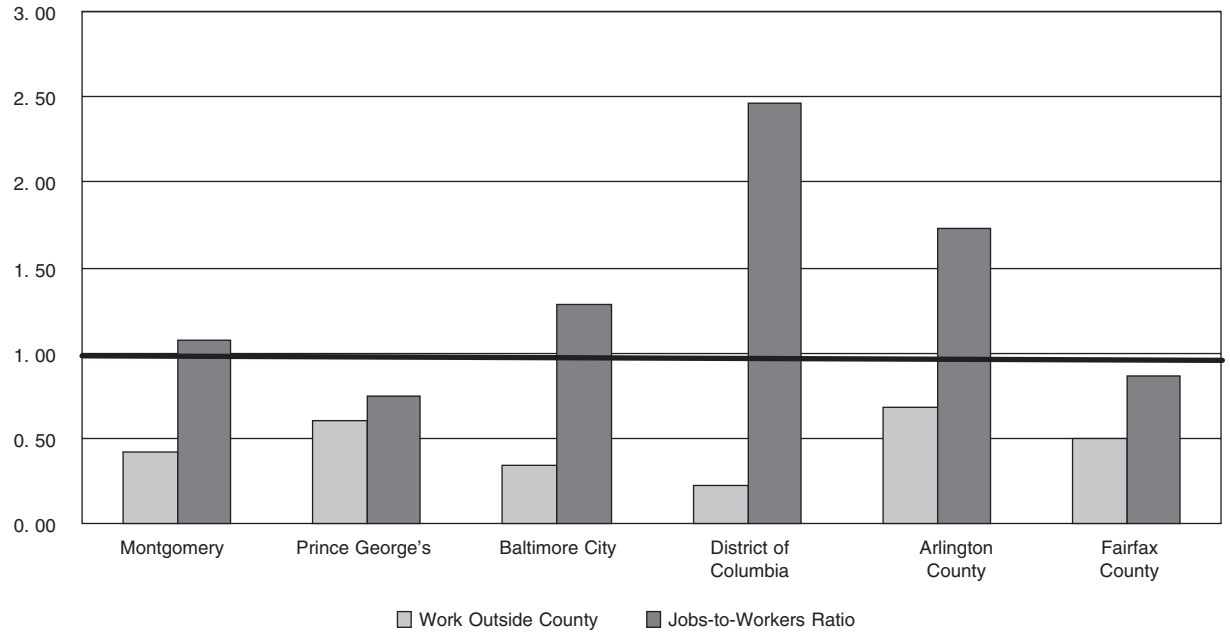

FIGURE 18 Jobs-to-workers ratio, in Washington, D.C., metropolitan area, 1990.

use. If all our trips have an economic or social transaction at their end, those transactions define both the purpose and the length of trips. It is important to understand trip length as a characteristic of some of the things we're talking about.

What does it mean when trip lengths get longer? It could mean that things are farther apart. Or it can mean many other things: decline in transportation costs, reduced travel times, and certainly higher incomes permitting people greater choices. I use this example: if you are looking for plain old bread, you tend to go to the first store you come to and just get bread. If you live in Washington and you really like Russian black bread with raisins, and there is a great bakery in Baltimore, you'll go there for bread.

Figure 20 shows trip length distribution by purpose. There is a kind of mix of trip patterns. Certain trips have stable lengths over time, because somebody on the destination end of that trip length responds to circumstances. For example, as trip lengths to shopping centers or banks or schools or medical services get too long, somebody builds something closer to the customers and reduces those trip lengths. Other trips are variable in length because they involve visits to friends and relatives, entertainment, or recreation, which are functions of the metropolitan area size and where your friends happen to reside.

- Las Vegas: up 700,000; 83% increase
- Phoenix: up 1,000,000; 45% increase
- Atlanta: up 1,200,000; 39% increase
- Dallas: up 1,200,000; 29% increase
- Los Angeles: up 1,800,000; 13% increase

FIGURE 19 Examples of metropolitan areas with extraordinary growth in the past decade.

I will jump quickly to freight just to make the point. The dramatic thing that has happened in freight is the value change in tons. Think of a truckload of computer chips. The commodity flow surveys say that something like 2 percent of the tonnage yields 40 percent of the value. In 1977, about 16 percent of value was less than 1,000 pounds, and that has more than doubled. Now 37 percent of the value of goods is in products less than 1,000 pounds. We have very small shipments of very high value, and people are willing to absorb high costs to protect those shipments.

What is this new world that we are going to be living in? It will be stable, with an older population, people with a high value of time, goods with a high value of time, and high-cost transportation to meet those needs in a global economy. Skilled workers will be at a premium. In that world, workers can live and work almost anywhere. Obviously, that will not be true in every job category, but in many categories it will.

Who are the immigrants? Where will they be? The current immigrant population is not ghettoizing. They come to America and they go directly to the suburbs. It is not a second- and third-generation thing. Yes, they are repopulating some of the downtowns, but a large portion is heading out to the suburbs directly. Mainstreaming of minorities will be an important factor.

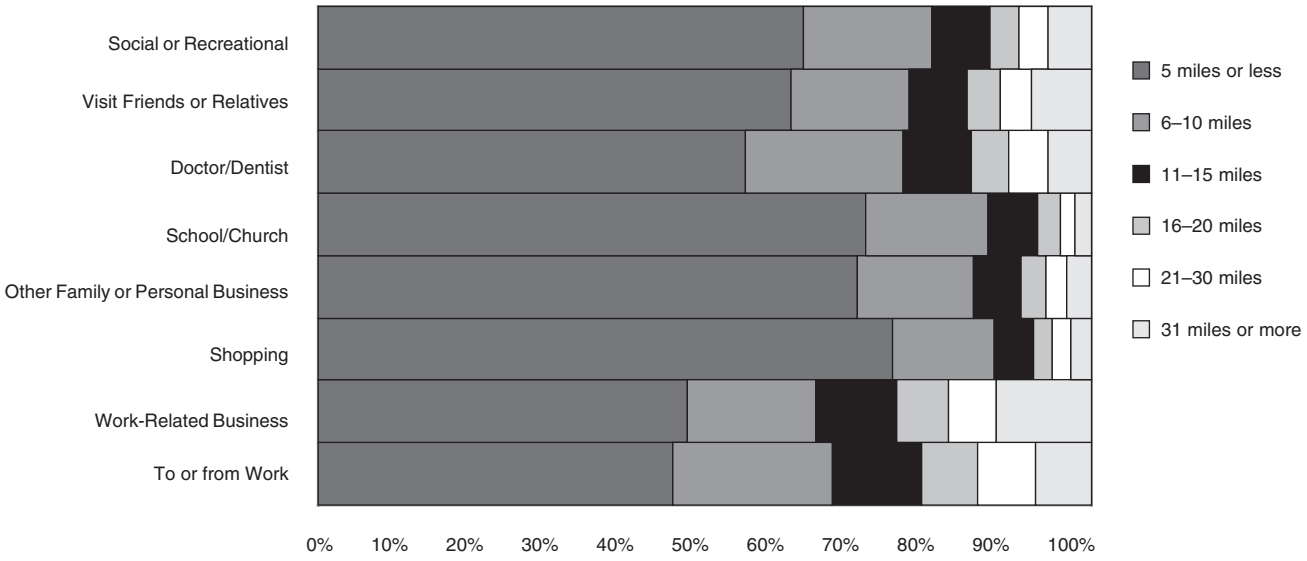

FIGURE 20 Trip length distribution by purpose—most trips are under 10 miles.

I think we will be operating as what I call a challenged, affluent society. In this new world, the great issue will be the skilled workers—finding skilled workers will be the key. Where do they want to be? Where do they want to go? That is where employers will follow. I had a discussion here in Baltimore a couple months ago, trying to explain that even if this is true, not everybody wants to be on a mountaintop in Colorado. A lot of people might want to be in the Inner Harbor of Baltimore. The question of competition between areas is going to be significant.

One important trend is that the workforce goes flat after the baby boom. It lays out into the future flat, even with the immigrants coming in. This means that the number of new workers out into the future is going to be very thin. If we have had too many commuters in the past, the issue in the future may be too few. The dependence ratio, the number of people depending on those workers, will begin to increase again, looking like it did in the 1950s. Instead of you taking your kids to the dentist, they are going to be taking you, but the dependence pattern will be the same.

When I consider the factors that operate in dispersal, the one I think is most significant is one people don't pay enough attention to—70 percent of workers live in a household with another worker. The option to live near work gets to be very messy when you have two- or three-worker households. While it is an attractive concept, it is difficult to bring about. In addition, there are many dispersal technologies in use—ground and air transport, overnight delivery, telephones and cellular phones, radio, television, computers, and the Internet—and the only aggregative technology I can think of is the elevator.

If people can live anywhere, where do they want to live? What attracts them? Generally, an environment rich in amenities: natural beauty, cultural resources, intellectual stimulation, a flexible workplace. It is clear that employers are going to have to be more and more flexible. They will have to try to get more women into the workforce, keep older workers from retiring, and get retirees back in. The dominant factor in our future labor force policies will be the tremendous amount of pressure to get workers to participate in our national workforce. This is the challenge in an affluent society in which mobility will still be central in meeting our social and economic needs.

Development Pattern Trends and Smart Growth

Gregg Logan, *Robert Charles Lesser & Company*

I'm not a transportation expert, so it is a little intimidating to be in this room full of transportation experts talking about transportation. My area is land use, and we like to think that what it is and where you put it has a lot to do with transportation.

I am going to look at some of the trends that have determined the development pattern within which you put your transportation solutions. Where did growth go and why? What was that growth? Then we will look at some new trends. I totally agree that demographics are destiny. I want to go deeper into that and look not only at the short-term trends over the next 5 to 10 years but also at some of the things we know about how people make decisions at different points in their lives, and how that influences where they go in terms of product and location choices.

I'll go through some of these trends quickly because I suspect you spend a lot of time thinking about them. We see faster growth in suburbs versus cities in the past decade. One important thing in thinking about the development pattern we have now and the type of development pattern we will have in the future is "driver" and "follower" uses. By "driver" use, I don't mean a car, I mean housing—looking at where housing went and how that led to retail jobs and later office jobs following the housing. If there are some shifts or opportunities to shift where housing goes, what happens to those retail and office jobs?

The suburbs have been growing rapidly as office locations. One of the trends we see now and as we look into the future is that a greater percentage of all jobs will be in office space. So following where office space has been and where it goes in the future tells us a lot about where job growth goes overall and the kinds of transportation systems needed to connect it.

Many of our metropolitan areas went from one dominant center to multiple centers. Where will the future growth pattern be? Will it be these other centers, those edge cities? The interesting trend here is edgeless areas. Bob Lang did a study with the Brookings Institution looking at office space data from 13 metropolitan areas. In the top four markets in particular, a really strong percentage of the growth is going into edgeless areas. So we seem to be, at least in many fast-growing areas, beyond the edge city phase. Some of the edge cities, in fact, may experience in the future or may already be experiencing a growth pattern similar to that of cities as they lost their dominance. As edge cities age and decline, we may see more edgeless areas, whose growth seems to be driven by this office employment happening at every highway interchange.

I'm going to use Atlanta, Georgia, as a quick example, not only because I'm based there and I know the market well but also because I think it shows a lot of symptoms similar to those of many fast-growing areas. Figure 1 orients you to some of the statistics I'm going to show in a minute. The darkest area is what we call in-town; the little bit lighter areas are what we call inner-suburban; the lightest areas are suburbs; and the unshaded areas are suburbanizing. This is done, for the Atlanta area, by superdistricts. In planning for our future transportation and growth in the Atlanta region, we are looking at the past 10 years. Does that represent the growth pattern we will experience in the future?

FIGURE 1 Example: Metropolitan Atlanta.

Figure 2 is a fair share chart showing which areas are gaining and losing household market share. On the chart, a score of 1 equals equilibrium. If your score is stronger than 1, you are gaining market share at the expense of other areas. If your score is less than 1, you are losing market share. Figure 2 looks at the household fair share distribution and shows the in-town markets at substantially less than inner-suburban, and substantially less than the suburban markets. The outlying suburbanizing areas are gaining market share at the fastest rate with the lowest density of development.

The big question in Atlanta and other fast-growing areas is whether that will remain the pattern. In the future, we see the area becoming even more difficult to serve with transportation other than the car.

What were some of the factors driving those trends? The demographic information presented here was excellent—I'm thinking about the baby boomers and their influence on land use and the "pig and the python" analogy. When the baby boomers were children, they generated a lot of school construction; as they moved into the family-forming years, they generated a lot of demand for first-time home buyer housing in the suburbs. As they came into the workforce, their employment participation rate increased, and we saw tremendous growth in employment and development of office space.

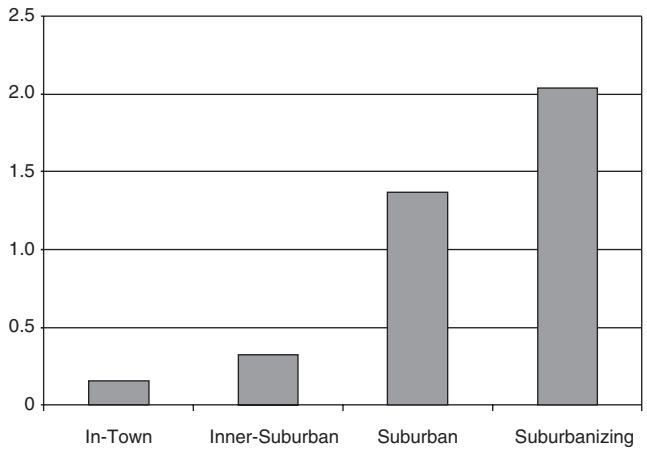

FIGURE 2 Household fair share, 1990–2000.

The leading edge of the baby boomers is now 56 or 57 years old. I said a minute ago that they would hit retirement age at age 65 in 2010, but the age at which people make retirement housing decisions actually starts a lot younger, at 55 to 60. It is really happening now.

There are other segments—Gen-X households, the echo boom, and so forth—that are important to think about in addition to the boomers. How they influence suburban growth and might influence other kinds of growth in the future must be considered.

Bob Dunphy has written about the "drive for value" trend. He discussed how people make a trade-off between spending more time in their car in exchange for lower housing costs. In a lot of markets, the trade-off that people thought they were making is turning out to be more than they bargained for, in terms of the commute going from 20 minutes to an hour all of a sudden. They didn't move further out; mobility decreased. One of the things that we are trying to quantify is how that change in the equation changes future behavior. But certainly, the drive for value is something that is heavily favored in the suburbs.

In any study of how people have distributed themselves in a particular market, it is hard not to think of race as a huge factor over the past 20 years. White flight, urban schools and perceived urban school quality versus suburban schools, comes back to the boomers—the 78 million people in that generation were in their family-forming years when schools were a big driver. We have to ask whether schools are going to continue to drive the majority of housing decisions in the future.

There is a perceived lack of geographic barriers in a lot of markets, and it is certainly true where I'm from in Atlanta—we didn't think there were any barriers until we met the Clean Air Act amendments, and then we realized there are a few barriers.

Jobs follow the boss. We saw, again in terms of "driver" and "follower" land uses, that jobs were really a follower use as the boss moved to the suburbs. We saw the best-paying jobs move to the suburbs where the executives lived, not coincidentally to areas that also tended to be the toughest in which to build any kind of affordable housing, or what we call "workforce housing," which is a significant issue.

The retail jobs are following the housing and the transportation infrastructure. You all understand that better than I. That alone is not enough, but certainly the kinds of transportation infrastructure we have created allowed that to happen.

From my field, land use, there are many difficulties and challenges in doing infill versus edge development. It's not that developers are not willing, or that it can't be more profitable to develop infill, but there are just so many more barriers. This issue greatly influences what kind of development pattern we will experience in the future and how easy it will be to capitalize on demand other than at the edge. Land cost is the most obvious. Development and regulatory costs will be a little higher in the suburban areas—maybe not as great as some people claim, but a factor. There is a challenge in finding large-enough tracts in infill locations versus at the edge. The "not in my backyard" (NIMBY) and "build absolutely nothing anywhere" (BANANA) groups make it much more challenging from a political perspective.

What are some of the future trends in growth and development patterns? If the past is the future, what do past trends suggest? We would see continuing dispersed household development, decentralization of jobs, office space developed at even lower densities as this edgeless growth continues beyond edge cities, and difficulty in providing any sort of nonautomobile transportation due to the lack of density. I was asked to say how that affects transportation. I know you understand this stuff much better than I, but I do see most growth occurring in these suburbanizing areas. If trends continue, that type of development will be difficult to serve with any kind of nonautomobile transportation, and building more roads is part of the pattern and traffic congestion gets worse. That is one scenario.

Are there trends that suggest something different? Is some of the location of future growth malleable, and could it be influenced by policy to occur in different locations? The short answer is yes, and there are some significant market forces that I think can lead us to a different outcome. The past is not necessarily the future. But there will need to be policies to support that, because the stars are not aligned in that direction.

I want to start with who we are today and give you some bad news in just a minute. The baby boomer generation, that "pig in the python," has had a dramatic impact on land use, and we will look at where they are going. I also want to take a little longer-term perspective, 25 years out, and look at the smaller Gen-X generation and the echo boom and the kinds of land use decisions they are making. One of the reasons to look beyond the baby boomers all the way to the echo boom is the statistics on growth in one-person or nonfamily households. Over the next 8 years we will see growth away from families. But it is also true that 10 years after that, beginning 8 years from now, as the echo boomers get into their family-forming years, there is the potential for family formation to increase.

This population pyramid (Figure 3) shows that as we go forward 25 years, all of us baby boomers are going to be in our late 60s and 70s. And Gen-Xers are as old as we are now, and there are fewer of them. Notice that the female column is a lot bigger than the male column.

I will be specific about that in a minute. Another trend is economic growth. In spite of current short-term

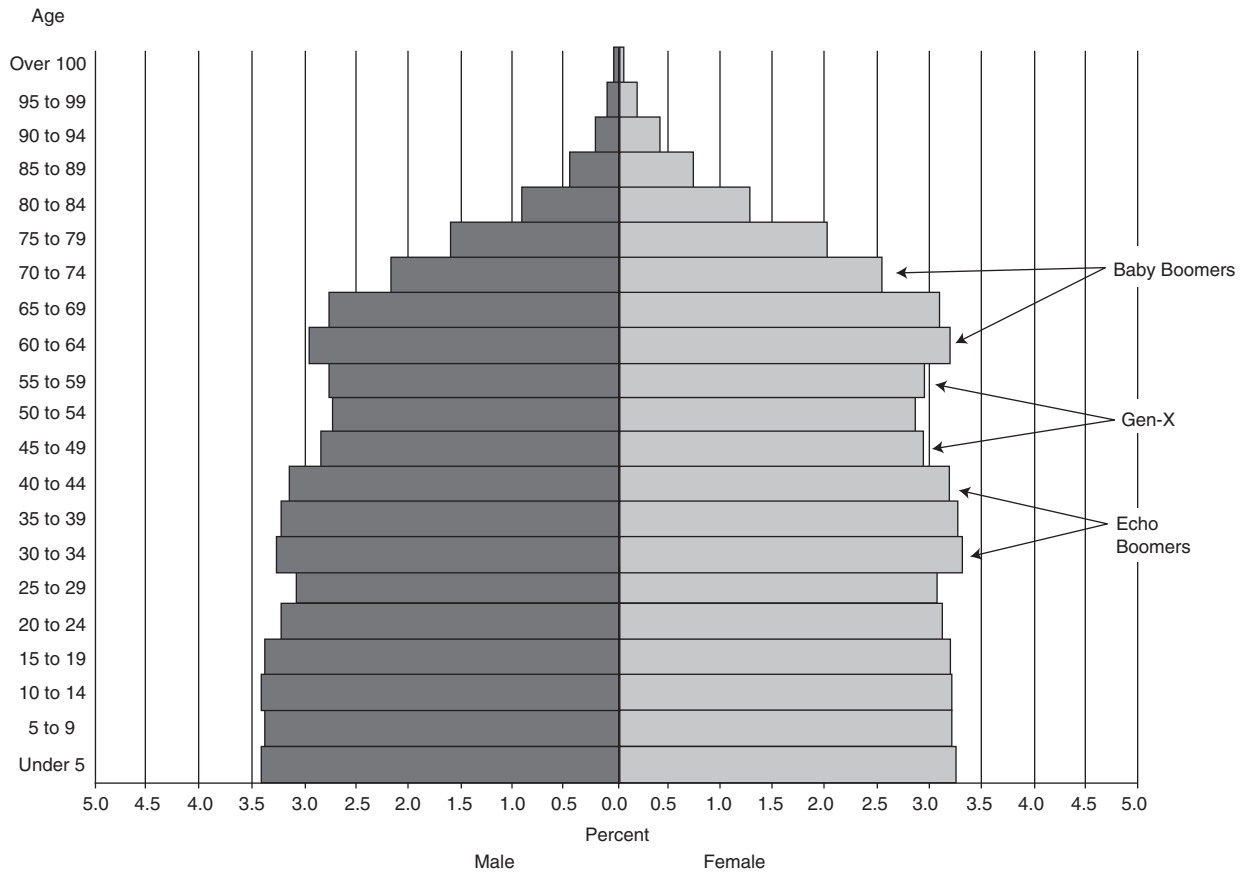

FIGURE 3 U.S. population pyramid, 2025.

economics—what is going on in the economy right now—I'll just say that I think it has nothing to do with land use. If you look at what creates demand for goods and services and makes an economy go, it is demographics. The demographics through the end of this decade are very strong. We have this huge 78 million population of the baby boomer cohort in their peak spending and earning years. Although some of their 401K plans have become 201K plans, lots of them are still in their peak earning years, and they are still buying luxury cars and second homes. When we think about impact on land use, this is clearly a trend we have to consider.

In the near term, through this decade, growth in population and jobs maintains strong demand for housing and office, industrial, and retail space, which will go somewhere within regions.

The age distribution of the population seems to imply the need for empty nest space for a lot of aging boomers. Although many boomers are working on their second family and having kids in their mid-40s (the "kiss retirement goodbye" group), huge numbers of boomers are getting into their empty nest phase now and then into the retirement phase. But it is the Gen-X "singles and mingles" who are late starting families that are already driving a lot of the demand for in-town housing. We keep trying to build more of it for empty nesters, but when we look at who is really behind the trend and having the biggest impact on in-town housing, it has been that Gen-X cohort. Gen-Xers moving back in town have had a big impact even on central city growth in the last 10 years. They have also had an impact on job growth and where jobs have gone, especially in the dot-com boom and bust cycle. The technology category is down but not out. An awful lot of technology jobs, if not a majority, will be created in the future. Many of the people who work in those kinds of jobs looking for venture capital today—what they think is cool is not suburban.

The aging baby boomers are looking at different lifestyle choices. We are seeing an increased demand for better-located housing and different kinds of housing products. Demand for various types of residential housing—town houses, condos, and senior living facilities—is already higher than what is currently supplied. If we think the past is the future, we are going to see an even greater imbalance in supply and demand for those kinds of products, which suggests a lot of different things in

terms of where we develop, what we develop, and what kind of transportation we connect it with.

It is also important to think about how home-buying factors change with age. Figure 4 shows that crime is always important. We always want to feel safe and secure. But the importance of school district declines with age. That huge baby boom population flocked to the suburbs because school district was important or because of white flight. At the same time that school district declines in importance, the location of shopping increases in importance. In other surveys we find that convenience becomes more important with age. So it is important to think about not just the sheer numbers of people, but the kinds of attitudes they have and what drives their location and product choices as they get older.

Figure 5 looks at just one dimension, the percentage of those over 55 who prefer living in-town versus living in a suburban area. The preference for the town house goes from under 10 percent at ages 24–34 to almost 25 percent at age 55.

We touched on changing household composition. The greatest growth is in childless couples and nonfamily and single-person households. Again, the Gen-X household is already driving demand for in-town housing, which has an impact on land use. If some of the boomers, and it doesn't take many of them, make a different housing choice, that has a very substantial impact on the overall development pattern. We see an increased demand for all kinds of attached housing, from independent to senior living facilities.

This is the household shift over the next 10 years (see Figure 6). Data 10 to 25 years out would show the families with kids segment increasing a little, still dwarfed by the singles, by the families with no kids, and by the nonfamilies, but no longer declining. That is because of the echo boom households having kids.

We have done a lot of surveys with different types of households, asking them what kinds of choices they would make in the future. Those kinds of preference surveys are a little suspect, because people largely have to deal with the options that they have. In most of the markets that we looked at, in guesstimating the demand for what we would broadly call "new urbanist" or "smart growth" housing—more compact, denser, closer to work or shopping or services, supporting a more convenient lifestyle—we find that about half as much is being provided in those markets as is actually demanded. In a lot of markets, although we try to give survey respondents a good picture (verbal or photographs) of what we are talking about, generally they haven't experienced it. So we think the percentages are probably a lot higher. But today at least 35 percent say they prefer something other than the conventional suburban, single-family, detached house.

Let's look at the growth. Given those demographics and the shift over the next 25 years, and the share of households that will be older or have a different household composition, either a one- or a two-person household will be a candidate for something other than a

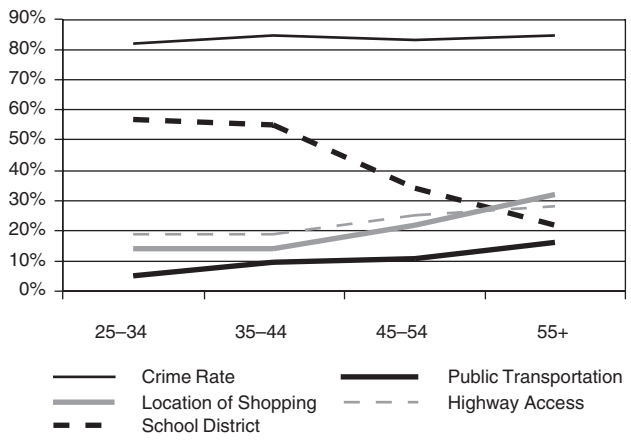

FIGURE 4 Home-buying factors change with age.

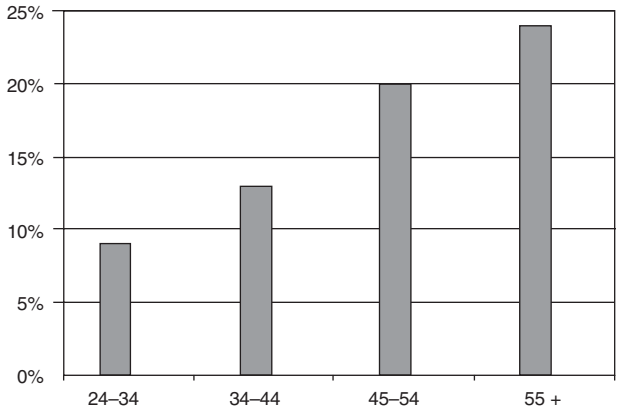

FIGURE 5 Percentages preferring town house in-town versus home with more traffic in suburbs, by age. (Source: NAHB/Fannie Mae.)

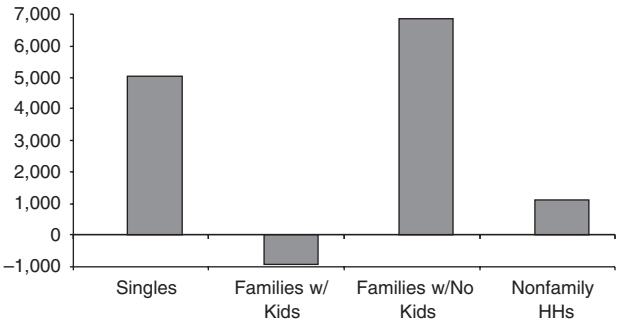

FIGURE 6 Households by type, United States. Over the next 10 years, the number of families with children will shrink, and singles and childless households will be the major market force. (Source: U.S. Census.)

conventional suburban dwelling. Anne Canby mentioned that in 10 years, about 70 percent of all households will have no children. We mitigated that by looking 10 to 25 years out; with those echo boomer households possibly having families, that percentage declines about 5 percent. But the point is that a huge share of the market has the propensity to choose something other than conventional single-family, suburban housing. Our surveys today say that maybe half of that one- and two-person household market will choose nonsuburban housing. Of that 65 percent, some people will continue to choose suburban locations just because they like big houses and driving. But the potential is there for something different.

Here are results from other surveys that have been done, one from a very proselytizing source for something other than the status quo, the Congress for the New Urbanism (CNU). Figure 7 draws from one of its surveys, and then I'll show you one from a group that tends to be at the other end of the spectrum, the National Association of Home Builders (NAHB). NAHB comes to the same conclusion. According to CNU, about 53 percent of people would consider easy-to-walk-to stores as very important in their decision-making process. Another 50 percent say they would prefer less automobile-oriented street patterns. Thirty percent say they like townhomes in their neighborhood; 15 percent say they want a townhome, and that figure today, according to NAHB, goes all the way up to 25 percent. Thirty-three percent want narrower streets, sidewalks, and shared recreation facilities; 20 percent want smaller lots or cluster development; 50 percent want small lots; and 40 percent want something other than a conventional, single-family detached house.

According to the NAHB survey (Figure 8), 35 percent said their most preferred option is to build new homes on vacant land in the central city or inner suburbs. These trends seem to support what CNU is saying.

Consider an easy walk to stores "extremely important"	53%
Prefer a less auto-oriented street pattern, with narrow streets to encourage walking	49%
Would like townhomes in their neighborhood	30%
Want to live in a townhome	15%
Want "narrow streets, sidewalks, and shared recreation facilities" rather than "larger lots and wider streets"	33%
Want smaller lots and/or clustered development	20%
Wants lots of 1/6 acre or smaller	57%
Prefer something other than single-family homes	40%

FIGURE 7 Support for "new urbanism." (Source: Congress for New Urbanism.)

	Most Preferred	Second Most Preferred	Third Most Preferred
Build New Homes in Outlying Areas	29%	26%	45%
Build New Homes in Existing, Partially Developed Suburban Areas	37%	51%	12%
Build New Homes on Vacant Land in the Central City or Inner Suburbs	35%	23%	42%

FIGURE 8 NAHB study on buyers' preferences. (Source: NAHB study of 2,000 U.S. home buyers.)

People want to keep talking about how the majority of households don't want that, and they are right. The majority are not necessarily looking for something different. But in Atlanta, in thinking about our future growth and the next million people, 35 percent of the market is 350,000 people. If those people make different sorts of location decisions, obviously that has huge impacts on our land use and transportation systems. There is a lot of evidence that at least one-third and probably more of the market will make different kinds of product and location choices in the future.

This is a trend: greater new urbanism demand and supply in a lot of markets. The demand, we believe, is only being about half met. That means more demand for multifamily traditional neighborhood development. The transit-oriented development supports the trend of movement back to cities, to existing towns surrounding metropolitan areas, to suburban business districts as activity centers with greater convenience, urban lifestyle, and amenities.

There is also a trend in terms of prices in this drive for value. At what point do people stop driving for value because the trade-off has just gotten to be too great? There is evidence, at least comparatively, from markets that hit that wall sooner. In comparing a Los Angeles or a San Francisco with an Atlanta, for example, where they have gone through that life cycle, people make different choices. Maybe it is not always what they wanted, but that drive-for-value trade-off became too great. The impact on land use will also make that number grow from one-third to something between one-third and that 65 percent who would qualify for something different because of money and time.

We think about this not just in terms of housing but in terms of employment and how changing employment growth—the types and locations of jobs—will also have an impact on land use and transportation. It is a little murkier, to be quite honest. It is harder to analyze because we have a lot more data on household decision making than we do on employment.

What do we *think* is happening? In thinking about where jobs go in the future and how that influences the development and transportation patterns, it is impor-

tant to note that historically employment has followed housing. The housing went to the suburbs first. Then as Gen-Xers moved back in town, it caused the explosion in in-town housing demand over the last 5 to 10 years, really since about 1993. As we came out of the recession, a lot of jobs did follow those households. That will continue to be the case.

Different industry segments continue to grow or decline, with a lot of growth in the services sector. Business and personal services will make up a huge portion of the growth in the future. There will be much more competition within the so-called knowledge economy for workers who, as I pointed out earlier, are enabled by technology to make broader decisions about where they locate. The increased mobility and wider choices available to workers will create competition between areas based on quality of life factors, because that is now their biggest economic development factor.

What does that mean in terms of possible changes in employment location? The trends are conflicting. We see continued decentralization driven by where the boss lives. The boss, by and large, picked up and moved to the suburbs in the past 20 years, and that became the dominant direction of residential growth. But we also see evidence of office location following residential location, with some residential going urban. We also see some employers thinking about the quality of their locations, the quality of the environments that they create. Some employers are concerned about the decrease in mobility in a lot of metropolitan areas and what sort of financial impact that has on them. Two examples are Bell South in Atlanta and Progress Energy in Raleigh, which have made decisions to consolidate their facilities closer in more urban areas that are served better by mass transit. I think they are evidence that congestion will encourage some people and businesses to make different location and product decisions.

Also, employers are thinking about what kinds of environments they create for their employees. The previous presentation mentioned that we are going to see a lot of competition for skilled workers. One way you compete for those skilled workers is to have good places for them to work. That is not necessarily going to be a suburban office park where you get in your car at lunchtime to drive a long way to pick up your shirts or go to lunch. In many cases, it will be a more convenient environment: existing suburban business districts, existing towns, and in-town areas that already have those urban amenities. That will affect employment location because larger employers know that since their own employees can't necessarily support all those amenities, they can't supply them internally. We went through a cycle where employers brought a lot of amenities into large buildings, but their employees couldn't support them all. But if they invite the outside world, they can have twice as many amenities for their employees, because other people support them. That is the definition of an existing urban location.

Another market factor is investment and profit. There is a very good annual survey done by Pricewaterhouse-Coopers to determine where pension funds and others who invest in real estate want to make investments. They tend to bet on 24-hour locations, and even some inner suburbs fail that test. They are looking for more vibrant locations. They have tended to favor easy investment decisions—investing in very similar products. Suddenly it occurred to somebody that real estate is a commodity and that if a particular segment—Kmarts or Wal-Marts, low-density suburban shopping centers—becomes overbuilt, they are all affected. However, the market favors special, unique locations, mixed-use environments, higher-value places. Over the past 10 years, some of those have actually performed better than their counterparts, getting above-market rents and maintaining above-market occupancies. Maybe these are better investments. The dollars and cents are going to drive more investment toward these kinds of mixed-use developments—Citiplace in West Palm Beach, Reston Town Center in Fairfax County. Places like that are outperforming the market. They also tend to do better in a recession, which has an impact on investment.

On the barrier side, we have the demand for density versus the fear of density. One good example of density is the Duluth Town Center. This is characteristic of what is happening in a lot of small towns that are being engulfed by metropolitan areas. This is not just suburban versus urban. When we look at the development pattern and think about what will happen in the future, a lot of the future density or urbanity that people are seeking may not be in a traditional downtown or central city, but in these multicentered areas in existing small towns and urbanizing suburban business districts.

Figure 9 shows Memorial Drive in Atlanta. The little circles are areas that we have identified as having the potential to become centers, town centers or activity centers. This is based on work the Urban Land Institute (ULI) has done on quantifying the principles of how to revitalize existing strip commercial areas. This is a huge opportunity because there are so many of these failing strips, and developers can capitalize on this trend of some households moving back in and no longer being able to drive for value because the value trade-off just is no longer there. A lot of these existing strips have huge opportunity, and this is just one little 6-mile area. ULI has a publication, *Reinventing Suburban Strips*. It has a 10-step program, and in this case we expanded it to a 12-step program, with the first principle being acknowledging that you have a problem. It is also a huge opportunity to create town centers like Duluth's.

FIGURE 9 Context map, Memorial Drive, Atlanta, Georgia.

What is the conclusion from all of this? The future may not be the past; there are a lot of market trends that favor smart growth development as a much bigger part of the mix; and at least one-third of future growth is malleable. Demographically the world is changing enormously, and as the customers for real estate products change, they will have different housing and location preferences. Congestion will also have a tremendous influence. In considering the trends of the past 10 years, those opportunities are inhibited largely by political and status quo barriers, not necessarily the lack of demand. The demand is there. If we are going to consider some alternative development patterns in the future, then we have to think about some of the policy issues that need to be addressed.

When we look at where those high-paying jobs are, where those executives moved and then relocated their offices to, you find those are also the areas with the most exclusionary zoning practices. Those are the places where we are most likely to find an apartment moratorium or antidensity sentiment and forcing the old drive for value in commuting, because of a real lack of affordable housing. By affordable, I don't mean Section 8 or subsidized—I mean workforce housing.

In Atlanta, for example, a police officer, firefighter, or school teacher can afford a house generally in the $80,000 to $150,000 range, and you can't find that where most of the best-paying jobs are going. When people make these exclusionary zoning decisions, those are the kinds of workers they are zoning out of their community—workers a community needs. Sometimes they want only luxury apartments, which tend to rent for more than $1,000 per month, and for most fire and police officers and teachers—regular, middle-income people—that $1,000 rent is a stretch. These suburban business districts, where a lot of the jobs are, have the potential to urbanize and accommodate a lot more of the growth and take some of the pressure off of the edge in the future. But many of those places are even less likely to have any sort of workforce housing policies than cities are. They could potentially go through an accelerated experience of what happened in central cities.

Housing and Urban Development and ULI have done a number of studies on how to address the whole

middle-income residential infill opportunity. There are huge opportunities from a demand perspective, but a lack of incentives.

It is very hard to go back and infill when you have antidensity sentiment, as expressed by NIMBYs. In looking at these areas that could accommodate more future growth, many of the suburban business districts are crying out for more housing. They may be only 50 percent developed and have lots of demand—and you may even be able to get there by light rail—but once you do, there aren't sidewalks or other ways of getting around. You come back to the argument, "Nobody wants it, so let's not build it." But maybe nobody chose it because the opportunity to experience that more convenient lifestyle by moving back into existing centers and corridors didn't exist, because the mobility options just aren't there in the suburbanizing areas.

Structured parking is expensive, and some cities are realizing that maybe we shouldn't subsidize cars only if they are moving. Trying to get that office space or housing, in particular, back into core areas where people could live rather than drive to and from every day—if you take the structured parking out of the pro forma for that residential development, it suddenly becomes feasible. Existing urban areas could attract a lot more growth by changing their policies to allow them to subsidize that structured parking expense for projects. That would have a huge impact.

To conclude, the opportunity is there, but there is no guarantee that we will have a different kind of future.

Land Use and Transportation Interactions

Reid Ewing, *Rutgers University*

In starting with the "You can't pave your way out of congestion" notion, I was asked to talk about the interface between land use and transportation. Alan Pisarski started by talking about transportation. Gregg Logan then talked about land use. I'm talking about the two together and the way they interact, which makes it very hard to build roads fast enough to keep up with demand. The first time I heard a department of transportation secretary say that was in 1991—it was an admission of defeat. That was in Florida, where the growth of vehicle miles of travel (VMT) was much faster than the growth of lane miles of highway. Even though Florida had passed a couple of gasoline tax increases, we were falling further and further behind, and the secretary made that bold statement.

The Texas Transportation Institute publishes congestion data every year. One measure is called the travel time index, the ratio of travel time during the peak period to travel time under free-flowing or off-peak conditions. For all 75 areas in their database, congestion was worse in 2000 than it was in 1982.

Why can't we build our way out of congestion? There are some obvious reasons—for example, the lack of tolerance for tax increases. But one important reason is induced travel. It is a very controversial notion: roads create their own demand. Robert Cervero at the University of California–Berkeley, a top academic scholar in planning, just wrote an article for the *Journal of Planning Literature*, and I quote him here: "The preponderance of research suggests that induced demand effects are significant, with an appreciable share of added capacity being absorbed by increases in traffic." According to his research, the elasticities are 0.63 from the road-specific studies and 0.73 from the areawide studies. This means that on the basis of many different studies, on average between 63 and 73 percent of the capacity added gets used up by induced travel. Although a jurisdiction may add capacity, the route changes and the longer trips and the new trips and the redistribution of jobs and housing use up a lot of that capacity. That makes it very hard to cope with congestion because the obvious solution, building more roads, doesn't seem to be a very effective one, at least by itself.

Ever since 1991, or maybe even before, we have been looking for alternatives besides adding to the supply of transportation. We hoped that travel demand management (TDM) would save us from worsening congestion. In the early 1990s, TDM solutions and ridesharing programs, whether business based or areawide, were highly touted, but they are not nearly as highly touted now. Telecommuting was also thought to be our salvation, but it seems there are real limits to it because people get more out of work than just the work. It is a social activity, and the possibility of advancement often depends on being there in person.

We have been hearing about congestion pricing since I was a student, which was a long time ago. A researcher named William Vickery, who won the Nobel prize in economics, suggested putting meters on the top of everyone's car and charging them extra for driving during congested periods. Yet there are virtually no examples of serious congestion pricing in the United States, and there are only a handful worldwide.

That leaves us with land use planning, which we think of as long-term demand management. As the stock in the other ideas—demand management and supply enhancement—has gone down, the stock of land use planning has gone up. More and more people and departments of transportation are now saying, "We have to do some land use planning, or we have to work with the locals who are doing the land use planning, because they are approving all these developments and we can't keep up."

What land use planning really means, in short, is finding ways to curb sprawl, because sprawl is blamed quite often for the congestion we see, even in low-density suburban areas. How can low-density suburbs generate that kind of congestion? Well, they can, because sprawl generates long trips and has other effects.

I'm going to be talking a lot about sprawl today and covering the empirical research. However I feel about these issues, I'm going to remain empirical. By sprawl, I mean low density and segregation of uses. Uses like residential and shopping are segregated from one another. Some of that is market driven; some is driven by land use regulation. But whatever the reason, it is segregated. One characteristic of sprawl is a lack of strong centers—a strong downtown, strong edge cities, and transit-oriented activity centers. A sparse street network is another—not well connected, not dense enough to meet demand. Then, unlimited outward expansion: it just goes on forever.

I'll refer to the alternative to sprawl as compact development. We are not European and I'm not suggesting that we all live in little villages at high density, even though it would be nice if there were more of those options available. I am not calling for that, but just not what we have today, which is so low density. There is so much low density and single use. The average suburban pattern is very low density. Employment and retail development are in strips rather than in mixed-use centers or even in single-use centers. Strips are much harder to serve than are centers with transportation infrastructure. They deny the possibility of multipurpose trip-making. As one example, Los Angeles is not as centered as one would like, even though it is dense and has a pretty good mixed-use pattern and some centers. It just goes on forever. That is part of our model of sprawl. So we want higher-density, mixed-use, centered development, as opposed to scattered development.

Now that I've defined sprawl, I'm going to be talking a lot about its travel implications. I'll start with what are sometimes referred to as micro or disaggregate studies. They use the individual traveler or the individual household as the unit of observation. They look at why people take this mode versus that mode; why they go this far versus that far.

There are really two distinct views of the world. One is the advocate's view of land use and transportation and how the two interact. In this view, household life cycle and lifestyle define your activities. There is some attraction at the destination that spurs people to travel. According to the advocates, and that would include most planners and the new urbanists and probably most of us in this room, those activities are filtered through the land use pattern and the degree of accessibility to create our household travel. Accessibility affects everything. It affects the number of trips we make, the length of trips, the modes used on those trips, and ultimately VMT or vehicle hours of travel (VHT)—everything ultimately depends on accessibility.

Then there is the skeptic's point of view. Skeptics are people like Gen Giuliano and Peter Gordon and Harry Richardson and the think tanks that have sprouted up in Southern California. In effect, they say that the relationship is just a simple linear one. The household characteristics create the activity patterns, which determine trip rates, lengths, and so forth. While accessibility exists, it is pretty much irrelevant because we are so mobile as a society, and the cost of travel is so low that people will drive everywhere whether they need to or not, and whether the pattern of development forces them to or not.

Those are the two different views. This debate goes back to 1990. You would think after 12 years of arguing someone would give in, but in those early days some of the studies weren't so great. For example, one famous graphic by Peter Newman and Jeff Kenworthy, Australians who wrote *Cities and Auto Dependence*, shows gasoline consumption per capita, which is also VMT per capita, on the *y*-axis and density on the *x*-axis. It is an exponential function—gasoline consumption declines exponentially and dramatically as density increases. At the top left are American cities. Houston is at the very top, with low density and high gasoline consumption. At the bottom right are Hong Kong and Moscow, with the reverse.

This chart implied that if density increased, VMT per capita would decrease dramatically. When this came out, even people who were favorably disposed toward their argument, academics and others, attacked it on the basis of methodology. A lot more separates Hong Kong from Houston besides density: transit availability and income, for example, and they hadn't controlled for those things. So there was a lot of criticism and rebuttal articles, and rightly so.

That kind of simplistic methodology has been supplanted. We have more than 50 recent empirical studies. A paper I did for the Transportation Research Board with Robert Cervero looked at more than 50 studies in the past 10 years that were methodologically fairly sophisticated—they used statistical methods, controlled for sociodemographic factors, and collectively related all aspects of travel to all aspects of the built environment.

The first sets of studies were of activity and neighborhood centers and how the design of those centers affects people's travel. We found 14 studies of this type. Many contain binary variables, meaning you are either in one kind of place or in another kind of place (dichotomous), or in a third kind of place (trichotomous). The community or neighborhood type was the defining characteristic. What they found was very interesting. Trip frequencies were relatively constant across places. That is, whether you lived in a new urbanist community or in suburban sprawl, you made about the same number of trips. But the trips were shorter if you lived in traditional urban settings, and walking was more prevalent, dramatically more prevalent. Transit was also more prevalent, but to a lesser extent than walking. As a result of the shorter trips and the mode shifts, the higher percentage of walking and transit trips, VHT and VMT were lower in the traditional places.

Although the prototypical neighborhoods differed between studies and were based on different characteristics, in effect all neighborhoods were divided into two classes: automobile oriented versus pedestrian and transit oriented, on the basis of when they were developed, their mixed-use pattern or lack of it, and whether or not the road network was interconnected. For a study I did back in 1993–1994 in Palm Beach County, Florida, we looked at all the aspects of travel characteristics for six communities, controlling for household size and income. In traditional places like downtown West Palm Beach, trips were shorter due to greater use of alternative modes.

In another study, Robert Cervero compared Rockridge with Lafayette, both on the Bay Area Rapid Transit line in the East Bay. The percentage of walk and bicycle trips is much higher in Rockridge, which is a traditional place, versus Lafayette, which is actually, by our standards in Florida, pretty traditional, but not by the standards of the San Francisco Bay Area, where it is located.

That raises an interesting question. In all of these 14 studies, is what really matters the design of communities, whether they are dense and mixed, and whether they have continuous sidewalks and interconnected streets, or is their location within the region—more central and accessible to the rest of the region—what causes these types of places to differ so dramatically?

I did a study in Palm Beach County that showed that the relationship between VHT/person and regional accessibility is fairly linear. This study and others have caused me to conclude that you are better off with anything in an infill, highly accessible site than you are with the best development you can do with high density, mixed use, and so forth in the middle of nowhere.

We have 35 studies of local land use patterns, really an amazing number. There have been more of these than any other type of built environment travel study. We have tested the significance of residential density, employment density, land use mix, land use balance, and so forth. Again, trip frequencies are relatively constant. As density goes up, the number of *person* trips—not *vehicle* trips—stays the same. That turns out to be very important. In dense, mixed-use environments, trip *lengths* are shorter, walking and transit use are more prevalent, and VHT and VMT are lower. The same is true in very accessible environments.

Larry Frank and Gary Pivo did one of an early set of studies around 1995. As it turns out, employment density counts just as much as residential density for people's mode choice. They found that the drive-alone single-occupant vehicle share is affected even more by employment density than by residential density.

Another Cervero study shows the probability of commuting by transit or walking as a function of two variables, density and mix, controlling for household size. It turns out that for low-density environments, it doesn't matter whether the land uses are mixed or not; the probability of *transit* use is about the same. When the density goes up, so does the probability of transit use. But mixed use doesn't seem to be the big factor. For the probability of *walking* to work, land use mix is just as important as density. You get the same increase by going from low-density, single-use development to either high-density, single-use or low-density, mixed-use development. Then the final increase comes when you have both mixed use and high density in the same place. So both density and mix matter, and they are not, as some people have implied, one and the same. They are correlated, and the correlation is high, as you would expect, but they are different.

Why is it important that the trip frequency is constant across density classes and mixed-use versus single-use environments? One study by Susan Handy shows that the average shopping *frequency* is constant—it doesn't vary with local accessibility. However, the *distance* traveled to shopping does vary. This means that better accessibility leads to less VMT or VHT. That is important because some people have claimed recently that new urbanist and other, more dense, compact developments will generate more trips because everything is closer and that will undo the good done by the shorter trips. That is just not true. It is not borne out by the literature.

Finally, we have urban design elements—site design. We found only six studies—this was a year and a half ago [early 2001]—that looked at individual design characteristics such as sidewalks and crosswalks (how complete the sidewalk system is), street trees (presence or absence), active street frontage as opposed to dead space, parking lots and the like, and parking arrangements. Six studies looked at the individual characteristics, and then 10 that had composites of urban

design—a "pedestrian friendliness" factor. The finding here is that individual features don't seem to make much difference. Just building sidewalks isn't going to help without a land use pattern to support walking. There may be some impact on mode choice from all those urban design characteristics collectively, but the impact seems to be small compared with that of land use. Possibly those urban design features in a collective sense have some impact on VMT, but again, it is less than the impact of land use.

The one exception to that finding (and I mention it because many of you are probably familiar with it) is the Land Use, Transportation, and Air Quality (LUTRAQ) study from Portland, Oregon. It showed that the pedestrian environment factor, measured in terms of ease of street crossings, sidewalk continuity, and other things, was more important than the density. That study considered VMT per household as a function of many variables, including the pedestrian environment factor and accessibility to jobs. The pedestrian environment factor is supposed to be the most important thing, but that is the only study that reached that conclusion.

I did a study in Miami where I measured absolutely everything I could in terms of street trees and sidewalks and so on. Only one variable was significant to the number of transit riders from a quarter-mile area: the number of marked crosswalks. If you think that just marking some crosswalks is going to make a big difference, I differ with you. It is obviously picking up some other phenomenon I wasn't able to measure that is correlated with the presence of crosswalks. Land use made a tremendous difference in the number of transit riders. Land use is the key, and urban design is secondary.

One last point: while the primary mode of travel to work seems to depend primarily on land use, once you are at work, urban design may be much more important in deciding whether you are going to walk to lunch, drive to lunch, or stay at your desk. A study by Bruce Douglas showed that in terms of VMT, even though workers in central business districts are making more trips during the day for personal business, eating, and errands, they generate very little VMT because so many of those trips are walk trips. They may have driven there, but they are walking or using alternative modes at lunchtime.

Here is the bottom line. Many of you have heard about the smart growth index. It is the Environmental Protection Agency's (EPA's) alternative to classic four-step conventional travel demand modeling. They put out the smart growth index software, and we provided the elasticity numbers that went into it on the basis of 14 studies. What does it all mean in terms of the degree to which we can, through land use, affect people's travel behavior? Obviously, the big one in VMT is regional accessibility. If you double regional accessibility, VMT will decline by about 20 percent. Design and diversity and density all make a difference. Together they are pretty significant: a 35 percent reduction in VMT.

Then there are macro studies on the cost of sprawl, and we are looking at the relationship between transportation outcomes. This is a partnership between Rutgers, Cornell, Smart Growth America, and EPA. We are measuring sprawl for metropolitan areas and counties in every way we can, by using national data sources—census, Census Transportation Planning Package, and so forth. You can measure more than you would expect. Even the humble census can be used to measure land use characteristics. If you compute density for census tracts, as we have, then look at the percentage of the population living at more than, say, 12,500 persons per square mile, you have a transit-friendly density percentage, and it varies dramatically from metropolitan area to metropolitan area. Or you can measure how quickly density declines with distance from the center of the metropolitan area. With TIGER/Line files you can count the number of street segments, the number of centerline miles, and the area, and you can compute street network measures. You really can do a lot with existing national data sources, and we have worked on this study over a period of almost 2 years.

We now have 83 metropolitan areas in the database. They are the largest areas in the country. They contain a little more than half of the U.S. population. We measured 22 operational variables for those four factors—density, mix, centers, and streets—and one overall metropolitan sprawl index. Then, at the county level, we included many more counties that are part of those same metropolitan areas, six operational variables, and a county sprawl index. We used factor analysis (although I won't go into the details), and it shows just how dense different places are. It tracks with your sense of places. We normalized them, standardized them, and put them all together into one index. We then looked at correlations between these indices, both at the county and at the metropolitan level, and different transportation outcomes. So, our transportation data are from different places—HPMS is the Highway Performance Monitoring System; FARS is the Fatal Accident Reporting System.

Here are just a few of the results of our work. If you plot sprawl versus VMT per capita, the pattern appears to be downward sloping at a very significant level. If you then model VMT per capita in terms of those four factors, you find that both density and centeredness are important determinants of VMT at significant levels. You get VMT down by raising density or making your centers, like the downtown, stronger. The elasticity of VMT with respect to the overall index is –0.16, which

means that if you increase the value of the index by 10 percent, you get a 1.6 percent reduction in VMT. That is not huge, but it is significant.

Sprawl versus walk share to work is upward sloping. It depends, again, on density and centeredness. Sprawl versus fatal accidents is downward sloping, like the VMT one, probably because VMT is the common element here. If people drive less, they do not kill each other as often. Here, density and centeredness are significant. I could talk in response to questions about why mix or streets might not have come out as significant in some of this.

Ultimately, by looking at the micro studies or our macro study of the sprawl index, we get a consistent picture of the relationship between land use and travel, and it is the one I just laid out.

Discussion

Reid Ewing: I have a question for Gregg. That one-third figure and the fact that only half of the current demand for more compact development is being met—how did you figure that out? Those are amazing statistics.

Gregg Logan: I wish there were more data on it. But I have done some surveys of various state agencies that have obtained similar data to compare with that. We were retained by the Conservation Fund to try and answer that question. We did a small study in Atlanta. It was the first time that we asked people about different sorts of situations and gave them a set of trade-offs. We couldn't just say, "Would you like something neotraditional or not?" So we asked them a series of tradeoff questions, and we took that same survey to nine other market areas. In each of those markets we then compared, as best as we could, how much of that kind of product was in that market by looking at sales data, building permit data, and so forth. Then, to make sure we were in the right ballpark, we obtained all the other similar studies we could find and made comparisons.

Audience question: And the reason we don't have that half, even if the market is supposed to respond to demand?

Gregg Logan: It has a lot to do with the barriers. I could give you several examples of developers who have done those kinds of developments, where they have to get 30 or 40 variances to the existing code to do that project. Then when they talk to their lender to finance it, they hear, "Why don't you have open parking, because everybody else does?" So they find it very hard to get financing approved. It is just so much easier to go out and find a site on the edge.

Audience question: One of the things that has interested me is the number of large metropolitan areas and how broadly they are expanding. It seems to me that as more of our population lives in these very large areas—the Baltimore area has just been called a consolidated area with Washington—the potential for very long trips obviously is connected to the fact that you have this very large metropolitan area. We have been talking more about the community or even the neighborhood level. I'm wondering if either Gregg's or Reid's work looks at this total scale of the metropolitan area and the impact that has on travel. The potential for somebody to have a 30-mile work trip increases dramatically with the size of the area.

Gregg Logan: It is an interesting question from a land use perspective. When I looked at the East Coast/West Coast difference in driving from one county to another for work, it struck me that in Atlanta, there are 13 counties in the nonattainment area dealing with the Clean Air Act amendments in an area that is about 160 miles across, in a metropolitan statistical area of 20 counties. You could fit all 13 of those counties in Los Angeles County or in Houston. Counties tend to be much smaller on the East Coast than on the West Coast. We tried to correlate multiple directions of growth, which seem to happen when an area gets above 4 million. Below 4 million, many areas have only one dominant center of growth. Size does matter.

Reid Ewing: We included variables reflecting the size of the urbanized area. The final sprawl index did not include those variables, but at one time we had a five-factor sprawl index, and clearly the size of the urbanized

area makes a difference in terms of many transportation outcomes. But, as I recall, and I don't remember the exact results, it makes less difference than density or centeredness. So we can understand to some degree why we are getting long commutes in terms of sheer size, but it also has a lot to do with the way we are developing.

Audience question: Reid, I was curious about your definition of "regional accessibility." It sounds like we need to pay attention not just to the internal design and transportation aspects of the place but also to where it is in the context of the region and its closeness or accessibility to transportation systems. Is that what you are saying?

Reid Ewing: That is exactly it. Regional accessibility is precisely the point. Regional accessibility is measured in two ways in the literature. The way I've measured it most often is by using a gravity model, which looks at the number of attractions at different travel time distances from the point of origin. The more attractions and the shorter the time to reach them, the higher the accessibility. Happily, it turns out that accessibility measures are easy to come by, because conventional four-step travel demand models compute accessibility as part of the trip distribution step. All you have to do is print them out.

Others: Cervero, in some of his work, and the LUTRAQ study measured accessibility differently in terms of the number of jobs that could be reached in a given travel time. I remember in LUTRAQ it was how many jobs can be reached by car and by transit within 30 minutes. But in any event, your point is right—however you measure it, accessibility is a very, very important aspect, meaning location is a very important variable in all of this.

Audience question: In our metropolitan planning organization, 91 percent of new growth is at the edge. All over California, the number is from the mid-80s to the low 90s. In Portland, where they are trying very hard to make it different, 70 percent is at the edge. A lot of the smart growth that is occurring is infill, sort of occurring naturally. Isn't our real challenge to make the communities at the edge smart growth from the start?

Gregg Logan: I think that it is good to make them smart growth from the start, and I have read some convincing studies that suggest we should do that because it is too hard to do infill. But we are finding mostly political barriers in the way of making it happen. Political and maybe land cost and assembling similar parcels on an infill site—you don't find these problems in greenfields. If you deal with those barriers, there is a lot of opportunity to focus not just on the edge but also inside the edge.

Reid Ewing: I would agree with that. There is also a lot of vacant land, and we heard in both presentations that the demand for housing will change as our demographics change. So, if 70 percent of Portland's and 90 percent of Sacramento's growth is at the edge, that doesn't mean it will be the same percentage in 20 years when you and I are looking to avoid mowing our lawns, looking for something a little denser and more walkable.

Audience question: Gregg, particularly in a place like Atlanta, there are barriers like the Clean Air Act. But aren't there also other barriers in terms of availability of water, which we seem to be running out of, and other infrastructure constraints to expanding outward in addition to the Clean Air Act and Water Act?

Gregg Logan: Absolutely. There are other barriers. Assuming that I'm right on the demographics and employment, I was trying to address the issue that there will continue to be growth, and we need to think about how to accommodate the growth. Here are the opportunities. In the Atlanta region, Georgia fought with Alabama over who gets to take how much water out of the Chattahoochee, and the same thing has been going on between Arizona and California for decades. We could run into other limits to growth. I was trying to address not *whether* we grow, but *when* we grow, where do we put the growth? Does it continue to go to the edge to create more expensive infrastructure, or can we put it in other places that may also meet market demands and have social benefits? I think the answer is the latter, assuming that we don't run into other barriers.

Audience question: I would like to propose perhaps a different crystal ball to the panel and see if maybe you can help me refute this. A lot of talk has concerned the structure of roads and the structure of the built environment around roads. But what if there was a mode shift from large car down to small car down to motor scooter in this country so that very quickly, as that happens, the density of traffic decreases? Could you argue why that might not happen and also tell us some of the things that would change in your modeling? I'm particularly interested in that because when you look at affluent Far Eastern countries, that is a predominant mode of travel, particularly in the cities. With Americans wanting to have it their way, driving, under their own power, this seems to me a possible alternative.

Alan Pisarski: I'm struck by an experience that I had. I spent a lot of time working in Shanghai and with all of the scooters and motorcycles, you have the worst pollution in the world, mostly because of the two-cycle engines. My personal sense of where we are going may differ from that of some of the other members of the panel. I do believe the future belongs to the SOV and walking—those two things working together rather than transit. But that SOV isn't going to look like a 1978 Buick. It is probably going to look like a cross between a golf cart and a Honda Insight, a hybrid small vehicle that will be able to play in most of the games

that the public demands in terms of value of time. So, I'm halfway to where you want to go.

Audience question: I think your last chart suggested that the ozone, in fact, at high densities got worse again.

Reid Ewing: I never noticed that. What you have in all of those slides are some outliers. Every slide has outliers and the outliers are interesting, but they were dropped for the statistical analyses. On the very far end are New York City and Jersey City and San Francisco County and so on. We dropped, in all cases, New York and Jersey City, and in some cases had to drop others as well. With the exception of walk share on the journey to work, the pattern always looked linear to me, as opposed to some fancy thing that swings up again. It was surprising. I would have thought that ozone was one of the flat ones, like congestion, as opposed to one that sloped downward throughout. But it wasn't.

Audience question: I ask because we model the four scenarios for our area. The most dense, most transit-oriented one actually had the worst ozone—we ended up with an environmental problem on the other end because of the congestion and the slow air movement and the number of high-pollution days. That scenario has been stuck in my head for about 5 years.

Reid Ewing: I don't think it did, but in any event, it raises an interesting issue. You modeled it and we are looking at actual data. If you based anything on a four-step model, and I'm assuming you did, you probably weren't capturing the true effects of mixed use and density on people's travel choices. The four-step model is just totally incapable of handling the kind of compact development Gregg was talking about that apparently one-third of the population wants.

Audience question: Alan, what impact would the fast-growing elderly population segment have on transit, because in many cases they either are giving up driving or they are not driving at night, knowing that after they hit three light poles they have to stop? But they can't walk either.

Alan Pisarski: Let me make a really sharp distinction between "should" and "actual." In straight, descriptive terms, the places where people use transit are work trips and school trips. Guess which trips older people don't make. Older persons' trip making is increasing and it is more like the rest of the population than it has ever been, except for the work trips. It is more automobile oriented than ever. I'm not suggesting that is a great idea. When this early elderly group gets to the 80-plus side, the issues of smart cars and intelligent transportation systems may come together with the aging population and its safety problems. I'm just hoping we will get intelligent cars soon enough to deal with that question because it is going to be a tough one. I don't see transit as a big response.

Gregg Logan: One thing jumps out at me in looking at the senior population numbers and in working with communities and planning for existing dense areas whose residents are saying, "We don't want any more high-density housing or apartments." Look at the fact that 20 percent of seniors rent, for example, and look at the seniors' population doubling. I think we are heading for a train wreck in terms of where seniors want to live and communities realizing that they need lots of that kind of housing in convenient locations where people don't have to drive or drive long distances.

Audience question: Although smart growth is generally associated with higher densities, what about the other two-thirds of the market, which still prefers lower densities. Aren't there ways in which they could grow smarter?

Reid Ewing: Of course. We are talking about the four factors: density, mix, centeredness, and streets. Two of them don't fall into your mixed-use category. I think density is saleable if it is done correctly. There is so much evidence that density can be done in a more acceptable way. We are not talking about huge increases in density; even incremental ones will help. I've always felt that mixed use was much more acceptable than the rhetoric implies. While there is resistance to density, I don't think there is the same resistance to a mixed-use pattern, a more villagelike pattern of development. You have the centers and the streets and probably a lot of other things that you can manipulate to reduce the demand for vehicular travel.

Gregg Logan: I would add that in looking at the opportunity to serve that third of the market, maybe half of whom are being served today, and thinking about future demographics, it suggests that two-thirds actually could be interested in something other than the low density. We could start meeting the demand for that third that wants the density in a way that helps sustain the ability to have the low-density areas that surround it. If we don't accommodate that, then we make low-density areas even less sustainable than they are today.

Alan Pisarski: I'm often struck by the fact that the young have nostalgia for something they never experienced. I grew up in that high density called Queens, and I'm not sorry I'm not there anymore. I keep having this impression that many of these people who answer surveys say, "Boy, that really looks neat." I wonder how long they will think it is neat when they are in it. I'm not trying to disparage it, but I guess I just have that question.

Working Definition of Smart Growth

Charles Howard, *Washington State Department of Transportation*

The conference planning committee had quite a bit of discussion about how much we should get into the definition of smart growth in this conference. We decided that there has already been a lot of work on the definition of smart growth, and that is not the purpose of this conference. Our purpose is to further define the transportation aspects of smart growth. That was a pretty good question on the low-density areas as well and aren't there smart things to do there. We are going to start to explore that tomorrow. That is definitely part of this.

I want to discuss quickly the Smart Growth Network's principles for smart growth and propose this as a working definition of smart growth. First of all, their principles of smart growth are to create a range of housing opportunities and choices; create walkable neighborhoods; encourage community and stakeholder collaboration; foster distinctive, attractive places with a strong sense of place; make development decisions predictable, fair, and cost-effective; mix land uses; and preserve open space, farmland, natural beauty, and critical environmental areas.

On the transportation side, the principles say provide a variety of transportation choices. That is what we are going to be getting into. Further, if you look at what the principles talk about, it is better to coordinate land use and transportation; increase the availability of high-quality transit; and create redundancy, resiliency, and connectivity. On the road networks, there should be connectivity between pedestrian, bicycle transit, and road facilities. Finally, a multimodal approach should be taken, and development patterns should be supportive.

So, that is really what we are focusing on—trying to get a better handle on what that transportation part of smart growth means.

The final two principles are to strengthen and direct development toward existing communities and to take advantage of compact building design.

That is the definition we are working with and you will have it as a resource. We will not debate this; we will accept it and move forward.

Principles of Smart Growth

- Create a range of housing opportunities and choices.
- Create walkable neighborhoods.
- Encourage community and stakeholder collaboration.
- Foster distinctive, attractive places with a strong sense of place.
- Make development decisions predictable, fair, and cost-effective.
- Mix land uses.
- Preserve open space, farmland, natural beauty, and critical environmental areas.
- Provide a variety of transportation choices.
- Strengthen development and direct it toward existing communities.
- Take advantage of compact building design.

What

What Does a Smart Growth Transportation System Look Like?

Introduction

Mary McCumber, *Puget Sound Regional Council*

I'm Mary McCumber and I'm from the Seattle metropolitan region. Our session addresses the "what" in the question, "What does a smart growth transportation system look like?" We're going to look at that question from some different perspectives: from the East Coast and the West Coast, from a medium-sized metropolitan area and a large metropolitan area, and from a national perspective.

During the break, you're going to do some hard work. You're going to consider what you heard from this panel that you would like to try in your region. What are the impediments that you face in doing that, and what are the potential solutions to these impediments? We will have a good discussion.

I'm going to introduce our panel. The first person will be Harrison Bright Rue. Harrison is the Executive Director of the Thomas Jefferson Planning District Commission in Charlottesville, Virginia. Harrison is and has been a planner, builder, developer, trainer, and founder of the Citizen Planner Institute, whose workshops have gained national attention for their practical approach to complex urban design transportation and sustainability issues. Harrison will be followed by Steve Heminger, Executive Director of the Metropolitan Transportation Commission (MTC) in the San Francisco Bay Area. MTC is a very successful metropolitan planning organization (MPO). We in the Seattle region copy almost everything they do and don't do it quite as well, but we look to them for the work they are doing on regional transportation planning. MTC allocates about $1 billion per year in transportation funds. I'll follow Steve and talk for 5 minutes about the Seattle metropolitan region and what a transportation system looks like within our region. Then we will have a national perspective from Frank Moretti, who will comment on the various presentations. Since 1992, Frank has been the Director of Policy and Research for the Road Information Program, which provides transportation policy analysis on transportation conditions, funding, safety, air quality, and regional planning issues.

Recent Transportation and Land Use Planning Experiences in Charlottesville, Virginia

Harrison Bright Rue, *Jefferson Planning District Commission*

I've been in the Charlottesville area for about 7 months; before that, I was in Honolulu for about 4 years, and in Miami for 6 years before that. Charlottesville is a very different area, and I'm intrigued and delighted to be there. It is a five-county region along with the city of Charlottesville. The population of the region is about 200,000, about half of that in the MPO. We have four rural counties with 15,000 to 20,000 people each. So with the complexity of the politics and all of this creative work we're doing, I'm actually working for a majority board whose elected officials are from very small, rural counties.

Every time we go to the public, we have to explain who we are. These figures are a small sample of what we use in public presentations. You have to explain what an MPO and a planning district are. You take them through the different things we do just to begin to get them thinking about coming up with solutions. If you are going on public process, people have to feel like you might actually be able to do something about it, which is very complex when you start talking regionally. It is really hard to make things happen regionally.

When I first went there, we decided to pull together the rural planning effort, which was separately funded and separately run, with the MPO planning effort and call it the United Jefferson Area Mobility Plan. We just finished a series of workshops this spring in every county. We worked with a different set of people; for example, it might have been the Chamber of Commerce in one county. We basically gave them the process and said, "You tell us how you want to run it." One county said it wanted the meeting to be its county comprehensive plan meeting. So, we did all the technical support for the county comprehensive plan mobility section.

We get together and we work around tables with a set of simple rules. We actually train folks on how to do that, but we never go to the public without talking about how we are building on previous efforts, starting with Mr. Jefferson's legacy. When we talk about sustainability, I always like to wear a kid tie to remind myself to think about planning for future generations. In this country, the idea of planning for seven generations actually goes back to the Iroquois Confederacy, before even Mr. Jefferson.

Figure 1 shows a list of individual studies about sustainability in commercial corridors and so on in the region. We came up with sustainability accords shown in Figure 2. I also want to introduce Hannah Twaddell. Hannah was with the MPO for 15 years, long before I got there. A lot of this is bragging about her work. I almost see this as a constitution for everything we are doing in the region, whether it is transportation or land use, affordable housing, workforce development, or farmland preservation. We try to come up with these 1998 principles and apply them at the beginning of every project we do.

We also look at specific projects we are working on right now. I do the workforce development. We are starting a Homeless Management Information System in coordination with a plan for the aging. We also like to brag about work that the city of Charlottesville is doing—a great study by Torti Gallas, looking at commercial corridors and changing the zoning. They are actively working on that right now.

- Sustainability Council Accords
- Regional Build Out Analysis
- MPO Long-Range Plan (CHART 2021)
- Charlottesville Commercial Corridor Study
- Albemarle Co. Neighborhood Model (DISC)
- Transit Development Plan (CTS)
- Charlottesville Neighborhood Plans
- Jefferson Area Eastern Planning Initiative
- Rural County Comprehensive Plans

FIGURE 1 Recent regional planning efforts.

- Encourage and maintain strong ties between the region's urban and rural areas
- Strive for a size and distribution of the human population that preserve vital resources
- Retain the natural habitat
- Ensure water quality and quantity are sufficient to support people and ecosystems
- Optimize the use and reuse of developed land and promote clustering
- Promote appropriate scale for land uses
- Retain farm and forest land
- Develop attractive and economical transportation alternatives
- Conserve energy
- Provide educational and employment opportunities
- Increase individual participation in neighborhoods and communities

FIGURE 2 Sustainability accords.

The county of Albemarle, which surrounds Charlottesville, is working on a neighborhood model. Current trends and zoning are resulting in typical sprawl; however, it would like to see a more pedestrian-friendly livable community. It is having difficulty in changing the zoning to produce the latter. Obviously, it would like to see boulevards rather than typical eight-lane arterial design so pedestrians only have to cross two or four lanes at a time, rather than all eight. What we are building out in the county is density without delight. Folks can tell and are annoyed. You can see the buildings are not that ugly, but they are not located in pedestrian-friendly areas.

When we look in our region, going back to 1995, this is some scary stuff. Figure 3 shows housing densities in the planning district. Under current average housing density, if you subtract the swamps and hills, instead of 200,000 people, you would have around 1 million if it were built out. So current zoning would allow five times the population. Nobody likes to see that. If you look at the 2000 census (Figure 4), you can see these individual dots are one person, and all the black in the middle is Charlottesville, the MPO area. At the top right, over one county border, is where all the affordable housing is going. To the right is where another big hunk is going, right over the county border. That is why we have to think regionally.

So how do we make this happen? Departments of transportation are the butt of jokes. Local folks find themselves powerless. It is very hard to plan regionally. But let's put some science and some dollars behind it. The Eastern Planning Initiative (Figure 5) is one of the initiatives for which Hannah got a Transportation and Community and System Preservation grant. It looked at a 50-year vision (Figure 6) and the dollars behind some of the elements, in addition to the regional plan (where

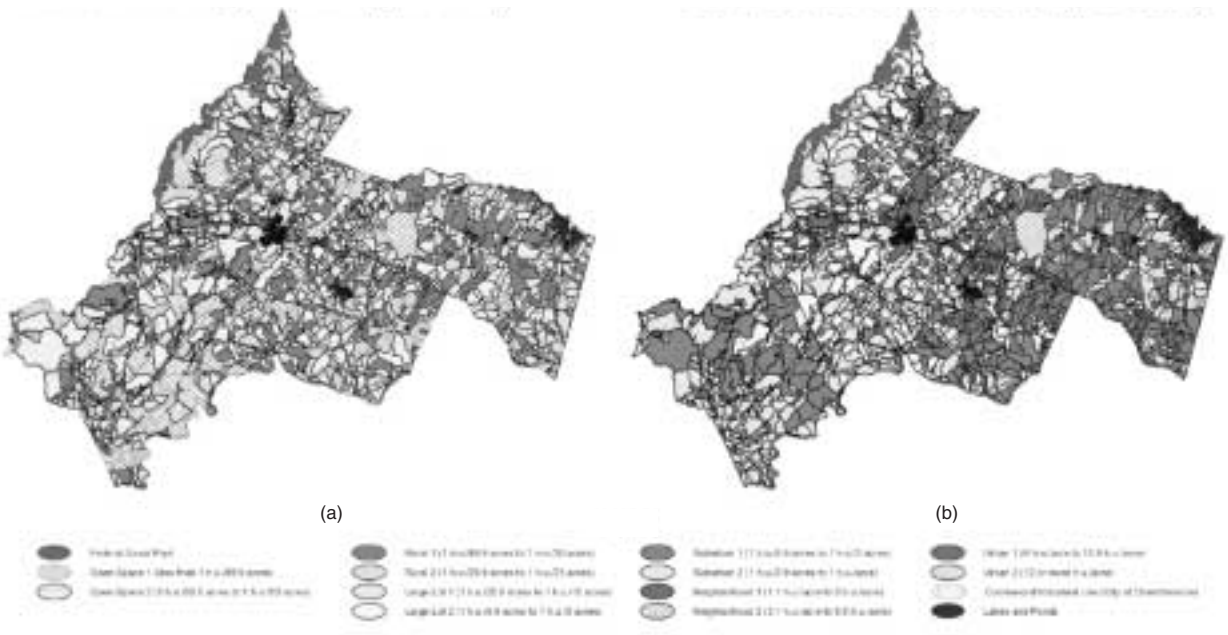

FIGURE 3 Thomas Jefferson Planning District housing density: (*a*) current average housing density and (*b*) build-out average housing density.

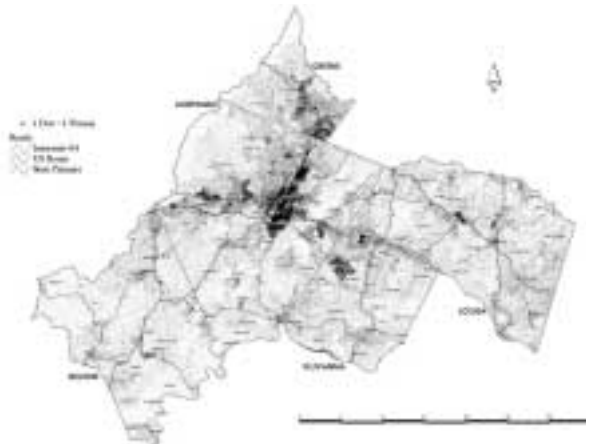

FIGURE 4 Thomas Jefferson Planning District: 2000 population density by census block. (Source: 2000 census.)

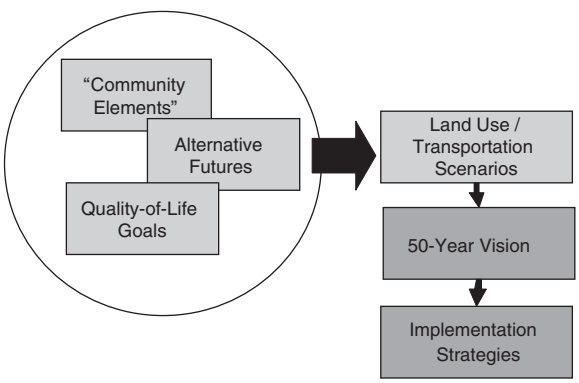

FIGURE 5 Jefferson area Eastern Planning Initiative.

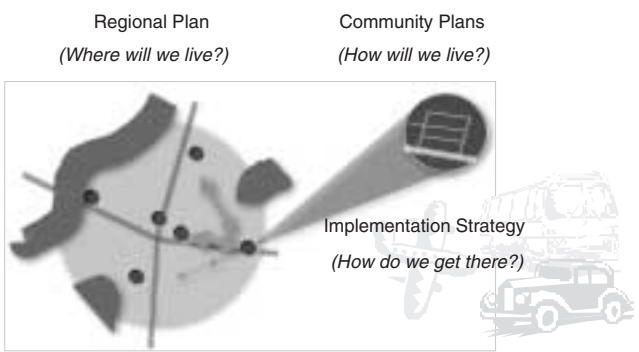

FIGURE 6 The 50-year vision: Step 1.

FIGURE 7 What makes a place a place? Open space, types and proximity of activities, size and character of buildings, size and character of streets, internal and external connections, and location of parking.

we are going to live), community plans (how we are going to live in those places), and an implementation strategy (how we'll get there).

What makes up a great neighborhood is not news to most of you (Figure 7). But they have developed a whole set of diagrams based on existing towns and neighborhoods that folks love, so they recognize them. We looked at urban mixed-use areas around Charlottesville, suburban mixed-use areas, and small towns, and we diagrammed exactly what it is that made them work and made them loved. Then we looked at the various elements that would enhance the suburban areas and diagrammed what that growth might look like. In Figure 8, on the left is what it is now, and on the right is what it would look like if you infill that suburban development with the elements that people like as it grows.

Then they plugged that into a model, into Excel spreadsheets, and developed some scenarios. Over 50 years, the dispersed scenario, or the sprawl version, would require widening all of those roads shown in Figure 9. The department of transportation's new investments were mostly for bypasses and widening of country roads. If you add them up, they total $1 billion

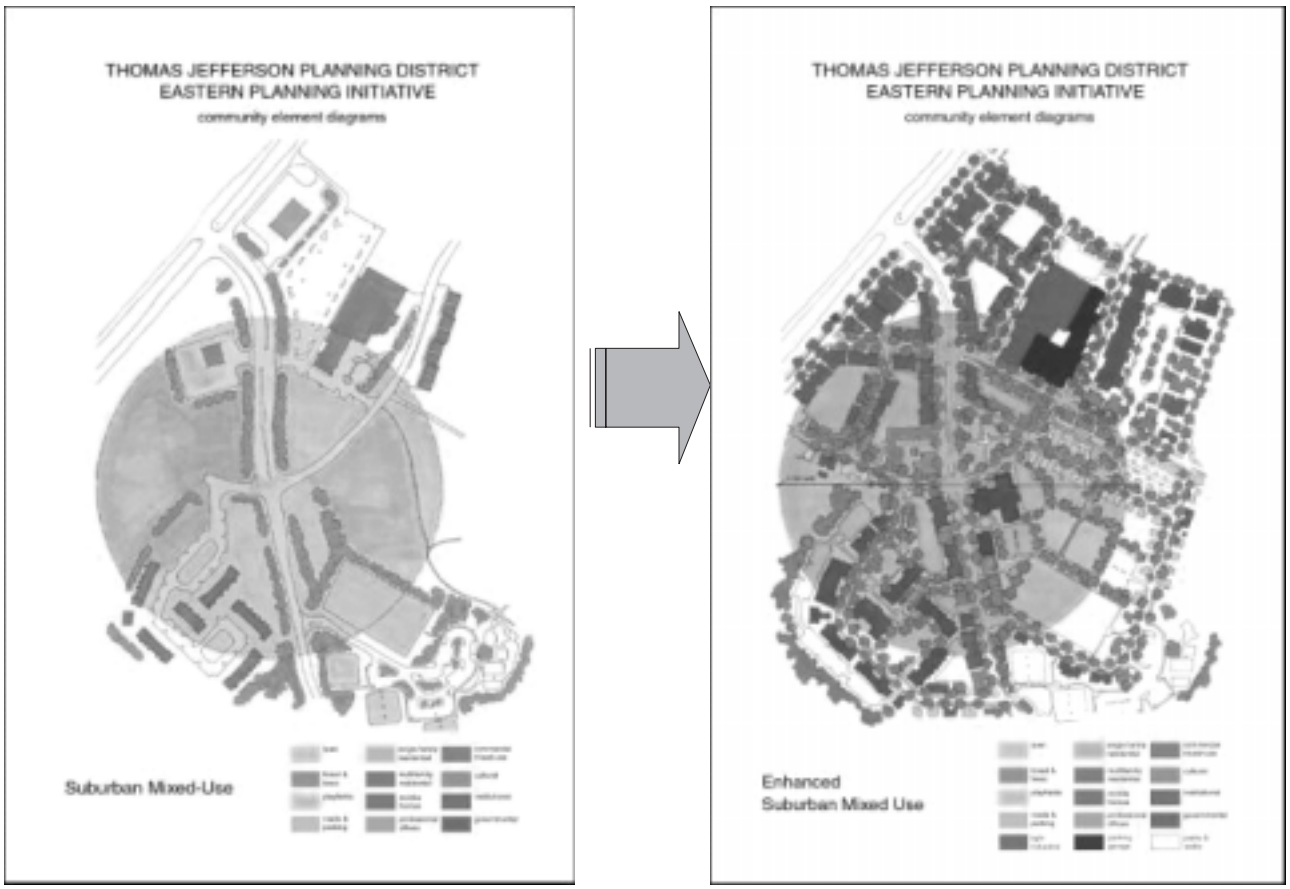

FIGURE 8 Enhanced suburban mixed use.

over 50 years. All of that would be in bypasses and wider roads, not transit. Under this scenario, 16 million miles are driven daily, and 44 percent of all miles driven are congested.

FIGURE 9 Dispersed scenario; $1 billion invested in bypasses and wider roads, not transit. Transportation results: 16 million miles driven daily, 44 percent in congestion.

In the two town centers and urban core scenarios, you would see a different pattern. Figure 10 shows less road building and much more transit express bus. This is because the growth was all focused on those town centers or urban core areas. The numbers are startling—$0.5 billion over 50 years (versus $1 billion), three-quarters of the miles driven daily (a 25 percent reduction), and 29 percent versus 44 percent of miles driven in congestion.

If you add priority transit (Figure 11), you spend the same amount of money and you get a minor reduction in miles driven and congested travel. There will be much more mobility and a little time savings. Contrary to the thinking when we first started, what made the difference was putting the growth into town centers. This is really the land use argument. That is where we have the bang for the bucks. We could spend another $0.5 billion on transit and get a bunch more reduction, but the big savings was in where and how you build the towns.

We realize that all of our congestion is because we have only these major, primary roads. When they built the region, they left out that connected grid—not neighborhood streets, but roads parallel to the main routes.

FIGURE 10 Town centers scenario before priority transit; $0.5 billion invested in roads and local transit. Transportation results: 12 million miles driven daily, 29 percent in congestion.

FIGURE 11 Town centers scenario with priority transit; $0.5 billion invested in roads and local transit; $0.5 billion in priority transit. Transportation results: 11 million miles driven daily, 25 percent in congestion.

The network between those town centers and neighborhoods is what produces the travel savings and the reduction in congestion.

Remember I talked in the beginning about the sustainability accords. Figure 12 shows the measures of those indicators. Town center is the one that people actually like the most. There is less interest in the other—nobody really likes the words "urban core." Everybody likes the words "town center." I think this is interesting. My friend here from Utah found the same thing. It is the middle road, exactly what they wanted. Notice the percentage of farms and forest saved and the

Measure/Sustainability Accord	Dis-persed	Town Ctr	CoreL	CoreM
Pct. Farms and Forests Retain resources/habitat/farms/forests	55	64	65	65
Pct. Developed Retain resources/habitat/farms/forests	45	36	35	35
Pct. Living in Clustered Communities Optimize use/cluster/human scale	13	61	68	68
Pct. Non-Auto Trips Transportation alternatives	4	15	18	18
Annual Gallons Gas Consumed (billions) Conserve energy	155	121	110	114
Pct. Travel Congested Employment/education access	44	27	20	21
Water Quality and Quantity Water quality and quantity	Poor	Good	Good	Good

FIGURE 12 In sum: how the scenarios compare (all scenarios assume approximately 330,000 population and 220,000 employment).

percentage developed—there is a big reduction from the sprawl scenario. The percentage living in clustered communities goes from 13 in sprawl to between 61 and 68 in the other scenarios. That is where we get the change.

The implementation strategy is the really hard part. This is a neat model, and fun to use. It communicates well, but actually making the changes is hard. Getting that kind of regional agreement is very difficult. We just had another polite argument about it at our recent commission meeting. Some people in the outlying areas are very nervous about people from Charlottesville telling them what to do. So even though that is not what is going on, there is a real history of reluctance. The idea of each county making these decisions is key. You can have regional agreements and consensus, but you can't have regional land use regulations. People have to make these decisions within their own counties, building where it makes sense, maintaining the small town viability, building quality communities, preserving the rural areas, coordinating investments—that is where our transportation work at the MPO comes in, along with ensuring equity.

The bottom line of the Eastern Planning Initiative study is that walkable communities supported by a good transportation network are a viable, sustainable, less expensive alternative to building freeways to accommodate dispersed growth.

Only one-sixth of the trips had to move from driving alone to walking, biking, or transit to produce those desired results. For most households, if you take 12 trips a day, one round-trip would make a difference.

Some suggestions: for the states and federal partners, help communities conduct and coordinate their own planning; support integrated land use, community design, and transportation planning; integrate locally based MPO plans into state plans; help the departments of transportation and MPOs be proactive in creating

urban communities; and then support inclusive processes.

I want to talk a little bit more about specifics on how to make that happen. Our old approach, 30 years ago, was to tell you what we wanted to do—go through and between places. If that is all we care about, pretty soon there will not be places worth going to. The new approach, context-sensitive design, can move lots of vehicles and still be safe for people and good for business. Let's look at some of the details.

Figure 13 is Charlottesville, Virginia. The portion of roadway shown on the bottom of the figure is the state road. The portion of roadway shown at the top is the county road. This is exactly where it crosses the river. You see the bridge and you can see the difference. On one side there is a nice median and trees. As soon as it goes over into the county, there is no median, and the road widens out. It carries exactly the same amount of traffic. It depends entirely on how the state works with local partners in the decisions to produce those details.

We have discovered that the Virginia Department of Transportation (VDOT) can do good work, and I think this would hold true in almost any of the other 49 states, when they are asked. Originally, for a new connector road, VDOT was going to build a five-lane underground tunnel. The city said it didn't need five lanes and didn't want the street to be buried; it wanted a street in the middle of the neighborhood that connects to other neighborhoods. This is three blocks from the University of Virginia, where there is a lot of pedestrian and transit traffic. They went through the battle and came up with a really nicely designed three-lane road with bike lanes and sidewalks and street trees and beautiful light fixtures. Now, VDOT is proud of that, but it is not going to do another one unless that locality insists on it. So as customers, you have to make some of the choices.

FIGURE 13 Charlottesville, Virginia (state road at bottom; county road at top).

We are quite proud in Charlottesville that we are the first city in Virginia that has gotten road funding flexed toward transit. This has been an ongoing battle, and the governor finally intervened this year. Now there is $200,000 per year flexed toward transit out of urban roadway funds. That is a big deal in Virginia. Our battle is to get the first sidewalk built out of urban roadway funds.

The state is also starting to look at installing roundabouts. The resident engineer asked me recently, "What is the name of that computer program that analyzes roundabouts?" They want to start looking at that for themselves. The state owns virtually all the roads in the entire system.

We know that as the region grows, travel times are going to get worse, and we are interested in looking at grayfields along Route 29, coming up with new land uses, and working to develop a bus rapid transit (BRT) system in those areas. We are required to develop a balanced plan; we just usually don't quite do it. So that is our focus right now—to come up with an investment plan that is balanced and coordinated with land use. We have been trying all kinds of public relations tools and interesting ways to look at these problems. We went out and packed one of the local streets with cars and then we started thinking in terms of moving people. We realized if we put those people on something like BRT, we could move the same number of people in one of the four lanes, and then focus on how they are going to get around once they get off the bus and use bike lanes and transit. We have an incredible amount of people-carrying capacity in our existing asphalt and concrete infrastructure. It is more of an operational and land use planning decision than it is about building all new roads in some cases.

We looked at some intersections. The Southern Environmental Law Center, as part of its lawsuit against DOT, looked at some ways to move through traffic at big suburban intersections and came up with a plan to bury the through traffic and get pedestrians across an eight-lane road. What we are trying to do at the MPO now is a study that will put the science behind this, and we want to do the engineering work to see if something like this would really work.

We are also looking at parking lots. It is one thing to make it easier to walk across the parking lot of the supermarket, but in our work in Honolulu on the BRT line, we looked at development opportunities in the grayfield malls and ways we might turn some of those into neighborhoods. There was an old Sears shopping center in La Brea, California, that now has new neighborhoods and commercial development on top of the old parking lot. It is being done around the country. We are also looking at intersections that can be reclaimed, building by building. We do visualizations just to check with people that this is what they want, and then we

figure out which rules we have to change to produce it. It usually starts with parking. We looked at ways to take gas stations back and still move the same number of people and cars.

It comes down to effective public process—getting people to the table; having a well-designed process; coming up with a comprehensive, exciting, visual plan; and proceeding with model projects even before the plan is done to get the public's faith. It doesn't replace governance and good business with anarchy. The people in the process, the designers, do their work. The developers on the projects and the decision makers, usually the elected officials, still make the tough decisions, and the plans get built.

It doesn't matter what you call it—it is getting people from the public and private sectors together to do the work. We always do citizen planner training for the groups on the basis of the principles in our manual. You know most of these principles—comparing places that are 6,000 years old with places that we know and love today, whether downtown Charlottesville or the new Disney Celebration. They copy our old towns. We like to get people out on the road, doing the roadwork, walking around, comparing streets. We involve young people and do the facilitator training. You have to make a plan. It doesn't have to be fancy, but people have to get their hands on it. It is always important to have them summarize, in their own words. It doesn't matter whether you do it on the computer or a crayon drawing. It has to have clear, simple principles, like the one we did in Honolulu to get the BRT approved. There were three goals: improve in-town mobility, strengthen islandwide connections, and foster livable communities. Everybody can remember those and it is almost enough to act on. The people in Honolulu were the ones that decided they didn't want a light rail line because of the wires and the cost. We went back to the drawing board and came up with BRT.

I'll end with one more visualization to inspire us. Figure 14 shows a really nasty, ugly, suburban highway in paradise—Honolulu—and we came up with some ideas for separating out through traffic from local traffic and reclaiming all that great, developable area next

FIGURE 14 Ugly suburban highway in Honolulu.

to the road. These are some of the policy angles: working with the adjacent landowners, assuming that a project would be initiated by somebody that could help make it happen; moving the buildings up to the street; landscaping; adding bike lanes, parking, and the street grid between the properties at the rear; and then seeing the mixed-use buildings come in one at a time, on adjacent properties. Then we thought, "This really isn't practical; we need to separate out the lanes. We can add the trees and make it look pretty, but if we separate out the through lanes from the service lanes and have a good plan for dealing with that at the signals, then we might have a chance of building something like what is shown in Figure 15." This has been done around the country, and some streets in Washington are like that.

FIGURE 15 Improved suburban highway.

So, whether you are building an on-road bike path, an off-road bike path, or whatever your first effort is, you sometimes need one of the most ungainly coalitions you can imagine to get it done.

Big and Small Things in the Bay Area

Steve Heminger, *Metropolitan Transportation Commission*

I will give a rather different talk from Harrison Rue that I hope is complementary, because his was quite practical and hands-on. Mine is a bit more philosophical and more in the vein of trying to challenge some of the assumptions that I think underlie this debate about smart growth.

I believe it is possible to do the right thing for the wrong reasons. Sometimes, that is just fine and we ought to get away with life's messy little compromises and move on. But I think the case of smart growth is such a tough uphill climb that if we are carrying too many untested assumptions on our back, we are going to make it a lot harder. We are also going to give more ammunition to critics who already have plenty of ammunition. So I think it is important to do the right thing for the right reasons, and that is why I'm going to try to highlight some of those points.

I think the first thing to highlight is the angle of decline, which is quite tall. I will read you one of my favorite quotes, which I think sums up the forces going in the other direction. This is from Harry Culver, the developer of Culver City in California—one of the great suburbs of America. "Whenever you can take a family out of an apartment house, out of the dust, dirt and smoke of a crowded city where it is throwing its rental money out the window each month and its health with it, and place that family in a fresh, pure, health-giving district in a home of its own, I want to say to you that you are not only starting that family out on the road to success, but you are rendering a service to the community and a service to humanity." That says it all, and that has been the creed for many years. In fact, it still is. This is a more recent quotation from a gentleman at Rutgers, a bit less ringing in its call, but I think thoroughly persuasive in its logic. "As you go farther out, your taxes fall, your housing generally costs less, your schools improve, you get increasing amounts of public recreation facilities, you are safer from crime, and you are more likely to be surrounded by people like yourselves." That last point is very important and often is not talked about in forums about smart growth.

Given its ability to deliver all that, no wonder the public loves sprawl. This is what is arrayed out there. I had omitted the next sentence of the quotation but I'll mention it now: "The only thing that is going to stop sprawl is if we run out of money to serve it." The next point I'm going to make is that we are basically on the verge of doing so.

Figure 1 shows interesting data from the Federal Highway Administration, which I would encourage all of you to look up. FHWA surveyed the 19 largest metropolitan areas in the country and looked at their long-range plans—which are, on average, from 20 to 30 years—to figure out where the money is going. So this is not looking back or fighting all the battles of the past 30 years, the highway revolts, and so forth. This is looking forward. Where do we intend to go? A couple of remarkable things surfaced. One of them is that we are going to spend about half the money on public transit. That is a very sizeable investment, especially given transit's current mode share.

Figure 2 shows the same data sliced a different way. On average, these 19 areas are going to spend two-thirds of the money on operation and maintenance

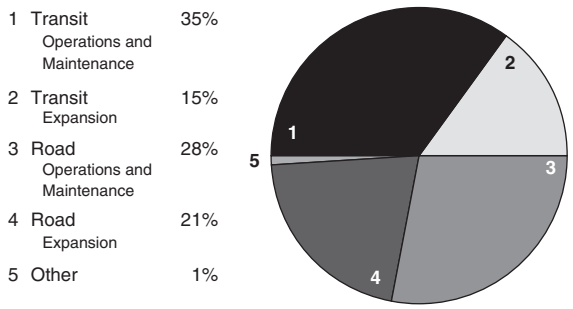

FIGURE 1 Regional transportation plans, top 19 metropolitan areas: average expenditures. (Source: FHWA.)

Metro Area	— Percent — Operations & Maintenance	Expansion
New York	69	31
Los Angeles	48	52
Chicago	81	19
Washington, D.C.	80	20
San Francisco	74	26
Philadelphia	73	27
Boston	81	19
Detroit	84	16
Dallas/Ft. Worth	43	57
Houston	53	47
Atlanta	51	49
Miami	64	36
Seattle	45	55
Phoenix	47	53
Minneapolis/St. Paul	50	50
Cleveland	91	9
San Diego	64	36
St. Louis	43	57
Denver	47	53
Average	63	37

FIGURE 2 Regional transportation plans, top 19 metropolitan areas: O&M versus expansion. (Source: FHWA.)

(O&M) of the existing system. That is simply because the systems are old, they are large, and they are very costly to maintain. That leaves very little for expansion. If you look, in fact, at the largest areas—the exception being the great one of Los Angeles—most of the large areas are spending even less than the average on expansion. The Bay Area is at 74 percent O&M, Washington at 80 percent, Chicago at 81 percent, Detroit at 84 percent, and Boston at 81 percent. That is important, because that is not just for the central city or the town centers. That is for the whole metropolitan region.

So one point is that this strategy, which is not necessarily a purposeful smart growth strategy, of spending money on the existing infrastructure is going to have a beneficial effect on those town centers and urban cores, because that is where most of this O&M money is spent. The new lines, out on the fringe, are not going to get most of this money. It will be the old systems, the big, heavy rail systems and the big highway systems that were built originally. That is Point 1.

Point 2: I titled my talk "Big and Small Things in the Bay Area." The second big thing we are trying to do about smart growth, which is called by a much longer, complicated title, is basically an effort by five regional-level agencies, MTC being one, in a nine-county region with 7 million people, to figure out how to grow smarter. Figure 3 shows what got us started on the project. It shows that the Bay Area, defined as the nine counties that touch the bay, is growing fairly slowly. Over this 40-year period, they grow fairly slowly, especially compared with the 10 counties that ring the 9 counties. In some cases you see population doubling over 40 years, which is pretty phenomenal growth.

In 1990, about 75,000 people were commuting from outside the Bay Area into it, and the projection is that by 2020, it will be 250,000. That is basically because we like to build jobs and not houses; that is our motto in the Bay Area. When you do that, you force people into very, very long commutes. This is the one that really scared us, because if that was going to happen, we as transportation professionals have to ask how we get all those people into jobs in the Bay Area. That is essentially the challenge we are dealing with in our region.

That is the challenge we were trying to deal with in this strategy. It is a challenge that perhaps is unique to our region, given the extreme housing shortage that we have. But at some level this challenge is fairly common across the country in terms of that dispersion. In this strategy, we looked at the three alternatives to the current base case shown in Figure 4. The base case is at the bot-

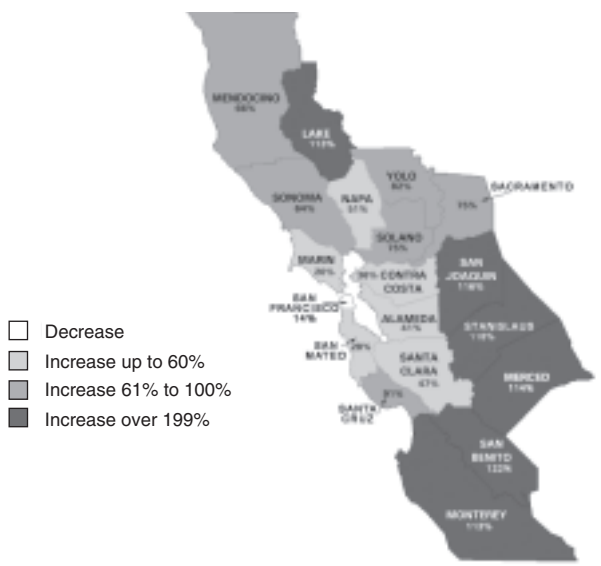

FIGURE 3 Total population growth: percentage change, 2000–2040. (Source: California Department of Finance.)

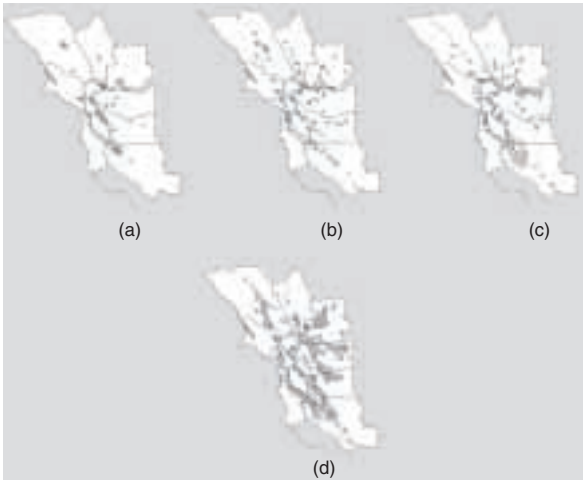

FIGURE 4 Maps show the impacts of three smart growth alternatives [(*a*) Alternative 1, central cities; (*b*) Alternative 2, network of neighborhoods; and (*c*) Alternative 3, smarter suburbs] and (*d*) the Current Trends Base Case on urbanization in the Bay Area in 2020. They indicate the primary areas of change in each alternative and the base case, including redevelopment of already developed areas (infill) and construction on currently undeveloped lands (greenfields).

tom. The current trends show where the underlying development will be. The alternatives, where the new growth is going to occur, are gradually more and more dispersed. The central cities alternative really focuses on San Jose, San Francisco, and Oakland, concentrating huge amounts of new growth there that are not currently projected to occur. The smarter suburbs alternative looks more at greenfield development.

Naturally, we are focused right now on the one in the middle, called network of neighborhoods. It is basically a transit-oriented development alternative around our rail systems in the Bay Area, and that seems to be the one catching people's fancy.

Figure 5 shows the consumption of greenfield acres for each alternative. I think this is where you can oversell smart growth and where the better arguments lie. In the base case, we have not only 83,000 acres of greenfield development in our region, but 45,000 acres out in the Central Valley and the Sacramento area. Those are residents we are exporting out there because we don't want to build them houses. The comparison of the alternatives is quite stark. This probably gives you a sense of the scale of the political challenge of accomplishing any of these alternatives, because the first alternative would have no greenfield development—all infill. Even the third one would have less than half of the development in our region.

What does that do to air quality? Figure 6 shows that it does not do much. That is one point to make right here. Smart growth, especially in the near term, but

FIGURE 5 Consumption of greenfield acres for each alternative.

VEHICULAR EMISSION CHARACTERISTICS (TONS/DAY)

CHARACTERISTIC	1998	2020 Base Case	Alt. 1	Alt. 2	Alt. 3
Reactive Organic Gases (ROG)	178	42	40	42	43
Nitrogen Oxides (NOx)	251	137	134	137	141
Carbon Monoxide (CO)	2,044	717	694	715	734
Carbon Dioxide (CO2)	473	609	590	599	616
Particulates (PM10)	84	84	80	82	84

FIGURE 6 Effects on air quality.

even in the long term, does not have much of an effect on air quality, at least here.

One reason that these data are a bit peculiar to our region is that we are taking about 200,000 people who would otherwise live outside the Bay Area and bringing them back in. They are bringing back their cars and their kids and all their problems, and that will have a countervailing effect, to some extent, on the infill benefits that you would gain through less travel and maybe taking more transit. My observation has been that this is one point where we have tended to oversell smart growth. For example, in comparing the base case with Alternative 2, in Figure 7, you can see where we seem to be headed. There is almost no detectable difference between the two alternatives. By 2020, no one knows what we will be driving, but it is going to be a lot cleaner than it is today. That is probably the one thing we know for sure.

Secondly, you don't find very large differences in transportation. If you look at the base case in terms of

Trip Characteristics

Work Trips	1998	2020 Base Case	Alt. 1	Alt. 2	Alt. 3
Percent Transit	9%	10%	15%	11%	11%
Percent Walk, Bike, Transit	13%	14%	20%	16%	14%
Total Trips					
Percent Transit	6%	6%	9%	7%	6%
Percent Walk, Bike, Transit	16%	16%	22%	19%	16%
Zero-Auto Households	9%	8%	11%	10%	9%
Total Vehicle Miles Traveled (millions of miles)	128	175	167	172	176

FIGURE 7 Trip characteristics under the alternatives.

transit trips, percent bike and walk, and so on, there is a larger difference between the base case and Alternative 1, in which we had a lot more infill and density in the major urban areas. With Alternative 2, which is more decentralized but still transit based, you pick up some benefit, but not a significant one. Again, I think there is a countervailing effect here of moving a lot of those in-commuters back into the region.

I wanted to amplify this because we did a different analysis several years ago that shows a larger difference. This is the more telling point in terms of policy makers and the public. In this analysis we compared the compact land use scenario. In Figure 8, the bar down at the bottom is probably analogous to Alternative 1—not identical, but similar. We compared it with infrastructure investment. In our region, of course, since we spend money on virtually nothing but public transit, we looked at all transit options. So one was a rail package at the top worth $12 billion. The second was a bus package worth $3 billion. The third was a ferry package worth $2 billion. You can add them all together and you will get up to the compact land use scenario in terms of benefits.

This is a very telling point for policy makers. Land use changes can affect the use of the infrastructure you've already built. These comparisons show that if you spend $10 billion on new transit, you will get about the same percentage increase in ridership as if you got more people to live where the existing stations are. That is the bottom line here, and I think that is a pretty powerful message.

I'm done with the big stuff now—on to the small. These are two of our programs, and I encourage people to lie, cheat, and steal them because that is why we developed them. One is called Transportation for Livable Communities, or TLC. The other is called HIP—Housing Incentive Program. They are both funded with federal flexible funds. David Burwell, at the Governor's Conference, showed that half of all the flexing done with federal money has occurred in California. We have done our share in the Bay Area. In this case, we are flexing highway money to these livability and housing incentive programs.

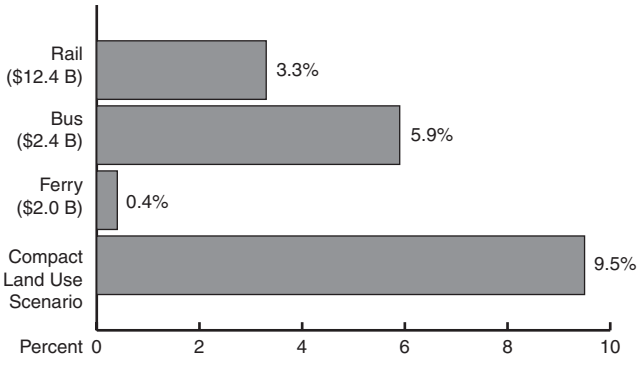

FIGURE 8 Comparison of blueprint packages, 2020 (percentage change in transit trips). (Source: MTC.)

TLC is intended to support transit-based development, as well as bicycle, pedestrian, and other kinds of activities at the community level. We have a planning program as well as a capital grant program. We've done quite a few projects by now. We are well into the several dozen projects that have moved through the planning and the capital phase, and just last year we started going to ground breakings. It is always nice to see the program actually take root in the region.

The planning program is intended to get these projects jump-started. They are often difficult to do. Sometimes you'll have a good planner, let's say at Bay Area Rapid Transit (BART), who wants to come up with a good project at a rail station, but he doesn't know who to talk to in the community. Sometimes it will be vice versa. One of the purposes of this program is to bring those two people together so that we can move the project through. We fund this planning component, by the way, not out of federal flexible funds, but out of our own agency budget. It is about $500,000 a year that comes out of our bottom line into the planning program. But the capital program is funded with federal flexible funds. The grants can go up to $2 million. We do have a local match component because of federal requirements, but we encourage overmatching to leverage the money further.

The new one is called HIP, which is more or less a straight bribe to local government to build more housing and, in particular, to build more housing near transit. The Bay Area has an acute housing problem, so we wouldn't mind if they built any housing, but if we can get people to build more housing near transit, we kill two birds with one stone. The more dense the housing, the more money they get. They get a bonus for affordable housing.

We just started this program, so we really don't have many results yet, and we are still waiting on the outcome. The critics say what we are really doing is not "incentivizing" but rewarding, and that may be true. But over the long term, rewards turn into incentives. As my former leader, Larry Dahms, used to say, carrots are sticks painted orange.

Let me conclude with some concrete results: pedestrian and bicycle access improvements at the suburban Concord BART station, a path in Marin County, and a downtown linkage in Santa Rosa, a downtown area that was split in two by a freeway. This is an attempt to try to piece it back together.

East Palo Alto is a very depressed, low-income community, and the idea is to get more development there. It is right next door to Stanford University. They are going to

create a transit village—an important example because it is near a bus transfer facility. This doesn't all have to be rail. We are doing it near bus and ferry facilities in our region.

I would like to leave with you the message that we don't need to oversell, because we have a pretty good product and a lot of good reasons to do it. I mentioned at the outset that quote about when you go further out there are more people like you. In my view, one of the strongest arguments for smart growth and infill is to get people back into more integrated, urban settings where their children can grow up in that kind of an environment and attend those schools. In my view, this is one of the last chances we have to deal with the subject that has bedeviled America for its entire history. I don't think we can approach this only as transportation professionals, saying if we can reduce vehicle miles of travel, then we ought to do smart growth, because it probably won't reduce vehicle miles of travel. But we should do smart growth for the right reasons, and we need coalitions to move the ball forward.

Smart Growth Transportation System in Seattle, Washington

Mary McCumber, *Puget Sound Regional Council*

I'm going to take a few minutes to reflect on what a smart growth transportation system looks like in another metropolitan region. On the basis of the two presentations we've had so far, a lot depends on local conditions—smart growth is a nice, big idea, and there are many different ways you can deal with the transportation system. The solution really depends on where you are and what issues you are facing. I'm going to talk about the Seattle metropolitan area and how we are dealing with this issue.

We are the Central Puget Sound region. We are a large region, more than 6,000 square miles. Seattle is the metropolitan center, but we have lots of governments—we like local home rule. We have four counties, 82 cities, and hundreds of special-purpose districts. We've gotten a lot of growth over the last decades, much of it related to jobs, and we have some concerns at the moment, but we have been a very high-growth area. We currently have 3.3 million people.

Between the 1960s and the early 1990s, we grew in different ways. We started to grow outside of our cities with much more sprawling land use and, even more important, without adequate infrastructure. Some good things happened to us. In the early 1990s, we had new mandates to "get our act together," and we had a population that was concerned about the wonderful place we live and what we were doing to it. So we passed, as a state, the State Growth Management Act in 1990 and 1991. Charlie Howard and I played a key role in that. We also were fortunate that the new federal legislation, the Intermodal Surface Transportation Efficiency Act and the Clean Air Act amendments, complemented what we needed to do because of the state growth strategy.

We were also fortunate because we were so concerned as a region in the late 1980s about what was happening within our region that elected officials voluntarily came together and agreed to a regional growth and transportation strategy. It was called Vision 2020, and to my knowledge, it was the first in the country. It was about concentrating growth, protecting businesses and open space in rural areas, and doing an urban growth area, which was very controversial. We weren't like Oregon and we took a long time to realize how right they were that the growth pattern should be within the urban area. We put a lot of focus into centers, diverse places throughout our region where people could live and work in quality communities, and connecting them with a good transportation system.

This vision, which was not required but which we did as a region, was in place in time to meet all those new mandates. We were pretty lucky. When I say that, some of the elected officials say they knew what they were doing, but I think it was more luck than anything else that those things came together.

We have started to measure our progress. Right now, we are putting out a new report called *Puget Sound Milestones: A Monitoring Report*. It is on our website (psrc.org), and highlights will be in our next monthly newsletter, *Regional View*. We measured the period between 1995 and 2000, the urban growth period: 16 percent of the land within our four-county region contains 86 percent of the population and 96 percent of the

jobs. That is a huge shift from where we were going with the trends in the 1980s.

We are also releasing [in September 2002] data on how those centers and diverse communities throughout our area are doing. They are doing really well. It is hard to go against the trend that we are bucking, but major things are happening. Seattle is a very healthy metropolitan center. We are lucky in that, but a lot of good decisions contributed to it.

Other older central cities are doing incredible things, provoking a major renaissance. Our rural towns that are growth centers are doing exceedingly well, and we have had major changes within some of those suburban edge cities that have reexamined their growth pattern.

Because of all the growth management planning that occurred in the 1990s, we were able to build off the regional growth strategy being implemented at the local level and do a new regional transportation plan in May 2001, titled Destination 2030. We brought together all the elected officials within our four-county region. We have a big political convention and we all have to come together. They vote on the basis of population, and we need a two-thirds vote to do a plan. So it is great in the sense that you get agreement; it is obviously hard work to get all those people together to do something meaningful.

We were able to address in that transportation plan update how to treat transportation on the basis of our regional growth strategy. We found that we had to do a lot of things. All that growth had occurred in a three-decade period without adequate infrastructure facilities. We needed to maintain and preserve our system. But we also needed some very big capital projects, so we had a system for moving around and choices within the urban growth area. We needed transit. We are still in a big debate about that, but we needed a high-capacity transit system. We needed roads within our region and we needed to finish the urban system within the urban growth area. We needed ferries, biking, walking, transportation demand management, transportation pricing, and all sorts of critical things that we talked about before.

One of the biggest things that happened with the adoption of Destination 2030 was getting elected officials in the region to stop talking about either roads or transit. We got people to talk about how we need both. It is not one or the other. It is the "where" that matters. In parts of our region, we don't need any more roads. We have a great system. In other parts of the region, we need to complete the road system so transit and other things can work.

In other parts of our region, within the urban growth area—everything I'm talking about is within that 16 percent of the land—we needed to have a complete transportation system. How can you bike, walk, and do other things if you don't have any way to move around? That was a breakthrough in our discussions. We are a place that cares about the quality of our community and environment. We had been blustering for years. You can't build your way out of congestion. We still believe that, but we also believe we need a complete system within our region.

Our map shows the regional growth strategy, the urban growth area, the centers, and the transportation system needed to make it happen. By working together in the same direction, these many jurisdictions and the state department of transportation all came together to agree on the strategy.

The big "but" is that we need to make it happen. We're the land of process. We like to look at things and then relook at them and reconsider what we should be doing. We need to get out of that habit. We need to get much more specific on those projects, fund them, and complete the system.

My conclusion is that I think it would be really difficult to do what we have done in such a complex region without our state growth management legislation. That gave us the necessary impetus to ask what the regional growth strategy was and what the transportation system needs were within our region to make it happen.

Achieving Functional Mobility

Frank Moretti, *Road Information Program*

I come at the smart growth discussion very conscious of the fact that I have been in the Washington, D.C., area for the past 15 years, living in Montgomery County. As I go around the country and attend a variety of conferences, often on this issue, I sense that the two groups still tend to talk right past each other. To some extent, this is the challenge in smart growth. Being on the steering committee for this panel, I was the one who asked that we have someone from Charlottesville come out and talk to our group because I was very impressed hearing Hannah Twaddell speak on this earlier in the year. I think they have done a nice job in trying to bridge those sometimes contradictory messages. One message is that obviously we are experiencing tremendous growth. We don't have a transportation system that can really meet the needs of the growth that exists, and the bottom line is that we need to build more capacity and more infrastructure.

The other message, I think a very appropriate one, is that for some reason we haven't done a very good job of building suburbs in terms of design and the type of transportation system that serves them. The way those communities are designed puts a lot of demands on our transportation system in an inefficient way. Unfortunately, the two issues are often discussed in a vacuum. Not until you put them together do you really start to move in the right direction. Our speakers discussed good ways to do that.

I think to some extent the census figures were a bit of a surprise to all of us. Much attention was paid to a real urban revitalization that occurred in the 1990s. Much less attention was paid to what was, by far, the predominant trend: significant dispersal of population. In Washington, I think sometimes we all tend to get so caught up in the rhetoric of these issues that we forget about what is actually happening out there in America. What was happening was significant and tremendous dispersal, often into suburban communities that no longer were even really attached to any city. The other thing the census documented is that urban density continues to decline. Obviously, smart growth should properly try to at least slow that trend, but I think we need to be very conscious of the decisions people are making.

The reality, obviously, is that most growth is occurring on the fringe. New suburban communities are being developed, and obviously taking advantage of infill opportunities in suburban areas is very appropriate for growth. But at the end of the day, I believe it was Anthony Downs at the Brookings Institution who said that the real challenge is orderly dispersal. We have no ability to stop dispersal, but we need to do it in a smarter way. Unfortunately, if we deny that dispersal is occurring, we tend to create a situation where people pretty much do whatever they want instead of taking a more reasonable approach. Since we are going to see significant dispersal, let's make sure it happens in a fashion that, as our speakers have discussed, is a much more logical progression.

Yesterday I heard a phrase that is the stake through the heart of anyone in the highway industry as I am: "You can't build your way out of congestion." As someone who often works in the area of public opinion, I have to admit it has been a very effective mantra in

terms of convincing people of the inability to build your way out of congestion. I think a lot of people are realizing that is really a false debate. The goal is not to get rid of traffic congestion in Los Angeles or Seattle. Building your way out of congestion suggests that we are trying to end traffic congestion. Clearly, that is not a reasonable goal. The real goal and the real challenge for a lot of large communities is to maintain some level of functional mobility so that your community still works. Obviously, the movement of freight in and out of areas is vital for their ability to remain viable.

In the Washington, D.C., area, the business community has become active in transportation because it is finding out that employees don't want to move to Washington. They think traffic is awful, and there are obviously other issues of crowding and home prices that come into play. But again, we are not trying to build our way out of congestion. We are asking how a region like Seattle, with massive continuing growth, or certainly the Bay Area and other places, can maintain adequate mobility and remain a viable region that people consider a good place to live and businesses consider a good place to locate.

When we put this conference together, we wanted to try to get into the real issues of how to pull together these sometimes disparate messages. I mentioned the Washington, D.C., area. To some extent it is the poster child for regions that moved toward a smart growth agenda in many ways, although not particularly in the community design area. Many of the suburban developments over the past 20 to 25 years haven't been particularly well planned. In essence, the transportation policy adopted over the past 25 to 30 years was to improve the transit system and not add any more significant roadway capacity. We have gotten a world-class transit system, one that I ride every day that does a very good job and is quite effective and was certainly needed. But we have massive traffic congestion.

When I moved into Montgomery County, to Gaithersburg, where probably 25,000 townhomes have been added, I was shocked on my way to the Metro station that I would have to drive along a two-lane road. One of the impediments was that one of the bridges had only one lane of traffic. It struck me that you could add 15,000 to 20,000 homes into a community and still have a one-lane bridge as one of the key roads to get people to the arterials. Montgomery County hasn't added the roads, and I find it somewhat refreshing that it has suddenly become the key political issue in the county. Politicians who traditionally would be talking about everything but transportation are now going into neighborhood meetings because that is clearly the dominant issue. What are you going to do? I think people in Montgomery County as in Northern Virginia aren't buying solutions that exclude expanding the roadway system. Obviously, that is the dominant mode of transportation. We certainly see the need for doing tremendous improvements in the area of pedestrian and bicycling facilities and continuing to improve the transit system. But the public is not buying the idea of not expanding any key roadways. Obviously, Washington has tremendous sprawl. Ignoring that issue clearly does not hold back sprawl.

The issue is how do you strike that balance between maintaining functional mobility, accommodating the vast majority of travel growth that we know will be on our roads, and moving your community in a direction of what I think is a much more rational way of designing communities and building new suburban communities in a way that is much more functional?

Discussion

Steve Heminger: I liked the phrase "orderly dispersal." I call it smart sprawl. I think that really is the challenge. The talk that I gave showed some very, very heroic assumptions about the amount of infill we would be able to do in the Bay Area and I really didn't tell you much about how we would do that because we don't know yet. One thing we do know is that we can't do it all with infill and we are going to need to learn how to grow smarter in the suburban areas. I think that means resisting the temptation to think we will do it by putting a rail line in every suburban community. There is not enough money in the plan to do that. Carpooling and telecommuting and express or rapid bus all are kinds of ways from a transportation point of view to try to serve new communities if they are developed in such a way as to support them, that would be smarter and that aren't going to cost us a fortune. I think that is an important step—to talk not about highways *or* transit, but to talk about options, and about where you put the right option.

Harrison Bright Rue: Orderly dispersal—to me, that was the town centers scenario that we looked at. Interestingly enough, when we went out to the public recently, we found almost unanimously the same desires in the urban community as we did in the very rural counties. Everybody wanted at least the option of living in a village or a neighborhood. They didn't know exactly how to go about that. I think that is our job as policy makers and as people who figure things out across agencies. But they wanted the choice; this is America. Our housing decisions are made on the basis of choice in the market and what is available. Of course, I think a town center is an easier thing to sell than dispersal, in terms of a marketing phrase.

Mary McCumber: I wanted to talk about the disorderly dispersal that occurred between 1960 and 1990 in the Central Puget Sound region in Washington State and the incredible job it is to come back to those areas. In the mid-1990s, when we developed the urban growth areas under the state's Growth Management Act, they were pretty big because you had already made major commitments to suburban development in those outlying edge areas. There was some infrastructure in other areas. So creating communities that use the land more effectively, doing the things we are talking about here at this conference, was incredibly hard. That is the challenge we face now. It is a lot easier to deal with issues within Seattle or Tacoma, our central cities, than it is on those outer edges, which are legally committed to urban-style development. That is our challenge.

I was taken aback by the fact that we are talking so much about dispersal and growth on the edge. If that edge never stops moving into the hinterland, I don't see how you ever come back and have the kind of discussion within those communities on the type and form of development within those communities. So it is a really tough issue in the United States and I don't think any of us can be very righteous about how great we are. But I contend that we are doing better in our region than we would have been if we hadn't taken the steps we did over the last decade.

Audience question: There are several aspects of urban infill. What are your observations on the resistance of areas to urban infill? I know in Seattle there is

quite a bit of resistance in the neighborhoods to the upzoning taking place. Also, what is an effective transportation strategy? In the city of Seattle, for example, a majority of people still use their cars to commute. It is a much higher transit percentage in the city of Seattle, but when you start infilling and densifying, you still have a significant auto component there. What are effective transportation strategies for denser urban areas? It is not like it is already there, because I don't think it is already there. We are starting to see growing congestion, which of course fuels the resistance to infill.

Steve Heminger: The Bay Area probably has half the nation's Sierra Club membership. Of course, those people don't want high density in their neighborhood either. So that question is a very significant one. Harrison mentioned that a lot of it has to do with words and pictures. We just had a campaign in one of our suburban areas, Livermore, on a growth issue and the antigrowth campaign mailer had nice, little suburban tract houses, and then right behind it was Cabrini Green from Chicago—implying, "That is what will happen to you." Part of it is that success breeds success. We can show people pictures; I now have some pictures of what this development looks like, and it doesn't look so bad. I don't want to be a Pollyanna about that. A lot of it has to do with incentives and bare-knuckle politics and having some leaders in those communities who are willing to say no to a lot of people who have shown up at a hearing. That is what it will take in many places.

The second point is another good one as well, and I think it ties into this subject of oversell. When you do infill, it is not as if those folks are not going to bring those cars into those houses. They will. That probably is going to mean some increased localized congestion. That is part of what comes along with living in a city. Some of it is to tell people that part of the bargain is that we might have more crowding in the schools unless we build more schools, but part of it is also looking at strategies. We are just starting something in our region called carsharing—it is like a guerilla car rental agency. It is a timeshare on a car, like a condo. It is one way to take that pressure off, but I think first and foremost is being honest about it. When you bring folks into an infill setting, it probably means that more of them are going to use transit to get to work, but they are still going to tool around on the weekend with a car and you have to find ways to deal with that.

Audience question: I am just giving some food for thought because our assumptions about how we will live in terms of driving behavior are very hard to predict now. As people are starting to infill and move in and change their lifestyles, they are doing things like timesharing cars because they think they need them, and then after awhile, they don't need them and then they become a liability. But that shift happens over a period of time and there is this uncomfortable period where you have too many cars and old behaviors clashing with new density and designs. Just something to think about as we are modeling for the future.

A question related to that: In the model that you all use, Steve, where air quality and congestion didn't improve much, were you using some of what Reid was presenting yesterday in terms of accounting for the influence of design on walk trips? I think that is a pretty important thing that models traditionally don't account for, and it might make a big difference in our predictions.

Steve Heminger: I wasn't here yesterday, so I can't answer. I think the largest message that I would draw from this is twofold. First of all, given what the fleet is going to be like in 2020, where people live will have a lot smaller influence than what they drive. Second, in this analysis, although not in every instance, we have a case where we are doing the opposite of orderly dispersal—we are bringing all those people back into the Bay Area, and that will have the unavoidable effect of increasing the number of people in vehicles.

Harrison Bright Rue: I want to mention two things. We are a small market, but we are approaching the carsharing program and trying to be one of the first small cities that does it. It is a very real strategy and I encourage you to look into it. The city realized that every weekend and evening we have 100 to 150 paid-for cars in our fleet, all the cars our employees drive around, that we could be letting the public use. So some cities already have that asset. It is something to think about.

I wanted to go back to the first question. The key to getting over this NIMBY resistance is to push the decisions onto the neighborhood. In Honolulu, we got the neighborhood leaders together and did maps. The question was, "Do you want it to grow or not? If you think some places need to get fixed, mark them on the maps. Tell us how you want to fix them." You know they will say that they want walkable neighborhoods, windows and doors on the street, but not too much density. Then do visualizations of what might happen on that site. One picture shows a warehouse neighborhood and an intersection with a BRT stop, right next to a park. Then show them what it would look like over time. Bring it back to them and test it. We used their assent to these images to recreate the downtown development plan.

Audience question: This is a rebuttal and a comment. The comment is, Look at what kinds of roads you are actually building. When you talk about arterials and following the "plumbing system" approach to an arterial so you can get to work, that is the old system. When you look at a typical urban area, average trip length is less than 3 miles across the board. There is a good opportunity to go back to a connected street system of smaller streets that probably occupy about the same amount or maybe even more of the landscape, but they

are streets that people can live with. I think that is what you are seeing when you have bad reactions to roads. It is not the idea of having a road, but that they are so darned ugly and they have been built poorly now for 40 to 50 years. The roads themselves are opposed by NIMBYs. I think the issue is more about design than about whether to build roads.

Frank Moretti: I think certainly the public will say generically we want more capacity so we can get places, but at the same time, when it comes to their community, it becomes an issue of design. I think Montgomery County, where I live, is a pretty good example.

The types of roads we need to build probably look a lot different from what we built in the past, in terms of the amenities that go along with those projects and the way they are designed. Some of the examples we saw in Harrison's discussion were pretty applicable. To some extent, that has been poorly managed by the business community and regional groups who keep saying we need additional capacity. They are still perceived as selling a product that, to some extent, has gone out of style. In trying to get these two groups together, what needs to be discussed is connectivity, adding turn lanes in certain areas, and in some corridors where capacity does need to be expanded, achieving a high threshold. To do any capacity work in an urban market, the threshold appropriately is quite high in terms of how it affects that community. I think this discussion is the correct one; it is getting at real solutions that can work politically.

I know in Wisconsin, to use an example, there is a proposal to do some expansion work on the freeway system there and the local governments are vetting it. As you can imagine, there is a great deal of discussion about its appropriateness. In the midst of that, the state legislature just passed a law that the region would have to expand capacity at the rate of travel growth, or something to that effect, unmindful of local political realities or how regional governments work. It is that dichotomy that needs to be addressed, between those who simply say keep adding capacity and the local realities that you have to be selective in how you do that.

Audience question: I have another hard question for Harrison. I was a little surprised by the results of your travel demand simulations. They may have been about what we have expected, but the magnitude was greater than similar types of analyses I've seen in other areas, especially in terms of the amount of reduction in vehicle miles of travel. I was also a little bit surprised by the observation you made about the decrease in congested travel associated with the compact alternatives. I would have expected some localized congestion. I was wondering if you could talk about the type of modeling you did for the purpose of this exercise.

Harrison Bright Rue: I'm going to hand that question about modeling over to Hannah Twaddell. She is actually the lead person for the study. For those of you who want to talk about the details, she has actually gone over to the consultant side and is doing similar work. But first, the key point from that study was really the connected roads. That is the orderly dispersal element—giving people what they want—a walkable village, in a town center, and even in those small neighborhoods out in the country. Growth implies not so much infill, but adding incrementally to the rest of the urban area, and then providing that connected grid. In Charlottesville, we have an eight-lane road and there are almost no parallel roads. Almost everything they are building is this one pod on that main road. So I think the real congestion benefits were in adding the connected roads. If you look at that $500 million investment over 50 years, most of it was new roads and smaller-scale ones, connecting those things so you don't have to go out onto the main arterial. Hannah, do you want to handle the modeling?

Hannah Twaddell: What we tried to do was take the work that Reid and Robert Cervero have done on the influence of design in shifting car trips to walk trips and build those assumptions into the modeling process. So we took those prototypical communities with enhanced suburban design, for example. When we ran scenarios where there were areas that grew in that enhanced suburban or urban mode, we made some assumptions on the basis of the research about the different shift you would get, the mode split you would get in walk trips. That wound up creating that market for transit. So I think that had a lot to do with the reduced vehicle miles of travel, but it was somewhat experimental. We tried to be as conservative as we could, but I have a feeling that is why it was different from what Steve got and what a lot of the models do now.

We did use TRANPLAN. We used a typical four-step model for the modeling process. But we did change some of the assumptions about the mode split on the basis of that research on the influence of urban design. So I think that is probably the answer to your question about why this one looked a little different. It is kind of fun to start working on that and talking about how we can use our models a little differently to try to account for that. But I think crystal balls are hard in any case. Certainly, what I have picked up today is that we may have totally different behaviors that aren't walking or driving that we need to account for, like motor scooters and golf carts and all the things that we may be doing 50 years out.

Audience question: The Centers for Disease Control and Prevention have taken an active interest in this issue of livability in the past year and a half because of the health consequences. I would just like to introduce that

into the whole view because I think this area can benefit from our discussions.

Principally, there are three health consequences we talk about: (*a*) the improvement in air quality; (*b*) obesity abatement, which you have heard about in the newspapers these days; and (*c*) safety, whether personal safety from crime or a reduction in motor vehicle crashes. Whether it is transit or infill, you are basically affecting those three things because you are either making more time for recreation and exercise or you are reducing the exposure to motor vehicle crashes, since there are 40,000 deaths in the United States from motor vehicle crashes a year, or you are reducing the amount of point source pollution. So I hope those three health consequences can be a part of all these discussions, if not in the foreground, at least in the background.

Keynote Presentation

Introduction

John Porcari, *Maryland Department of Transportation*

Good afternoon. I'm Maryland Transportation Secretary John Porcari. It is my pleasure to welcome you here to Baltimore for this landmark conference on smart growth in transportation. We have a wide range of notable speakers and panelists from the transportation planning and environmental areas. We are very lucky to have such an excellent collection of talent.

This kind of brain power and expertise is one of the keys to fostering healthy debate and discussion on smart growth and the opportunities that smart growth creates in transportation. Among the distinguished smart growth leaders is our keynote speaker this afternoon. A college professor by trade, he brings to the job of governor the unique combination of teacher and leader. This combination has served him well as he has worked with the legislature and our citizens in Maryland on the critical need to change the way we think about development, transportation, the environment, and in fact our future. It is that same combination that allows him to explain and promote the merits of smart growth across America and around the globe.

After working with our speaker for many years, the last four as Transportation Secretary, I can tell you that Governor Glendening deeply believes in smart growth. He sees the future and the positive impact we can have on our children and our grandchildren. Since the early days of the administration in 1995, Governor Glendening has worked tirelessly to build the foundation for one of the most progressive smart growth agendas in the nation. In 1997, that vision became law in Maryland, and today smart growth is part of the way that we do business here in Maryland. It has not always been easy, and there has been a lot of work and innovation along the way. But through the governor's leadership and his rock solid belief in the principles of smart growth, we're overcoming obstacles. We are literally changing the face of the state of Maryland.

Governor Glendening's efforts have been recognized by varied interests around the country. His smart growth–enabled conservation initiative, for example, was judged to be one of the most innovative government programs in the country by Harvard University's Kennedy School of Government. This year, the Sustainable Energy Institute presented Governor Glendening with the Sustainable Energy Top Ten award for his commitment and leadership in protecting the environment, preserving natural resources, and promoting mass transit.

Among the other lists of honors related to smart growth are the Truitt Environmental Award from the University of Maryland, Center for Environmental Sciences, for the commitment to restore and protect the Chesapeake Bay—Maryland's treasure. Maryland also received a charter award from the Congress for New Urbanism for the smart growth–enabled conservation initiative. Ladies and gentlemen, it is my privilege and honor to introduce to you a real champion of smart growth and transportation, the Governor of the State of Maryland, Parris Glendening.

Presentation

Parris N. Glendening, *Governor, State of Maryland*

Thank you very much. John Porcari, our state's transportation secretary, lives within walking distance of the Metro system, uses it all the time, and says, "Why don't we extend it even further?" He says that to me every time I have his budget before us. He has done a great job and I appreciate it.

By the way, John said I was a professor by trade who has gone into politics. I'm reminded of the story about the first grader who is asked to write an essay on Socrates. The essay is very brief. He says, "Socrates was a great teacher who went around giving advice to people—and they poisoned him." With that in mind, I'm always a little bit cautious about linking all of these things. But I am very pleased to be here this afternoon and to welcome you to Maryland and to Baltimore.

I'm also pleased to say "Welcome to Maryland" because this is a state that takes smart growth very seriously. I don't know whether some of you have seen it—Marylanders obviously have, but in most transportation projects statewide, you'll actually see a sign that now says, "Smart Growth Starts Here." In fact, that was one of John's contributions to our effort. In Maryland, we see smart growth as a fundamental model of how to run our various agencies, not just transportation or housing or planning. We also see it as a long-term commitment, not just a trend. It is, in our mind, the way a state does business, the way a state should do business. Every new project that we have, in any area whatsoever, must be able to live up to the principles of smart growth. In fact, we have made the entire state budget, a $22 billion budget, a tool for smart growth. Literally every project must pass through a screening test in which there is a fundamental, basic question asked: does this expenditure, capital or operating, contribute to sprawl, or does it help with the viability of existing communities? We have created not only an Office of Smart Growth to oversee this, but a special Secretary for Smart Growth. We also have a Smart Growth Subcabinet, in which the key departments come together on a regular basis, not only to review the overall direction for the state but also to review budgets to see how the agencies are doing, consistent with these goals.

I know we are all interested in transportation here, but when you get to the courts, for example, the location of that courthouse has a huge impact. Same for the university system. I remember the mayor of Hagerstown called me one time and said, "If you are so much for smart growth, why are you building a new campus out on the Interstate?" I said, "I don't know. That's a good question, let me check." So, I met with the university personnel and they took me up to show me this site. It was beautiful. It was rolling hills and there were still some cattle and it was just wonderful. I said to the representative from the university who was there with me, "So tell me, how will the students and faculty get here?" He said, "That is the great part—the new interchange is going right over here." I said, "Where is the transit or anything like this?" He said, "Everyone will need to drive not only to the university, but to go off-campus to get a meal or anything." We relocated the proposed campus. The new campus is now under construction in downtown Hagerstown. I say it this way because part of our mission is to review the entire budget and ask whether it contributes to sprawl or to the viability of existing communities.

In another example, young families make decisions about housing location largely on the basis of the schools. Almost always, a young family will ask where the schools are and what they are like. We know what has been happening in recent years all across this country. The newer schools are always built out there somewhere in the sprawl to accommodate the growth. So a young family looks around in a long-established community and they see that the long-established school does not have the technology or the new science wing and simply does not meet the same standards as this school out there.

When I became governor, about 43 percent of our school construction funding went to older schools in older areas of Maryland. We pay between 50 and 90 percent of school construction, depending on the income of the local jurisdiction. But 43 percent went into the older communities and the rest went to accommodate sprawl. I am pleased that as of last year, 80 percent of the school construction budget went to existing communities. Just as an example: if you know the Montgomery County/Takoma Park/Silver Spring area [in suburban Washington, D.C.], we opened five new schools from total renovations or replacements in one school year's time. Instead of people saying, "To get to my new school I have to drive all the way out I-270," they know that it is right there along with the mass transit and everything else.

Another example of how smart growth actions can affect everyone is in the area of land preservation. We have made an aggressive effort in land preservation. Like most states, we were being devoured by sprawl. The statistic that has always amazed me is that if we continued the existing pattern in the central part of the state, it would consume more land in the next 25 years than we did in the first 360 years. We are in the process of losing not only our farms and forests and open space but our central cities and smaller central communities, as well as our deteriorating older suburban areas. We were wasting literally hundreds of millions of dollars to accommodate sprawl. Today, together with some innovative programs that the legislature approved, including our Green Print and Rural Legacy programs, we are now permanently preserving, over the past 2 years, more land for future use than is being lost to development. To the best of my knowledge, we are the only state in the country doing this: we are *permanently* preserving. That is, permanent easements have outright purchased more land than is being lost to development. In fact, I think what you'll see increasingly across the country is a movement to permanently preserve at least one acre for each acre of land lost to development. There would be agricultural easements and so on. If we are going to be successful, I think this is essential.

Part of our whole effort is that by making better land use decisions and targeting our resources to existing communities, we are, in fact, doing something that is very fiscally conservative: saving our taxpayers the high cost of subsidizing sprawl. Just as we have changed the way we do business with our capital and operating budget, so too are we changing the way we do business with our transportation budget. Maryland's $9.1 billion, 6-year transportation budget has, in effect, become an incentive fund, a policy guideline for smart growth.

Throughout the process, we have recognized that government policies often inadvertently encourage sprawl. I don't know how many of you saw the recent History Channel presentation on growth that talked about opening up the suburbs and how these policies were so well designed and what their economic basis was. These policies created not only sprawl but the economic segregation that has occurred in many of our communities.

We are very much aware that good, well-intended policies often have the inadvertent result of encouraging sprawl. Therefore, it became clear that we need new government policies to encourage investment in existing communities and in smart growth areas (or whatever they may be called) in a particular state. We have taken a carrot-and-stick approach in which each county identifies what we call "priority funding areas," the more technical, less sexy name for smart growth communities. These priority funding areas are the state-approved areas where new growth will occur. They automatically include all incorporated towns and cities.

If local decision makers approve development projects outside of the designated areas, we simply say, "Sorry, the state is not going to help pay for this. We are not going to help subsidize the cost of the decision you have made in terms of zoning. If you, in fact, destroy one more farm or one more field, then you pay for all of the infrastructure. You pay for the schools, you pay for the parks, you pay for the water and sewer, and you pay for the roads." We don't really care who the "you" is. It can be the local government if it thinks its development decision is best. It could be the builders themselves. The point is, the state will no longer use its tax dollars to subsidize those sprawl decisions.

On the carrot side, however, we say, "If you invest in our existing communities or in the locally designated state-approved growth areas, then you can avoid these costs because the state pays most or a good portion of all those different needs—the water, sewer, roads, schools, and so forth. In addition, you will have access to state tax credits, grants, low interest loans, and other incentives." Also as part of smart growth, if a project is coming along and it is not in a smart growth area, they are not eligible for those different tax credits and other incentives. In fact, we are trying to change the bottom line so that an equal project makes more sense from a financial perspective in a smart growth community.

I do know that there is always a great concern, especially in times like this when the economy is very tight and you are talking about smart growth, about the economic impact. One very important framework to keep in mind is that smart growth does not mean no growth. It does not even mean slow growth. As proof, Maryland's economy continues to surge ahead of the national average. We are outperforming almost all other states, and we are certainly outperforming almost all the states in the mid-Atlantic area. Our unemployment rate remains well below the national average, and the most recent Census Bureau figures show that Maryland now has the highest household family income in the nation, the lowest overall poverty rate, and the lowest child poverty rate. We are doing this at the same time that we are a national leader in the smart growth, antisprawl environmental movement. Clearly, you can have a strong, growing economy without sacrificing the environment and without producing sprawl if you are willing to rethink the way you do business.

When I say that, I'm very much aware that people will often tell you (because they always tell me) there are just two types of growth that they absolutely hate, sprawl and density, and they are equally vigorously opposed to both. Obviously, those are the only two options. I know that some of you may still be skeptical about smart growth and even hostile to the program. But it is important to note that I agree with you on one major point, and that is, if you are for open space, if you are for the environment, if you are for smart growth, then you must also be for building, for development, for growth where it is appropriate, and you must be willing to aggressively support the density that is needed to go with that.

I also say to my friends in the green movement and the environmental movement that key environmental groups also must recognize this fact and be willing to step up in support of development where appropriate.

Just to give you one quick example: In Takoma Park, just outside Washington, D.C., I started getting all these letters and calls from citizens complaining about a proposal on the District of Columbia side. They asked me to intervene with my friend, Mayor Anthony Williams. There were several acres of land where a developer had proposed building fairly high-end town houses because they were literally a block from the Metro subway station. They said the kids played ball on these lots and they didn't want these town houses. I talked to the mayor down there and the town houses were going to run about $300,000. He said this was exactly the type of development they needed in this area. Part of it was the high density because it was right next to the Metro stop. Takoma Park, by the way, has a large number of small community parks. We met with some of the leaders on this, and we asked to help. We told them we supported that development and it ought to go ahead. In fact, my understanding is that it is under construction now. It ought to go ahead. It doesn't make any sense to have an $8 billion mass transit system and not build around it. Those are the types of decisions we are going to be serious about. We have to be willing to stand up and not only say "no" to some things, but to say "yes" to other projects.

Just as smart growth does not mean no growth, so too smart growth does not mean no roads or highways. The smart growth approach simply calls for a different balance when directing highway and road construction. In fact, transportation investment is one of the most powerful tools that we have to implement smart growth. At the Maryland Department of Transportation (DOT), I am very pleased with the leadership that John Porcari has given on this. The Maryland DOT has focused on developing a balanced transportation system by incorporating land use and economic development goals into its overall projects. The department recognizes it can help produce vibrant communities. That sounds like an innocent statement, to say that economic development and land use policies should be part of this. But you do run into, as everyone here knows, a group of people who believe that if you are not talking about just traditional concrete road construction, that somehow or other you are misusing the state transportation trust fund. Our approach is that we use it for a variety of reasons, but all of them end up doing the same thing, which ought to be our goal: helping create vibrant communities and helping to move people and goods.

Maryland boasts a large number of examples of livable communities using the smart growth principles. From Maryland's Eastern Shore to southern Maryland and from the D.C. suburbs to right here in Baltimore, we are seeing older, distressed communities come back to life with modernized schools, businesses, and young families. In many of these success stories, it is, in fact, the innovative, community-based transportation construction projects that have helped lead the transformation. For example, a traffic circle in the Baltimore suburb of Towson was designed both to reduce congestion and to produce a more walkable business district. Towson is divided by two major highways in each direction. Some redevelopment and private-sector money was coming in, but a major issue was that it wasn't pedestrian-friendly. The town was separated from the business section, and one of the things it ended up doing was putting in a roundabout and making the entire area much more business-friendly. If you go to that area now, you see significant additional private-sector dollars coming in.

Likewise, a new partnership in the D.C. suburb of Mount Rainier extended sidewalks and built transportation infrastructure to create a better-connected, more

accessible community. Once again, you see private-sector dollar investments following that.

By investing in these communities, we are trying to preserve their places as vibrant centers of commerce and culture and residential living, and to produce a renaissance in a community that had been struggling before. Maryland demonstrates, I believe, that transportation dollars can be effectively leveraged to achieve other goals—community redevelopment goals, transportation goals, and business development goals. To some extent, it becomes a question of which is the horse and which is the cart, and which do you focus on first.

With public and private investments, we can help redevelop existing communities. One major portion of that, of course, is to expand dramatically the mass transit options. Our transit goal is to double daily transit ridership from more than a half-million riders per day in 2000 to a million riders per day in 2020. Reaching those goals, however, means making transit more convenient and more accessible. We are creating outstanding public spaces and corridors near where people of diverse incomes live and work and invest, and we are connecting those public spaces with efficient, balanced transit. We are also in the process of providing people with the goods and services that they need near the transit stations. Taken together, these are having a tremendous impact in a large number of communities as we go about the process of revitalization.

We have changed the face of transportation in Maryland, and I'm pleased that so many other states are working with us and following this vision. However, to realize its full potential, smart growth must have the national government engaged as an active partner. We worked with members of the last administration and this administration as well as members of Congress on this issue. We are talking about a variety of areas. For example, all small business loans are largely treated equally. With the exception of an empowerment zone or something like it, it doesn't make any difference if a small business loan will tear down a forest to start a new small business or invest in a long-established community. We believe there ought to be changes, so the priorities are given to those areas that have long been established.

You can go through area after area. Talk with the federal government about location of facilities. I'm not talking about the competition among states, which is part of the normal political process. But once the decision is made within a state (for example, where we relocate an FBI office), then the actual location ought to give priority to smart growth areas designated entirely by state and local decision makers, not by the national government.

The emergence of smart growth as a federal issue is becoming increasingly clear. The major point is that much of this focus will be on federal transportation funding, which continues to overwhelmingly favor new roads while shortchanging transit. I believe this is not only shortsighted but unfair. In the Transportation Equity Act for the 21st Century, for example, $171 billion went toward highways, with only $40 billion going to transit. This again continues the long-established roughly 80/20 split. I talked to a number of people about this, and you always get the same response: if you are riding transit, people ought to pay part of the cost. But in fact, we subsidize roads and bridges and other types of transit and do not expect people to pay part of that cost. We believe there ought to be a much better balance instead of this 80/20 bias. We are doing this here in Maryland, and we offer models that we hope lend some credence over the long term to the national government.

Last year, for example, for the first time in the state's history, the amount of capital investment for transit was roughly equal to the amount of highway investment. Think about that for a second. Capital investment for the state for transit was roughly equal to highway investment. Again, I emphasize that smart growth does not mean stopping all highway construction. Smart growth means finding an equitable balance to support transit and roads.

Let me close this afternoon with what I think is a fundamental issue. What is our vision of the future? I believe there are two competing visions, both for Maryland and indeed for America's future. We can have a worsening quality of life, one in which we spend 10 hours or more per week sitting in traffic, and one in which we have to endure unbearable smog and air pollution. As an aside, I hope everyone noticed that children's asthma doubled in the past two decades, almost all a result of air quality. We can't have a future in which we continue to lose businesses because people simply are unwilling to fight traffic congestion to get to them. Or we can have a better future—one in which traveling to work or anywhere is affordable and convenient with public transit, where walking on sidewalks and using bicycle-friendly facilities are real options instead of being forced into our cars simply to get a quart of milk, and in which breathing becomes easier because our air is less polluted.

I believe that smart growth is a political culture that is profound in its rewards. As transportation planners, you can help make this vision a reality. I believe that by embracing smart growth we can achieve a better future for transportation in America and indeed in communities that so desperately need it. I also believe that by helping these decisions and spreading the word about smart growth in transportation, we can, in fact, change the vision for our future. When I say that, by the way, people will say that sprawl and everything else are there

and these are our choices. Can you really change this? Is this realistic? I remind everyone that we didn't get into the condition of sprawl and abandoning so many of our cities and long-established communities overnight. We have worked very, very hard for the past seven decades to get where we are, starting roughly in the 1950s with the Interstate highway program and with some of the post–World War II and post–Korean War mortgage programs and so on. We have worked very hard to do this. This is not just an accident. I recognize it is going to take a lot of work as well, and it is going to take a long time. If every single state changed its policies today, which I assure you is unlikely, it would still take decades before we truly see the type of vision that we are outlining.

Let me leave you with a story. If you keep the story in mind, it will help give you encouragement when you get discouraged about some of these things. The story is told about a coed over at the University of Maryland back in the 1970s, when we had these annual riots and what we called "the annual burning of the campus." The coed wrote her parents a little letter that said, "Dear Mom and Dad, I'm sorry to be so long in writing, but the demonstrators destroyed all the stationery when they burned down the dorm. Please don't worry about my eyesight—the doctors say it is only smoke damage and I should be able to see again in two or three weeks. And please don't worry about where I'm living—that kind boy, Bill, has offered to share his apartment with me. Mom and Dad, I know you have always wanted to be grandparents, and you will be pleased to know that you will be 6 months from now. New paragraph: Please disregard the above exercise in English composition. There was no fire; I'm not hurt; I'm not pregnant—in fact, I don't even have a boyfriend. But I did receive a B in Chemistry and an F in French and I wanted to be sure you received the news in the proper perspective."

Thank you very much.

Where

How Does Smart Growth Differ with Location?

Introduction

Charles Howard, *Washington State Department of Transportation*

Our first speaker is going to be Luann Hamilton. Luann is the Director of the Transportation Planning Division of the Chicago Department of Transportation, and she is going to be dealing with the urban infill example.

The second presenter is Mike Cummings. He is the Environmental Systems Director at the Urban Corridors Office, which is the group in our Department of Transportation in Washington State that is developing some major projects in the Seattle area. He is going to be talking about the I-405 redevelopment, a suburban ring corridor.

Jim DeGrood will be our last presenter. Jim is the Development Services Administrator for the town of Marana, Arizona. He is going to be talking about growth in the urban fringe.

Smart Transportation in Chicago

Luann Hamilton, *Chicago Department of Transportation*

I wanted to start by giving you some background on Chicago. There are more than 8 million people in our six-county metropolitan area as of 2000, and about 2.9 million live in the city itself. Chicago reached a peak population of 3.5 million or 3.6 million in the 1950s. We have come down somewhat, but during the 1990s we grew from 2.7 million to 2.9 million, so we are on our way back up toward the 3 million range.

When we think of smart growth and what places epitomize it, older central cities quickly come to mind. I was speaking with someone today from Boston, and we were saying that some of the issues discussed this morning—what people are trying to achieve in their communities—we already have in our old central cities. Cities like Chicago grew up before the automobile age and are thus already suited for a less auto-dependent way of life. This is particularly true of Chicago's downtown. Transit, including our commuter rail system Metra, rapid transit, and bus, is readily available there. Indeed, the downtown is the hub of all the transit services in the region. Our blocks are short. Our sidewalks tend to be wide. Buildings hug the property line and face the street, providing a walkable environment.

In the last two decades of the 20th century, new residential areas developed in and near the downtown, including conversions of older manufacturing and warehouse buildings into lofts, redevelopment of old rail yards into communities like Dearborn Park and Central Station, and, most recently, conversion of older office buildings in the heart of downtown into condominiums. As a result, our central area population increased 56 percent between 1980 and 2000, to 83,000, which included a net increase of 23,000 housing units. This proximity of housing to workplace makes it practical for workers to ride their bikes to work, walk, or take a short bus or taxi ride. It also ensures that the downtown streets stay lively in the evening and on the weekends.

However, even places like downtown Chicago face challenges that require smart growth solutions. During the post–World War II years, downtown streets were widened and some sidewalks were narrowed to make room for more cars. The goal was to move quickly between outlying homes and downtown jobs. As we now know, such roadway enhancements facilitated the suburbanization of housing while diminishing the attractiveness of the downtown itself. Although our downtown continued to grow, most of the new growth over the past few decades has been outside our traditional central business district, in areas with less community transit service.

Figure 1 shows our current central area boundary. Our core central business district is on the right, bounded by the Chicago River on the north and west, Congress Parkway, and Grant Park. A lot of development occurred north of the river in the areas called Streeterville, North Michigan Avenue, and River North. These areas, while they have transit, aren't at the center of the regional system. At the same time, suburban office space grew at a faster rate, diminishing the downtown's share of new office development. While the central area still contains about 55 percent of the region's total office space, which is pretty good (the only place that has more is New York City, with 62 percent), we captured only 40 percent of new development in the

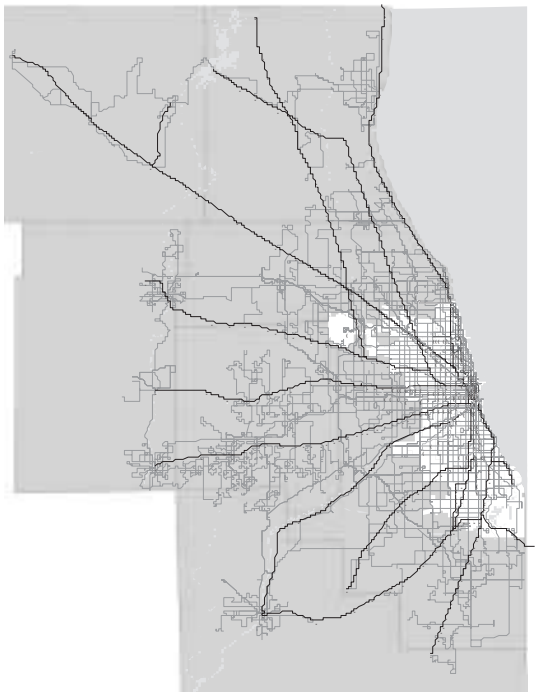

FIGURE 1 Regional transit network focuses on central area.

1990s. And some of the newer central area developments feature blank walls along the street that discourage pedestrian activity and deaden the environment. With all of this came a lot more traffic and congestion.

In response, in the late 1990s, the city of Chicago joined with the business community and civic and community leaders to develop a new 20-year plan for the central area to address these challenges. The plan is based on an economic analysis that developed long-range forecasts for various land uses downtown. The plan has three guiding themes: ensure a dynamic central area made up of vibrant and diverse mixed-use urban districts, ensure that the central area remains accessible and connected, and reinforce the central area's focus on its waterfronts and open spaces.

The Chicago Department of Transportation's (CDOT's) role was to focus on Theme 2, keeping the central area accessible and connected. The goal we set was to make transit the first choice for people coming to and moving around the central area. To accomplish this, we need to expand and upgrade the transit system to provide higher-quality service from outlying areas to the central area and within the central area itself. This will allow us to diminish auto congestion, future traffic, and parking demands. We want to create high-quality landscaped streets and highways, both to improve the city's image and to make it a more inviting place to walk in. We want to reduce barriers faced by pedestrians and people with limited mobility. I was thinking about the fact that two of these goals can sometimes be in conflict with each other because we have cases where we have encouraged developers to put in a lot of landscaping when they do planned development. What happens is that they build planter boxes right in paths that pedestrians need to take to get to the commuter rail station. As part of all this, we are looking at how to make sure we maintain clear paths for pedestrians.

As part of the economic analysis, consultants surveyed businesses to determine why they locate in our downtown. They found that proximity to mass transportation was the factor with the strongest influence on the location decision. Mass transportation was mentioned by 73 percent of respondents. Of note, nearly one-third of the companies interviewed indicated that an urban residential lifestyle was a factor in the location decision.

The economic analysis concluded that office space growth would continue following the trends of the past 20 years (Figure 2). This projection drives the planned transportation recommendations, since the transportation system needs to accommodate peak-period commuting trips. The projected downtown employment increase will result in 165,000 to 239,000 new daily work trips. Our goal is to increase the transit mode share for these trips to 70 percent—substantially more than the current mode share of 53 percent for downtown transit but consistent with the transit share we see in the downtown core, where transit is most convenient. This would bring our overall mode share for transit up to 58 percent in 2021. So we are looking for a 5 percent increase in transit mode share, from 53 to 58 percent. To accomplish this, we need to invest in transit capacity regionally and provide better transit connections within the central area. We also need to manage auto use better.

We did a traffic analysis as part of the long-range planning process and looked at the existing level of service across various corridors in and out of the central area, including bridges over the Chicago River as well as expressway access points. We found that right now

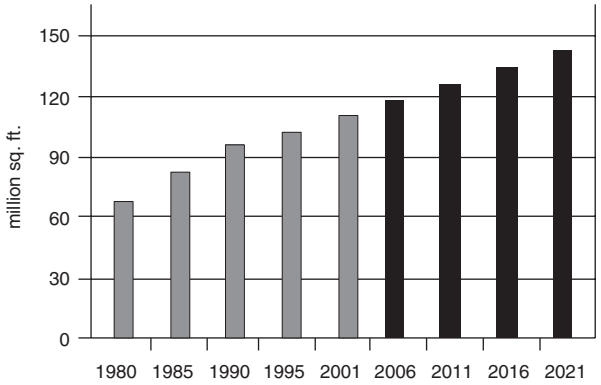

FIGURE 2 Central area office space growth.

a number of intersections are at Level of Service E, which means traffic is pretty congested. I'm not a traffic engineer, so I'm not going to use more technical terms for it, but it is already pretty congested. If we leave our parking policies as they are now, congestion levels will increase in some key areas, like some bridge crossings, to Level of Service F, which is gridlock. However, if we enforce more parking restrictions in our downtown area, we can at least keep those critical crossings at Level of Service E. That is our goal—to maintain Level of Service E. It is a little different from some other environments.

The Chicago central area plan is based on a core belief that directing growth to the historic center of the region will eliminate sprawl at the regional fringe, protect regional open space, enable the greatest number of people to commute on transit, maximize the value of existing infrastructure, and improve the environmental quality of the region. Transportation recommendations in the plan, including transit, roadway, pedestrian, and bicycle improvements, will be brought online in coordination with development over a 20-year period.

Within the central area, the plan recommends pursuing transit-oriented development, encouraging high-density office and retail development near transit stations, designating corridors along existing and proposed transit lines for high-density development, encouraging developers to incorporate transit stations in buildings to increase transit convenience, and reducing or minimizing parking requirements for developments adjacent to Chicago Transit Authority (CTA) and metro stations.

The Central Loop is already zoned to permit high densities. The plan recommends extending the high-density office core into the West Loop to the Kennedy Expressway, to center on our existing transit stations. We are proposing to expand that area to the west of the river where our two largest commuter rail stations are—Union Station and the Ogilvie Transportation Center. So we are encouraging high-density office in that area, where it is very convenient for commuters to take the train and then go to their office. It is also right next to our expressway corridor so that if they do drive, they don't have to drive all the way through the central business district.

We are also expanding the high density north of the river, where we are proposing to put in bus rapid transit (BRT). This corridor is already seeing increased density. We just passed a planned development by the Trump organization for a new 85-story office/residential building.

For roadways, our recommendations focus on management of the existing system. We are not in a location where we can really grow the roadways very much, so our goal is to manage them better. We recommend revisiting our on-street loading and parking policies to address issues such as on-street loading by UPS, FedEx, and similar companies that are contributing to traffic congestion. We recommend developing a traffic management center to better coordinate traffic operations, both downtown and in the neighborhoods. We just recently were awarded Congestion Mitigation and Air Quality (CMAQ) funds to construct the traffic management center. We call for completing the street and bridge grid in the former rail yard areas to tie new development into the rest of the central area. This may sound obvious, but in the 1980s, when we first started redeveloping the railroad lands, that wasn't done. Instead, the communities that were built were very insular. They have cul-de-sacs and fencing all around them, and you can't really get through. As a result, you can't have good transit service or good pedestrian access for the people that live in them. They disconnect the grid. So now, in our newer developments, we require the developers to tie into the existing grid network to make those areas more permeable for transit and walking.

Plan recommendations are being incorporated into the ongoing update of our citywide zoning code, which was written in 1956. This is the first time we are attempting to rewrite zoning since 1956—almost 50 years. One proposed component will be limited driveway access, particularly on streets with heavy pedestrian and bus volumes. One of the problems that we now face is that when people walk to the commuter rail stations, they have to walk past many driveways into parking garages, and it makes it very hard to keep up the flow of movement. The same thing occurs with buses and bus lanes, where there are cars turning in and out constantly. We are trying to either prohibit or restrict driveways on a lot of our major corridors. I know this is going to be a sensitive issue for the business community in Chicago. We are already hearing about it.

Another thing we can do is look at parking. Right now, Chicago has a restriction on freestanding parking garages in certain areas. The plan proposes several alternatives. One would be to expand the restricted area to the area outlined that runs along the river, which would mean that we wouldn't have as many people crossing the bridges to get to parking, and that would reduce the congestion in those key bottleneck areas. Another alternative would be to review all parking proposals in the larger square outlined area. That would cover freestanding garages, surface lots, and parking within developments. Again, we are starting to talk to the parking community about this, and they are very concerned. I hope we are successful.

To increase transit use, we recommend increasing CTA and Metra rail for rail and bus capacity into downtown. As I said before, we are expecting a lot of

growth. Getting to 70 percent transit mode share will mean 115,000 to 167,000 additional transit trips daily, and we will need to expand our capacity going from the suburban areas into the city in order to achieve that goal, or make that goal possible. We also want to improve transit distribution in the downtown itself, improve intermodal connections between rail and rail and rail and bus, and provide express rail to our airports, Midway and O'Hare. We already have rapid transit to both airports, which is unusual, but we would like to put in an express-type service to both airports so that you could check your baggage downtown and not have to look at it again until you get off the plane and you would have a faster trip out to the airport. Then you would get on the normal transit service. Those are goals we are trying to achieve and projects that we are starting now.

Our phasing plan recommends starting with improvements to the existing system before undertaking the largest, most expensive projects, which may not be needed right away. Downtown transit improvements have been under way for the past 15 years, and additional improvements will continue to be made in the coming 20 years, including renovating and improving stations, both in the subways and on the elevated line. My department, CDOT, builds stations, and then CTA operates and maintains them. So this is one of our tasks.

As for adding new stations along existing lines where warranted by development, the biggest issue we have right now is that all the new developing areas think they need a new transit station. We have to set up criteria to make sure we put the stations in the places with the greatest need and then provide intermodal facilities between commuter rail, rapid transit, and bus. One example—we have a commuter rail station in the South Loop, the LaSalle Street station on the Rock Island line. The nearest bus stops are two to three blocks away, so when you get off the train you have to walk two to three blocks to catch the bus. We just got CMAQ funds to build a new intermodal center adjacent to the train station so that the buses can be right there next to the trains. With those kinds of conveniences, we think we can get more people to use transit.

Another thing we can do right away is to preserve corridors for the future where we think we're going to need higher capacity. We can move from our current bus network to BRT in selected corridors. Features of BRT include exclusive travel lanes, traffic signal priority, limited stops, enhanced boarding areas with canopies and real-time bus information to increase customer comfort and convenience, and wide doors with low floors for easier boarding.

Over time, we want to grade-separate some of these BRT corridors where feasible. We have already done one—the Lakefront Busway near the lake. This is an old commuter rail corridor that is still active, and we built a bus lane there that moves convention visitors from the hotel district in the north down to our McCormick Place Convention Center in the south. Another existing rail right-of-way that we are pursuing is up on the north end along the river where the Trump development is going to be. This is the Carroll Avenue corridor, which is an old Union Pacific (UP) freight line. We are in discussions with UP to acquire its interest in that corridor to provide BRT below street level.

There is currently no below-grade right-of-way available, but if demand warrants in the future and traffic requires it, we would pursue below-grade busways along Clinton in the West Loop and along Monroe in the heart of the Loop. The Carroll Avenue busway would follow the north bank of the Chicago River on the old UP right-of-way. This particular busway would connect our commuter rail stations in the West Loop with the Streeterville area, the medical district by Northwestern University Medical Center, North Michigan Avenue, and Navy Pier. It would also allow residents in the Loop to get to the commuter rail stations and to get to the new office growth that we are planning in the West Loop.

Finally, the most visionary of the various proposals is the West Loop Transportation Center, which is shown in Figure 3. This is truly a multimodal facility in the West Loop along the Clinton corridor. This is something we expect we might need in 20 years if we achieve all our goals, we have the kind of growth we would like, and we can get the transit funding from various sources. There are two commuter rail stations in this corridor. One is the Ogilvie Transportation Center and the second is Union Station. The West Loop Transportation Center would link those two stations. There would be a mezzanine level connected directly into the commuter rail stations, a busway that would connect to our other grade-separated busways, a CTA rapid transit line connection, and at the bottom level,

FIGURE 3 West Loop Transportation Center.

intercity rail or regional rail. It could be used by high-speed rail if the Midwest Regional Rail Initiative ever takes off.

In conclusion, we think that Chicago's central area plan is a smart growth plan because it clusters new development near transportation. It focuses higher-density office in the Central and West Loop, which are already denser and more built up and have good transit. It encourages residential development within walking distance of the jobs downtown, including just north of the river, west of Halstead, which is just west of the expressways, and south of Congress. Finally, we recognize that regional policies need to change to support growth in the central area to promote better integration of our various transit services as well as more funding for mass transit.

Smart Transportation in the Puget Sound Region

Michael Cummings, *Washington State Department of Transportation*

I'm here to talk about how there are good reasons why Seattle is not Chicago. Figure 1 is symbolic of what is happening. This is the south end of the I-405 corridor in Renton. The left side is Boeing's facility. On the right side is housing in the area. To the north is Lake Washington. When you think water in our area, you think salmon because there is this incredible linkage due to the Endangered Species Act (ESA). There is congestion in both directions on the I-405 corridor most of the day. This is typical of what happens in this area.

I'm going to break this presentation into two parts because there are a lot of things happening in Puget Sound related to smart growth. First, I'm going to talk about the land use issues in the area, and then about the 405 program.

FIGURE 1 I-405 corridor program.

Metro Seattle, in the Puget Sound region, has about 3.28 million people, which is approximately 55 percent of the state's population. What is happening in the region related to the corridor? The I-405 corridor is about 30 miles long and has about one-half million people living adjacent to it. The I-405 program was a demonstration program for reinvention of the National Environmental Protection Act process. It has been 3 years since we issued our notice of intent, and we will have a record of decision in October of this year.

We have congestion in certain locations, particularly on the I-405 corridor. In some areas of the corridor it is up to 12 hours per day. There are huge business and public concerns about the level of congestion in the Seattle area. When congestion occurs on the freeway, trips move off the freeway system to the arterials, which results in cut-through traffic in our neighborhoods.

The region is currently experiencing an economic downturn. As mentioned earlier, we have an ESA-threatened species in the region. This and other factors have made transportation a major topic of most of the radio talk shows in the Seattle area.

In the Puget Sound region, we expect population growth of about 1.5 million between now and 2030. Travel demand will increase by about 60 percent. As Mary indicated, both she and Charlie Howard were active in helping to implement a growth management program within the state of Washington to reduce sprawl. One of the key elements of that program was to establish a growth management boundary and to preserve rural lands. The growth management program has three goals in regard to transportation: encourage

mixed use and multimodal development activities, establish level of service standards for local arterials and transit systems, and define specific actions to bring transportation facilities into compliance with established standards. Figure 2 shows the Puget Sound region. The dark area is rural, and the lighter area is the urban growth area. The dots are the activity centers, which are intended to be the focus of the urban growth.

Now, what has happened since growth management was adopted in the early 1990s? An article from one of the local newspapers quoted the King County executive saying at a recent update, "We are going to direct growth into the urban areas. We do not like sprawl. We are looking at eliminating 5,000 lots in the rural area through down-zoning."

Figure 3 shows the I-405 corridor. Seattle is to the west, and Bellevue, Redmond, and Lynnwood are at the north end, with Tukwila and Renton in the south portion of the corridor. Lake Washington lies between Seattle and the I-405 corridor. The corridor runs through 2 counties, 9 suburban communities, 6 urban centers, and about 14 business and housing activity centers. The corridor is located within the urban area.

What is happening? We are getting infill development. Bellevue is the largest city on the east side, inside the corridor. A lot of new housing is being built. Microsoft's campus in Redmond is located in the corridor and is becoming more heavily developed as it expands its facilities.

We are getting mixed-use development. Kirkland has housing above some of the retail areas. There is housing above a retail area in Redmond. There is an open-air regional shopping mall; it is part of the mixed-use project in Redmond. You see walkable street concepts being developed and encouraged in these towns. We also have an aggressive transportation demand management program, with 25 years of experience. We have more than 200 high-occupancy vehicle (HOV) lane miles. We have park-and-ride systems throughout the area. The Puget Sound region has the largest public vanpool system in the nation. We have had a commute trip reduction program that has been successful in reducing single-occupant vehicle trips. Here is an existing park-and-ride lot that was recently converted to a transit-oriented development by building housing above it.

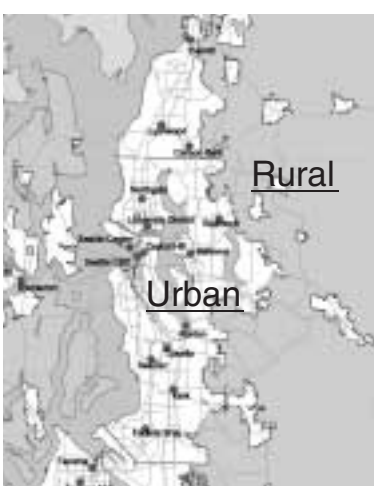

FIGURE 2 Puget Sound region has established a growth management boundary, with activity centers to focus growth and development within urban areas.

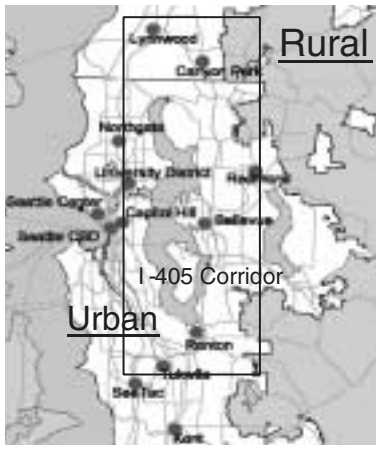

FIGURE 3 I-405 corridor, located within urban growth boundary, is targeted to accommodate a major portion of the region's housing and employment growth: 2 counties, 9 suburban communities, 6 urban centers, and 14 business and housing activity centers.

The I-405 corridor is planned to accept a large portion of population and employment growth for the region. It has been estimated that growth will add about 200,000 people and 150,000 jobs and increase daily person trips to the corridor by 56 percent by 2020.

In 1999 the I-405 corridor program was started. We had 35 agencies involved in this program and 24 concurring agencies. The concurring agencies had to agree in writing, at three critical steps in the process, that they would support that decision and would not revisit it unless conditions changed. We had five co-lead agencies on our environmental impact study (EIS) and four legislative representatives. The program had three committees: a steering committee, which included resource agencies and local staffs; a citizens' committee composed of environmental groups, business interests, and neighborhood groups; and an executive committee, which was the decision body for the effort. The executive committee included elected officials and senior staff from the Federal Highway Administration, the Washington State Department of Transportation, and others.

We understood that the general public wasn't necessarily represented on these committees, so we made a big

effort to meet with people. We met with the public in residential basements and in business boardrooms. We had more than 140 speaking engagements and did a statistically valid survey as part of our public involvement process.

In November 2001, our executive committee adopted a multimodal vision for the corridor. It involves improvements in both roadway capacity and transit systems within the corridor. The goal of this recommendation is to accommodate planned growth, connect centers, support infill development, address concurrency requirements in the area, support economic vitality, and provide choices. The recommendation included more than 150 projects in a 20-year program at a cost of approximately $10.9 billion.

The recommendation included the purchase and formation of 1,700 new vanpools in the corridor. HOV and carpools and vanpools are a far bigger market in this area than is transit, both now and 20 years from now. The formation of these vanpools would require nearly 8,000 parking stalls.

It included a plan to complete the HOV system in the corridor. We have a large HOV system, but it is hard to get in and out of. The plan included development of direct access ramps and freeway-to-freeway connections at various locations in the corridor. A BRT system is included as a key part of the planned transit investment, and additional bike and pedestrian facilities would be improved throughout the corridor.

Figure 4 shows the central portion of the corridor and shows how the transit elements work together. The large dots are urban centers. The smaller dots are smaller business and employment centers within the corridor. The first component is the BRT spine that would service the 30-mile corridor from Lynnwood to SeaTac Airport. BRT stations are added that support the BRT line at activity centers. Other all-day BRT service is developed to connect with the I-405 spine and provide service to downtown Seattle and to the areas east. Also operating in the HOV system is the express bus service, which serves a commuter market that does not want to stop at all the BRT stations.

There is also the all-day bus feeder. This increase in transit service will require transit centers to be expanded in several activity centers in the corridor. The plan includes adding about 5,000 permanent park-and-ride spaces primarily to support the transit element.

Our roadway component, shown in Figure 5, is principally defined as up to two additional lanes in each direction, throughout the corridor. With this improvement it is necessary to add the freeway-to-freeway connections and the arterial connections to make sure people can get on and off the expanded freeway system. The plan also provides for additional HOV and freight improvements in the corridor.

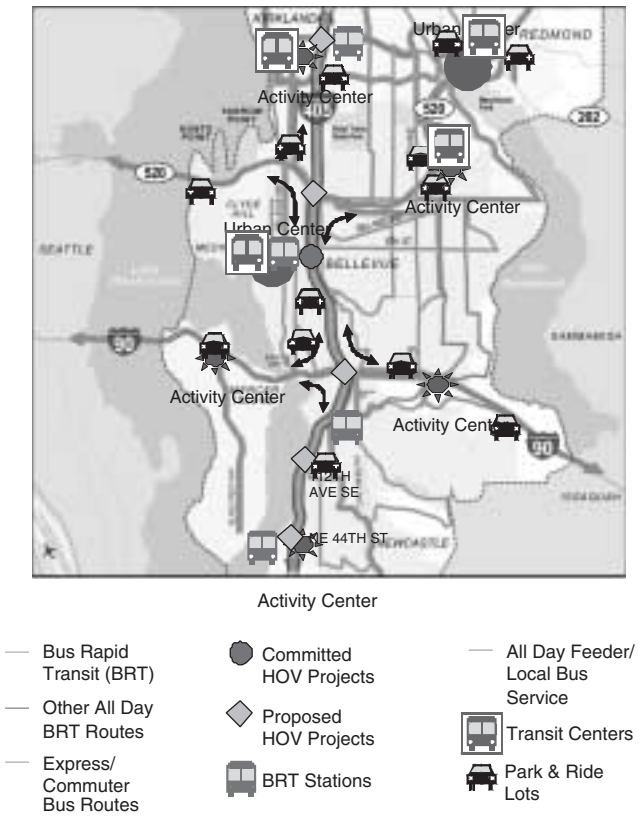

FIGURE 4 How the transit elements work together.

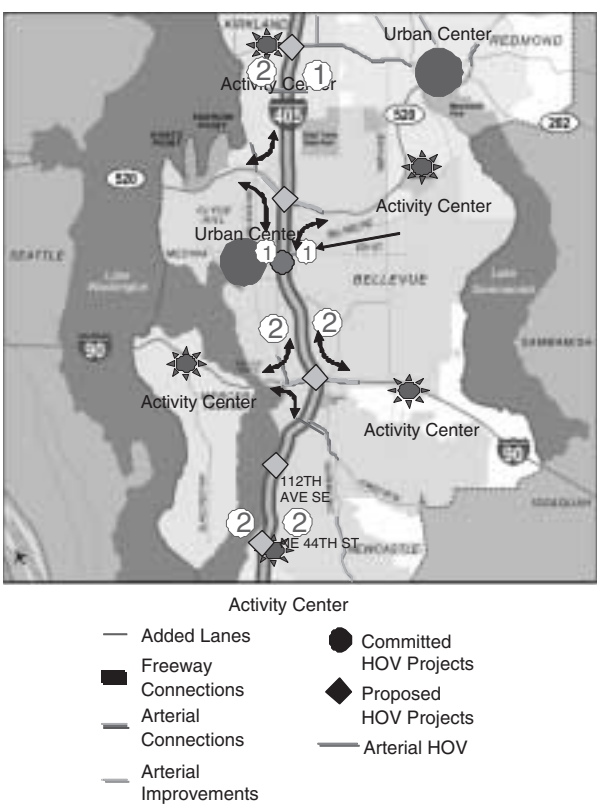

FIGURE 5 Roadway component.

We are also looking at managed lanes. This potentially means taking the existing HOV lane and the lane adjacent to it and separating them from the general-purpose lanes. These two lanes would be managed through access control, occupancy, or pricing. This is not a popular topic in our area, but it is being actively considered.

The other important piece of any smart growth strategy is environmental planning. We want to integrate these environmental investments as we make the transportation investments. The proposal is to take a watershed-based approach to environmental strategy. We also want to support growth management goals through our implementation strategy. We will continue to work with our partners—the tribes, jurisdictions, and resource agencies—to refine and improve our environmental program. We have an opportunity to go out in advance of these improvements and not only mitigate them but also correct existing environmental problems.

Keep in mind that one of the key things we have to deal with is the ESA. The issue is how we address development in urban areas while improving the habitat for salmon and other threatened species.

Where are we now? There are two funding proposals. Referendum 51, which goes to the ballot in November, is a statewide measure to raise the gas tax by 9 cents. I-405 is targeted to get about $1.8 billion of that for investments. A regional transportation improvement district proposal is also being formulated now, which we anticipate will go to the ballot next year. Between $2 billion and $4 billion might go to I-405. We also have future funding opportunities related to Sound Transit (high-capacity transit provider in the Puget Sound region) Phase II investments.

We have been at this for about 2 years. We believe it is a balanced and integrated approach and that it is a critical part of a strategy to make growth management work in Washington State.

Smart Transportation in Marana, Arizona

Jim DeGrood, *Town of Marana, Arizona*

It is a little intimidating coming from an edge city to talk about smart growth. The town of Marana is located in Pima County, a suburb of the city of Tucson. It is the second-largest urban growth area within the state of Arizona. The Tucson metropolitan area has a population of about 900,000. It is surrounded by mountains. Interstates 10 and 19 come through the center of the valley, and Interstate 10 bisects Marana, heading to Phoenix. Right now, within the valley, most of the available land has been consumed up to the mountain fronts, so new growth is extending out along the Interstate corridors. As a result, Marana is experiencing a lot of new growth.

True to our western heritage, Marana wasn't built to facilitate growth. Rather, it was meant to keep the city of Tucson from sticking a straw into our aquifer; water rights have clearly been at the heart of our history. The town of Marana started in 1977 with water issues. Since that time we have had to grow, basically to build a strong, stable economic foundation for our community. Right now we are at about 115 square miles. We have a population of about 18,000. That is up from the 1990 census, which showed us at only 2,200. That made us the fastest-growing community in Arizona: 500 percent during the 1990s. Because of our position within the Tucson metropolitan area, we expect to continue to grow, and we are looking at an estimated population of nearly 90,000 in 2025.

Where is growth taking place? Dove Mountain consists of two master-planned communities, and there are other outlying areas where housing activity is occurring. Then we have the historic part of town, or the older part—I can't really call it historic—where we are just now starting to see economic activity. There is a lot of land use planning in this area.

All of this activity is really quite dizzying and has prompted a lot of debate within the region. The state of Arizona has certainly had its fair share of discussions concerning the merits of growth management versus smart growth. When you start talking about smart growth, a couple of things come to mind. The first is transportation, and the other is the environment. We certainly have our issues there.

We enjoy being a center for biological diversity. We have a little bird called the cactus ferruginous pygmy owl, which is a listed endangered species, and back in 1999 there was a critical habitat established for it. In 2001, it was judicially vacated. So we are in a state of flux. The Fish and Wildlife Service has an obligation to bring back a new designation by next June. As a result, we have seen a lot of shift in development emphasis. We thought we were going to be looking around the master-planned communities, the residential golf communities up in the Catalina Mountain foothills, but we are now looking at a shift in interest to the agricultural lands. As a result, we are stranding a lot of public investment in infrastructure. What we are probably looking at in the critical habitat areas is a maximum of 20 percent disturbance. So we will be preserving a lot of open space not necessarily because we want to, but because we have to. We are considering changing land uses in the existing agricultural fields because there is a lot of interest in growth and development there.

Low cotton prices have also contributed to the interest in developing in that area because a lot of the old cot-

ton-farming families find that they are being driven from business. We may be looking at little continuation in that as a result of the recent farm bill, but we still think that as a lifestyle, farming will diminish over time. Frankly, even though there is a lot of interest in preserving farmlands nationally, that isn't necessarily the best thing in an arid environment. We are experiencing overdrafting, and there are probably some good environmental reasons for diminishing the amount of farmland in our area.

The other part of the growth debate has been transportation, and certainly there is not consensus on how we should do that. We don't have a strong bus system within our region. We had, I think, a very well-run one, but unfortunately, because of a funding situation—it is financed by general funds—it has no dedicated funding source, and it has eroded in service provision because of fiscal constraints.

In terms of going forward with our transportation planning efforts, we first need to keep in mind a number of institutional issues. The first one is the highway user revenue fund. Within Arizona, the distribution of the highway user revenue fund is based on the last census population count. Clearly, we don't fare very well. We're presently delivering services to a population of 18,000, and just 2 years ago the census said we only had 13,200. So our ability to deliver even operations and maintenance with that funding source is difficult. We also have the growth management initiative. It was soundly thrashed at the polls in 2000, but not for lack of interest. It was largely because the home-building industry mobilized very well at the polls.

One of the things the state legislature did to address the issue was pass legislation called "growing smarter plus." It requires that we go back and revisit our general plans and bring them before the voters. The plan also has to contain a component showing how growth will pay for itself.

Another institutional issue that we need to deal with is transit. The city of Tucson is the provider within the region, and it is a general fund activity. As a result, the only way we get bus service into our area is through intergovernmental agreements. We also have to continue to work on coordinating our regional route development. We do that pretty effectively through the Pima Association of Governments. But that is not to say that we necessarily have the same opinion about route alignments as do our neighboring communities.

Finally, we need to keep in mind that the endangered species issues are not over. I mentioned the cactus ferruginous pygmy owl. In 2000, there were 22 of those owls in the portion of town that has critical habitat. A count this spring found only seven. Only one of them was female, so it is going to take some real soul-searching on how we address that.

We have just recently completed a transportation plan update. It is a run-of-the-mill small area transportation study. We updated our population, construction costs, and demographics; tied it to our land use information or general plan; developed an updated traffic model; and came up with a recommended roadway network. We also made an effort to forecast revenues from our existing sources and identified a cost for a recommended roadway network.

Although we have other elements that are more oriented to smart growth, such as park-and-ride lots, our major public investments are going to be in our roadways. We will continue to rely on Interstate 10 as our main street, more or less. We need to develop additional interchanges and access for our community, and we need to provide mobility within our community with the arterial road upgrades. I don't know how other regions deal with it, but as a matter of course we always provide bike lanes and sidewalks along all of our roadway improvements, at least our arterial and collector streets.

This plan results in a need for about $700 million worth of expenditures. I calculated that at upwards of $40,000 per capita when you look at our current residential population. It is quite a daunting number. Most of it is spent on roadway capital improvements. Many other cities and towns, certainly existing ones, spend a lot more on operations and maintenance than we expect to. But we have a lot more new roads to build.

Within the state, our traditional sources of funding for road improvements include the highway user revenue fees, which consist of two components. One is our vehicle license tax, which is always subject to being slaughtered at the state legislature by the new car businesses. Second, we have the fuel sales tax, which is not indexed to inflation and has not changed since 1992. We also have federal and state project funds that come down to us through the council of governments. We have improvement districts available, which are useful for localized improvements. Nobody likes talking about it, but we do use some of our general sales tax funds for road improvements. And Marana does not have property taxes. We would have to seek that from our voters, and it is not very likely.

The city of Tucson is faced with the same issues, and it has been strapped for a number of years and has not been able to do needed improvements. Over the past 15 years, it has gone before the electorate three times with sales tax proposals tied to transportation, and each of them has failed, not without the city having done an awful lot of legwork. The city has done community outreach to try to identify what plan would be acceptable, and it has never gone before the electorate without having what it thought was a generally well-received plan. However, come election time, pretty much everybody has a reason to vote against a plan.

We engaged a blue ribbon panel of interested parties in our transportation planning effort. We brought in our chamber of commerce and our building community and our neighborhood associations as well as our citizen activists and basically posed to them the question, How are we going to pay for this? We know where we are going. These are the things they offered to us, and in a very constructive fashion.

First, impact fees. There is nothing new about them; they have been pretty common within our region for the last 10 years, and they are more common in other places of the country. Rather than look at a capacity consumption-based approach to deriving an impact fee, we have gone to a more direct benefit area approach, where we look at new interchange development costs paid for by impact fees. In our region, we have fairly high relative costs for developing new interchanges because we have not just the Interstate but an adjacent UP railroad line and a river to cross to get to the Interstate. So we have fairly costly interchange improvements—much more so than a standard diamond.

We are considering using community facilities districts more frequently, particularly in looking at master-planned communities, which we are always encouraging. Probably our most important new revenue source is the construction sales tax. We've raised ours to 4 percent, three-quarters of which we have dedicated to our transportation capital improvements program. This is the same area that would be subject to a general sales tax, but within the Arizona model tax code, we are allowed to identify our tax construction sales differentially. To give you an idea of how much revenue it raises—for a $120,000 home, our construction sales tax is about $2,300, plus a development impact fee of $2,400. The total funding contribution on what we would consider an affordable home is about $4,800. For luxury homes, for example, a $2 million home, a construction sales tax raises a substantial $39,000. So normally we look at sales taxes as being regressive, but in the case of new housing, I would argue that it may be progressive.

How are we working toward meeting our $700 million cost? We are still about $160 million short through our 2025 horizon year. We expect that we will expand the use of impact fees and development exactions, and we will probably narrow the gap substantially on the roadway side. We still have some needs to meet in the transit area, and I think that is probably more of a regional issue.

We need to continue our transportation planning efforts by matching up funding needs with appropriate sources, working to develop further our funding program with the local home builders, fine-tuning our general plan, and coordinating with our transportation plan. We need to recognize the changing environmental issues, and certainly the pygmy owl will factor into that.

In closing, I would like to reiterate that we found the construction sales tax to be a good funding source. We normally think of construction sales taxes as one-time only, like impact fees. But you see that occurring over time when people reroof, repaint, remodel, add a swimming pool, landscape—all of these contribute to our construction sales tax revenues. The public generally equates construction sales taxes with new growth, so it is politically a popular thing to tie it to. The home builders actually were very supportive. They see the remodeling industry as competing with them. They are happy to have that industry participate in the funding of transportation improvements. Also, as I mentioned, it does appear to be somewhat progressive as it relates to housing affordability.

Discussion

Audience question: A question for any or all of the panelists. As we think about what constitutes smart growth, have you, in your efforts, had a discussion locally or regionally about what makes it smart and how smart it is? I ask that in the context of a larger question. We just finished the Johannesburg global environmental summit, and one of the issues of great concern to leaders across the world is reducing greenhouse gas emissions. It seems to me that one criterion for judging how smart our transportation and smart growth are is whether they help produce significant reductions in greenhouse gas emissions over the life of the transportation plan.

Jim DeGrood: One of the things I didn't speak about in my presentation was our land planning efforts. Clearly that is key in my mind to reducing emissions. We are working to strengthen our business district to try to reduce trip lengths by bringing both commerce and jobs closer to the residential communities that are developing. That is the only technique that we really have available to us within the framework under which we are operating. Certainly, I think we would like to participate regionally on more transit-related issues, but we are the small fish out there.

Michael Cummings: We did air quality monitoring, and the local clean air agency was part of this effort. Ozone is a big issue for the Seattle area. Our EIS process looked at various types of transportation investment strategies, ranging from doing nothing all the way to a major road expansion program. Basically, we found that there wasn't a lot of difference in overall air quality levels. The Puget Sound area may have an issue around 2007 because the performance improvements in vehicles don't occur fast enough to deal with the increase in travel demand. After 2007, air quality for most emissions is projected to improve.

Charles Howard: A couple years ago I was able to go to Europe to study transportation sustainability. We looked at experiences in Stockholm, Berlin, The Hague, and Edinburgh. One of our conclusions was that the local efforts in each of those places were well nested within a national strategy. The European Union has a very strong focus on global warming and CO_2-reduction strategies. We don't have that in this country. I'm not going to say whether that is good or bad, but the fact is we don't have a national direction. So it is really hard for each individual location to do anything. For example, there is much concern and activity in the city of Seattle in the direction of sustainability and CO_2 reduction, but it really is difficult for individual jurisdictions to take that direction without this national umbrella. We saw in Europe that the strong national umbrella got the localities moving in that direction.

Audience question: Chicago has a really interesting approach to central business district development, yet I suspect 80 percent of residential growth is going on at the edge. Do you have any information that would describe whether the growth in your central business district would, in fact, draw more residential development inward from the far edges, or don't you know?

Luann Hamilton: I'm involved in the regional transportation plan process at our metropolitan planning organization, and I know the region is going to continue to spread out. But I do think that having housing near

the downtown offers choice. I assume that some people may choose that. They tend to be empty nesters or young singles or couples who don't have children yet. I think one issue putting pressure on us is, If you want to keep people when they are having families, what do you do about your schools? Traditionally, downtowns didn't even have schools, because they didn't have populations. So how do you handle that? I think we have to struggle with those kinds of issues, and perhaps we can provide more and more amenities and services that will make living downtown attractive to a wider market.

Audience question: As a follow-up to that question—can you talk about what, if anything, Chicago's plan does or says outside of the central business district? You mentioned transit-oriented development in your presentation, neighborhoods outside of the central business district but still in Chicago. I'm thinking of places like Garfield Park and the Bethel transit center. I'm not sure what its status is right now, but I was wondering whether the plan incorporates or contemplates that?

Luann Hamilton: The plan really focused on the central area, which is the central business district plus the residential communities immediately surrounding it. Garfield Park with the Bethel area is farther out. However, I do think we say in the plan that we would like to repopulate a lot of the corridors that are along our transit lines so that, besides having the jobs downtown and some housing downtown, we also encourage redevelopment in those corridors where people can take transit easily to get downtown. I don't believe the Bethel project has happened yet. I think they are still working on the financing.

Audience question: Michael, in your discussion you suggested concurrency was partly driving the 405 reengineering. Could you talk a little about how you view concurrency—whether it is smart growth or not, and how much that depends on how it is measured?

Michael Cummings: Mary McCumber is probably more familiar with this than I am, but there are different concurrency standards in different communities in the Puget Sound region. There hasn't been a really good effort to coordinate these standards between jurisdictions. The city of Bellevue, for example, moved from a 1-hour level of service to a 2-hour level of service requirement. A neighborhood association that has standing in the land use planning process objected and tried to overturn that decision. I think the city of Bellevue ultimately prevailed. The public perception that we are not addressing congestion does and could in the future limit plans to increase densities in our urban areas.

Charles Howard: Washington State's concurrency program requires having level of service standards both for roadways and for transit. Transit has been pretty well ignored in a lot of those, and not for any deliberate reason. It is just difficult to come up with one and work with the regional transit agencies. Both are required. Then actions are required—the law doesn't say to widen the roadways to meet this concurrency. It says to take some transportation actions. In essence, you don't have to restore the level of service standard that you have, but you do have to address the type of growth that you're experiencing, address the travel behavior, and come up with a plan that accommodates the travel behavior. It is balanced that way. It does not require specific highway improvements if your highway is deteriorated. I think that is an important distinction to note. Whether it is being carried out that way or not, that is another issue and there is a lot of review. I think the Puget Sound Regional Council is doing a review of concurrency in the region, and we are trying to refocus on whether concurrency is working or not. I think it can be a smart growth strategy.

Mike brought up an interesting point: regardless of what you do with the standards, the people who live in the communities know what is going on with the system. That is really the origin of our concurrency standards: in 1989 the city of Bellevue had a moratorium by citizen initiative to stop growth. It was because the congestion was getting, in their minds, unbearable. So the citizens are the ones who are ultimately going to test whether these strategies are the right ones to be implemented.

Audience question: Can you explain what "concurrency" means?

Charles Howard: Concurrency is the requirement that we establish level of service standards both for roadways and for transit facilities and then provide sufficient transportation facilities to meet those standards concurrent with growth. "Concurrent with growth" is defined as within 6 years of the development, in a transportation improvement program (TIP) time frame. That is the basic requirement. The idea is that if you cannot show in a TIP the type of transportation investment needed to support the growth taking place, you have to deny the development. It requires areas to grow only as fast as their transportation systems can grow, to accommodate the travel behavior that will come with growth.

Audience question: I have a question for Luann. The BRT on elevated structures really surprised me. Usually when you get into structures like that, jurisdictions jump to a rail system. I was curious about why specifically there was a pretty elaborate BRT loop being planned downtown that would involve so much capital investment.

Luann Hamilton: Actually, the BRT would be below-grade, so it wouldn't be on an elevated structure. It would use available corridors. Two of the corridors are freight rail corridors—well, one is a commuter rail/former freight rail, and the other is a freight rail. So we would just take over parts of the right-of-way for the busway. You do need ramps in certain places to connect

to the streets, but it is not a fully on-structure facility. Several are new below-grade corridors, and those would be more costly. Part of the reason we were shying away from rail is that we had a really bad experience. I don't know if you've ever heard of the central area circulator project, but we tried to do an extensive light rail system in downtown Chicago earlier in the 1990s, and we expended a lot of energy on it. I believe we had a federal funding agreement for one-third, and we had a taxing district put into place in our central area so that the businesses agreed to pay one-third of it, but then the state assembly refused to pay the other third. After that happened, the whole thing crashed and I think we are staying away from new rail.

Audience question: This question is directed to Michael, but any of you can answer. To what extent in evaluating your alternatives did you try to predict the effect of the various alternatives on land use and take that shift in land use into account in the evaluation?

Michael Cummings: We developed four major alternatives that were evaluated in our EIS process. We used the Puget Sound Regional Council model, DRAMEM-PAL, to look at how each alternative might affect growth. We found what you would expect: the more accessibility that was created in the corridor, the more development it tends to attract. One of the biggest problems with the model, and I think it is very common to models in other regions, is that some of the zones, particularly in rural areas, are so large that the model does not show how the growth occurs within them. The result was that major transportation investments within the urban area tended to encourage the growth to occur there.

Audience question: Did it take into account your concurrency requirements?

Michael Cummings: It took into account the requirements of growth management, so it tended to dampen the development in the rural area. It did not specifically take into account concurrency. We did explore that, but there wasn't a way of structurally including it in the model.

Audience question: One of the issues we are facing right now is our version of concurrency, called "adequate public facilities ordinances." We have a number of areas close in that are shut down to development under adequate public facilities ordinances. The unintended consequence of that is to drive more of the development further out. That is why I asked the question that I did, in light of your concurrency requirements.

Charles Howard: I want to emphasize that—making employment sites more accessible inside the boundary and continuing the development inside the urban growth boundary are good things. That is what we wanted to accomplish, rather than having it go out further, which tends to happen if you are not providing the type of capacity inside.

I want to point out a unique feature of our concurrency issue is that concurrency does not apply to many state highways, including freeways. That was a compromise put out a few years ago because the local governments believed it was difficult to deny a development on the basis of the level of service on a freeway. They were successful in passing another piece of legislation to exempt state highways. So, 405 does not have to meet concurrency requirements. That is both good and bad. It doesn't account for the growth, but it also probably counteracts your experience, which is saying no to development because the freeway is jammed. Although it is counterintuitive to most of the public, from an organizational and transportation perspective, you can accommodate more growth in the corridor. That is inside the growth boundary, which is where we want it.

Audience question: Have you heard discussions relating to smart growth and the financing of transportation—that there may be smarter ways to finance transportation? Mike mentioned a proposed 9-cent increase in the gas tax, for example.

Luann Hamilton: I think that depends on the elected officials. I think planners would say, "Sure, let's have gas tax increases to make driving more expensive and to have drivers more fully bear the costs." But it is out of our hands.

Michael Cummings: In the Puget Sound region we are exploring value pricing. The Regional Transportation Improvement District is exploring tolls as a funding option. It certainly has significant implications for addressing smart growth and dealing with strategies for funding the kinds of investments we're talking about. To quote one of the local elected officials, "I don't want to be out front of the tolling issue, but when you start to look at these kinds of projects and these kinds of investments, the belief is that tolling and value pricing will surface on their own merits." So that issue is starting to surface in the Puget Sound region.

Audience question: I have a question for Jim. Could you talk about the current and expected travel patterns in Marana? Is it essentially going to provide housing for the employment in Tucson? A follow-up question to that concerns how the wildlife habitat issues limited the location of growth and essentially moved it into a different place. Have you tried to put together a vision of where you want that growth to occur in the community?

Jim DeGrood: With respect to the first question, there is a fear that we will become more of a bedroom community to the city of Tucson. That is clearly something we are trying to avoid. We do have industry and commercial areas within our community, and we need to strengthen them in order to try to keep the growth and shorten the average vehicle miles traveled. We are committed to that as we look at land use decisions. If we are looking at a new resort hotel in a very exclusive area, we will look at things like requiring SROs as a

part of the approval process. These are kinds of things we need to do to ensure there is appropriate housing proximate to the generators.

With respect to the habitat conservation issue, yes, it clearly has affected us and will continue to affect us. We're not sure at this point how we'll end up. There is some discussion right now about relocating the pygmy owls from the area that has currently been identified as a recovery area because they don't feel the population is viable. There are a number of stressors other than development, including a 3-year drought. Whether their population is large enough to sustain continued occupation in that area, we don't know. If that occupation and the habitat designation are gone, it is going to throw everything back into the mix in terms of land use decision making. That is probably our greatest fear. We have been working on doing a habitat conservation plan. We are in the initial phases of that. An overall Sonoran Desert conservation plan is under way countywide, and we are looking at doing Section 10 permitting with our habitat conservation plan.

Audience question: The three of you come from quite different kinds of communities and have different perspectives. Do you see anything on the horizon that will substantially lower the costs of transit or transportation projects in the future? A lot of the improvements we are seeing on the environmental side come from better cars. Is there anything in the overall transportation picture that looks like it may give us quantum steps in cost improvement for transportation systems, looking out 10, 20, 30, 50 years?

Jim DeGrood: That is a pretty broad question. We are looking at techniques we can apply locally. For the bus system in the region, the highest single cost component is the labor for operating the buses. If we can form vanpools more effectively and provide recreational and commercial opportunities close to home, even if it means crosstown commutes to work, that will be one way we can bring some sense to the vehicle miles traveled problem.

Luann Hamilton: In Chicago it is BRT as opposed to doing light rail. BRT is more affordable for us. It uses existing rights-of-way, often either below grade or at street level. Actually, about two-thirds of our regional transit ridership is on bus and not rail, even though everyone thinks of rail as the main mode of transit. If we can do things to make bus travel more attractive and desirable by getting better travel times and more convenience, I think that would be a good step.

Michael Cummings: Probably the initial thing is to make transit more effective. We're still struggling with getting ridership and density close to stations. We looked at various transit technologies, and BRT certainly provided the dollar value for the ridership that is projected to occur. Even in downtown Bellevue, which is looking at about a 40 percent mode split for a single occupant versus transit and HOV, more than 60 percent of that is HOV traffic.

Audience question: Jim, you spoke of using I-10 as your main street. If you're a satellite suburban community, I-10 is your lifeline access into Tucson. If you develop your own industrial base, I-10 is your supply lifeline access to the rest of the world. How do you justify, as you approach a population of 90,000 people, clogging up I-10 with local traffic as a main street and cutting off your access to the rest of the outside places?

Jim DeGrood: I don't know that I necessarily justify it, but within eastern Pima County, that is the way it is functioning. Even if traffic does not grow in our community, it would grow on other parts of the I-10 system because we haven't done a good job of developing alternative routes. We are looking to lessen the impact by building parallel routes. We are certainly looking at doing that—we have a river park, as I mentioned earlier, with a major river through the region that parallels I-10. However, we do not have a roadway parallel to I-10 that could take some of the traffic to Tucson.

In terms of looking for additional right-of-way, we have tried to work cooperatively with UP. They have been receptive; however, right now it exists as a single main line through town, carrying about 65 trains per day. So it will not be an option anytime soon.

Where

How Do Smart Growth Transportation Systems and Institutional Arrangements Vary with Location?

Introduction

Tom Downs, *National Center for Smart Growth Education and Research, University of Maryland*

The program this morning continues with the "where" of smart growth. How have transportation agencies in very different regions of the country responded to smart growth initiatives? This session will explore the questions from four perspectives.

The first panelist is Neil Pedersen on how Maryland's transportation program has changed in response to smart growth. Neil is the Deputy Administrator for Planning and Engineering at the Maryland Department of Transportation's (MDOT's) State Highway Administration. He oversees planning and preliminary engineering, environmental design, bridge development, highway development, and real estate. He has been in his current position since August 2000. Before that, he was Director of the Office of Planning and Preliminary Engineering. A native of Massachusetts, Neil holds an undergraduate degree from Bucknell University and a master's in civil engineering from Northwestern, and he is a registered Professional Engineer.

Second is Jacob Snow. Jacob is talking about gambling on the metropolitan transportation process to foster smart growth in Las Vegas. Jacob is a rarity these days: a native of Nevada. He was born and raised in Boulder City. He has a B.S. in geography from Brigham Young. His postgraduate study is in planning, finance, and accounting. He has held his current position, General Manager of the Regional Transportation Commission of Southern Nevada, since July 1999. Before that, he was with the Clarke County Department of Aviation, where he was the Assistant Director of Aviation, and before that, with the city of Provo, where he was a community planner.

Next is Bob Grow, whose presentation is titled "Whose Future Is It, Anyway?" Bob is a native of Utah and holds a B.S. degree in electrical engineering from the University of Utah. He has a law degree from Brigham Young. He is an experienced private-sector person who worked on the restructuring of United States Steel. He served as a Director of the National Association of Manufacturers. He was selected in 1994 as Utah's Entrepreneur of the Year. More important for this presentation, he served as Chair of the Coalition for Utah's Future from 1995 to 1999 and as Chair of Envision Utah, a Utah public–private partnership for quality growth seeking to develop a long-term growth strategy for the Geater Wasatch Area, from 1997 to 1999. He is the Founding Chair Emeritus of Envision Utah, and a number of people consider that one of the finest state planning efforts in several decades.

We have Tom Kloster, who is from Portland, Oregon. Tom's presentation is on the role of federal programs in Metro's 2040 plan for the Portland region. Tom manages Metro's regional transportation planning programs and oversees the update of the 20-year

regional transportation plan and the 5-year transportation improvement program for Portland's metro region. Metro is an elected regional government that actually has a significant amount of control over land use and capital investment. Tom has been with Metro since 1993 and has worked previously in land use in the Portland area. He is a Portland native. He earned a bachelor's degree in geoscience at Oregon State and a master's degree in urban planning at Portland State. He is a member of the American Institute of Certified Planners, the Institute of Transportation Engineers, and the American Planning Association.

Smart Transportation in Maryland

Neil Pedersen, *Maryland State Highway Administration*

I would like to spend some time this morning following up on a number of the remarks that Governor Glendening made yesterday. I will talk about how the broad vision and policies translate into specific programs that we have implemented at MDOT to ensure that the transportation program supports the visions that Governor Glendening talked about.

I'm going to give you an overview of the smart growth program in Maryland to set the context, discuss our policy approach to what we call "smart transportation," explain how Maryland's transportation investments have changed since the smart growth program was first implemented in 1997, talk specifically about some of our smart growth–related transportation programs, and then very briefly touch on changes in transportation projects to make them compatible with smart growth.

Four major goals have been established for Maryland's smart growth program. They are to support and enhance existing communities, support local business, preserve agricultural and natural resource areas, and save taxpayers costly infrastructure investments. Transportation can serve an important role in supporting each of those four goals. As we talk particularly about the programs that we have developed, you will see how they support each of those goals.

Governor Glendening made reference to the fact that he introduced, and the legislature passed, smart growth legislation in 1997. It is actually contained in the annotated code of Maryland. Much of what I will talk about is in the context of those statutory requirements. We probably could have implemented some of it without the statutory support. But having that policy support from both the governor and the legislature was important in being able to accomplish what we have.

One of the major programs established in that statute was the rural legacy program. The intent of that program is to preserve farmland, natural resource areas, greenbelts, battlefields, and coastal bays. I think you will see how we can provide both programs and money to support the rural legacy program, particularly through the enhancement program and through what we call our access control program.

The second major program area is the voluntary cleanup and brownfields program. The intent of this is to encourage cleanup and redevelopment. The centerpiece of our smart growth program, the Neighborhood Conservation Program, is intended to reinforce this element of the overall smart growth program in our older areas. We have our "live near your work" program. This is an incentive program where employees who move to within 3 miles of their workplace can receive credits up to $3,000. This provides an incentive for people to give up the long commutes that sprawl tends to induce.

The centerpiece of the smart growth legislation and probably the element that affects us most at MDOT is the priority funding areas. You heard Governor Glendening talk about this as the technical term for designating what are known as "smart growth areas." Generally, they are areas that meet certain density requirements; areas that have water and sewer service; areas that are already developed; and planned areas in county plans, designated by the counties, that meet certain density requirements. Unlike some of the other

northeastern states, much of Maryland is unincorporated. We have a number of small municipalities, which tend to be some of our older, developed areas. By definition, all of our municipalities are priority funding areas as well.

Figure 1 is a map of Harford County, which is northeast of Baltimore. The darker areas are the priority funding areas in Harford County. One striking thing is that probably only about 20 percent of the county is a priority funding area. The idea behind priority funding areas in the statutory requirements is that state capital investments, for the most part, will be made only within those priority funding areas. So if a developer wants to build a subdivision on 3-acre lots outside of those priority funding areas in Harford County, that developer is going to have to incur all of the costs associated with providing water and sewer and roadway improvements for that development.

In addition, state money for programs like reconstruction of schools or construction of new schools or new capital facilities is directed to the priority funding areas, and we try to locate many of those facilities within priority funding areas. This creates challenges for transportation, particularly in terms of trying to link some of the priority funding areas, and I'll talk about this later.

The policy approach taken by MDOT is called "smart transportation." This quotation from the governor really sets the overall policy framework: "Smart transportation means a more balanced and responsible policy that provides our citizens and future generations with genuine travel choices. Smart growth is a way to set priorities that will ensure the efficient use of transportation dollars, provide support to our established communities, and discourage costly sprawl development." Smart transportation means focusing our resources in specific areas where growth can best be accommodated, the infrastructure is already in place or planned to support it, and local governments want growth to be concentrated. From a policy perspective, this sets the policy direction in terms of where we will spend our money, particularly on projects but also on programs.

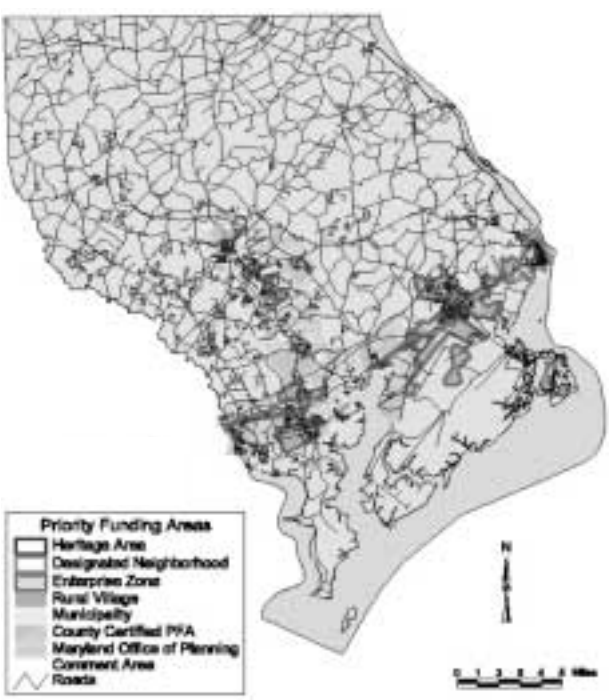

FIGURE 1 Priority funding areas, Harford County.

How have our investments changed during the past 6 to 7 years that smart growth has been in effect in Maryland? First, our money has been directed to priority funding areas. Our program has focused on existing and planned development rather than on sprawl-generated traffic problems. To the extent that people choose to live in sprawl development outside of the priority funding areas and end up driving on congested roadways, they can't automatically assume that MDOT will widen those roadways or construct new roadways to alleviate the traffic problems that result.

There is an emphasis on providing modal choices—modal choices not just between highways and transit but also between bicycles and pedestrians.

We have also looked at ways that we, as MDOT, can support the broader smart growth program initiatives. After the smart growth legislation first passed, we reviewed our entire capital program to identify projects that were not consistent with smart growth. There was a provision in the legislation that any project that had National Environmental Policy Act (NEPA) approval was grandfathered and could go forward. But we did a policy review of all projects, even those with NEPA approval, and we concluded that five projects, all of which were bypasses around small towns, did not meet the spirit and intent of smart growth, even though two of those projects had NEPA approval. We removed those projects from our program. You can imagine that there was quite a bit of political backlash. We are still feeling some of it.

We focus in Maryland on multimodal improvements. We have a number of corridor studies under way in which we are considering both highway and transit improvements, not as alternatives to each other but as packages of both highway and transit improvements that support each other.

We use access controls as a tool for where development can occur in two broad ways. First, we examine where to purchase access controls on existing highways as well as on the few new highways we are constructing. Second, we look at where we currently own access controls to determine whether we will make

breaks in those controls to encourage development in some locations.

We attempt to link transportation funding with land use decisions. We have taken the bold step on some of our projects of saying to local jurisdictions that if you want us to fund this project, we want and expect certain things in terms of land use decisions. That has had some interesting political reactions.

We consider key questions in reviewing projects for funding. Is the project within a priority funding area? Is there a significant safety need, and is there an exception for safety improvements? We generally try, in most of those exceptions, not to have major capacity improvements, but in several we have had major capacity improvements because of the safety problems. Does the project connect priority funding areas? We have an exception for making improvements connect priority funding areas, but we need to have as much control of access as possible on those projects. Is there a reasonable alternative in a priority funding area? For example, for those bypass projects, we look at improvements along the existing road within a priority funding area. Finally, is the project grandfathered?

The governor noted that in our capital program last year we achieved a 50/50 split between highways and transportation. Figure 2 shows an analysis of the capital program for the 1994 to 1999 period, which was the last capital program before he became governor, versus the current capital program (2002 to 2007). The governor talked about our tremendous increase in investment in transit, from $1.4 billion to $2.5 billion. But the highway program has also proportionally increased, so the split is still the same as it was 8 years ago. However, the significant changes are where and how those highway dollars are being spent and what type of improvements they are spent on. The conclusion is that smart growth—and the governor said this—is not about spending no money on highways and diverting it all to transit. It is about where and how you spend money on both highways and transit.

I would like to go quickly through some of the smart growth programs. The first is the centerpiece of our smart growth program. Neighborhood conservation and urban reconstruction projects are focused on revitalization areas. We basically upgrade state highways that serve as main streets through these areas—not just the pavement but also drainage improvements, sidewalk improvements, landscaping, and aesthetics. We try to turn the state highway from something that divides the community into a community asset that can help spur revitalization. In a number of communities where we have done these projects, private money has followed toward revitalization. We are spending on the order of $30 million to $40 million per year on these projects.

	FY 1994–1999 Capital Program		FY 2002–2007 Capital Program	
	$ mil.	%	$ mil.	%
Highways	$2,601	64	$4,719	65
Transit	$1,436	36	$2,544	35
Total	$4,037	100	$7,263	100

FIGURE 2 Modal share of capital program.

We have also recognized that much of our urban congestion off the freeway system is at intersections. We are focusing more and more of our improvements on intersections, as opposed to widening highways. The governor made reference yesterday to this particular project in Towson. There were five legs coming into a signalized intersection, which operated at a very poor Level of Service F, and we put in a roundabout. It has really helped revitalize this area and improve operations significantly. This particular roundabout has had a problem with minor accidents, but we have significantly decreased our major accident rate.

Our intersection program is funded as a separate program—about $5 million per year. We have a number of other projects around the state that are funded for intersection improvements outside of this as well, including some fairly major projects.

We have a major emphasis on bicycle and sidewalk improvements. Up until 1995, by statute the State Highway Administration was not supposed to construct sidewalks along its highways unless money was taken away from other projects in the local jurisdiction. Statutory language passed in 1995 turned that around; now we *must* construct sidewalks and accommodate bicycles as part of our facilities unless we demonstrate why it is not reasonable to do so. We have a program for retrofitting a number of our facilities to build sidewalks from the era when we weren't allowed to, as well as a person for making our roadways more bicycle compatible.

We have a program for improving pedestrian connections to transit stations. We have separate investments, called Access 2000, to provide sidewalks on a number of state highways and local streets to improve pedestrian friendliness. We have been spending $1 million to $2 million per year on this, and it is amazing the miles of sidewalk you can construct for fairly modest amounts of money.

We include our noise mitigation program as part of our smart growth program. The governor has said that part of our job is to improve the quality of life in communities, and the quality of life along our freeways is very much affected by noise. We have had a pretty healthy retrofit program of $10 million to $20 million per year, in addition to the Type I noise walls that we build as part of our projects.

We emphasize landscaping and aesthetic design on all of our projects through our "thinking beyond the pavement" program. We have a separate program of $7 million to $9 million per year dedicated to landscaping and aesthetic design.

We consider congestion management, and in particular our intelligent transportation systems (ITS) program, to be an integral part of our smart growth transportation program, because we try to get as much out of the existing system as we can without actually having to build more capacity. We have been spending $10 million to $20 million per year on our ITS program.

We use our transportation enhancement program as a major tool to help smart growth. One criterion that we use to select projects proposed by local sponsors is whether the project is located within a priority funding area. We have had major expenditures on scenic easements, particularly in Civil War battlefield areas, under the enhancement program as part of our rural legacy program. We have also had a number of water quality and wetland projects funded under the enhancement program.

We have access management programs as part of individual projects to ensure that we manage access and prevent new strip commercial development from occurring as well along several of our National Highway System routes in the state. We have been spending about $1 million per year on this. The amazing thing is that, particularly in areas where we have agricultural land, you can buy a lot of linear feet worth of access controls, leaving entrances that can be used only as farm entrances. The farmers are delighted because they get money that they otherwise would not have received.

The governor talked about our major investment in and our goal for transit, doubling transit ridership in 20 years from about 0.5 million to 1 million riders per day. The backbone of our transit system in the state is our bus system. We do have rail systems in both the Baltimore and Washington areas, as well as statewide commuter rail. But our focus is on improving and increasing bus service, investing in selected new rail lines, and improving service on existing rail lines.

Transit-oriented development is a major part of our smart growth program, and we have had task forces working on ways to encourage more transit-oriented development. One group within the secretary's office is focused on joint development of our transit stations in particular. In the State Highway Administration, we have a number of projects trying to improve access into transit stations, particularly terminal stations, along our beltways, as well as investments to improve parking.

To wrap up, I want to talk about changes in the projects to make them more compatible with smart growth. I mentioned earlier that when we are reviewing projects for funding, we try to ensure that the alternatives that are developed or that are ultimately selected are located within priority funding areas. If we are studying several alternatives, some of which will go outside the priority funding area, we try to steer away from those alternatives.

The focus of our program has shifted to improving existing roads rather than building new roads. We use context-sensitive design in Maryland. We call it "thinking beyond the pavement." This is aesthetic design, working with the community and trying to develop projects that become assets to the community. We consider controlling access on particular projects along existing arterials that do not currently have access controls. We try to build bicycle and pedestrian compatibility into virtually all of our projects, particularly off of the freeway system. We look at transit components. We look at transit as an element of our highway projects, rather than looking at transit improvements as an alternative to highway projects. And we try to combine our improvements with other state and locally funded improvements, particularly in revitalization areas. We have been very successful in doing that.

Smart Transportation in Las Vegas, Nevada

Jacob Snow, *Regional Transportation Commission of Southern Nevada*

My name is Jacob Snow, and I'm the General Manager of the Regional Transportation Commission of Southern Nevada in Las Vegas. I'm not exactly sure why I'm here, coming from a community that probably has represented the antithesis of smart growth in many ways, but in some ways it hasn't. If you were to ask Las Vegans what "smart growth" means, many would say that means we put the slot machines in the grocery stores so we don't have to travel as far to the casinos. They are everywhere in Las Vegas.

One of the reasons we're unique is that the Regional Transportation Commission is a metropolitan planning organization (MPO), a transit agency, and a street and highway agency. So we don't have a fragmented transportation framework as do so many other areas around the country. We make the transportation plans as the MPO, and then we implement them as a street and highway agency and as a transit agency. That has been particularly beneficial for us in some respects.

Our commission has five goals, and the strategies and tactics that they have pursued to attain those goals are basically focused on some of the principles of smart growth. The first one is compact development in Las Vegas. Back in 1950, the core of the population, which was only about 52,000, was right in downtown Las Vegas. Figure 1 shows all of the developed parcels—52,000 people. A decade later, we had doubled in population to 110,000. A decade after that, we had doubled again to 220,000. A decade after that, we had doubled to 440,000. Pretty soon, we are going to get big enough that we can't double our population every decade. In 1990 we were 775,000. Then by the end of 2000 (Figure 2), we were more than 1.4 million people.

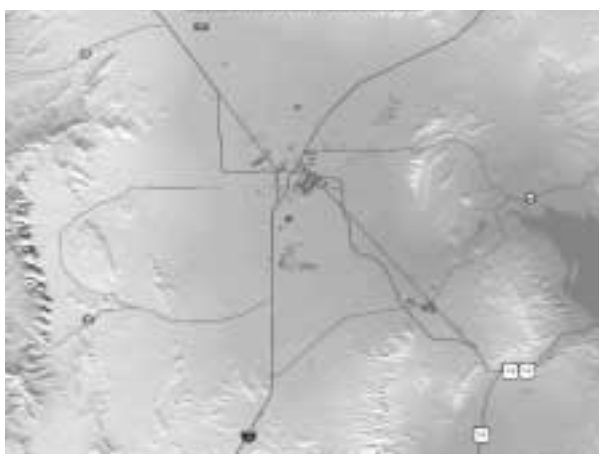

FIGURE 1 Development growth as of 1950.

The ethos of Las Vegas is that growth is good. As you look at this picture, ask yourselves a question: Does this represent sprawl or a very compact, high-density urbanized area? The Texas Transportation Institute (TTI) studied 68 cities in its annual urban mobility study. Las Vegas is third in density of those 68 cities: New York, Los Angeles, and then Las Vegas. A recent study by the Urban Land Institute (ULI) talked about cities where the vehicle miles of travel per capita is low. The top city on the list was New Orleans, followed by New York City, then Philadelphia. These are cities that developed around transit, where transit predates the automobile. It is difficult to get around in an automobile in these cities. But fourth on that list is Las Vegas.

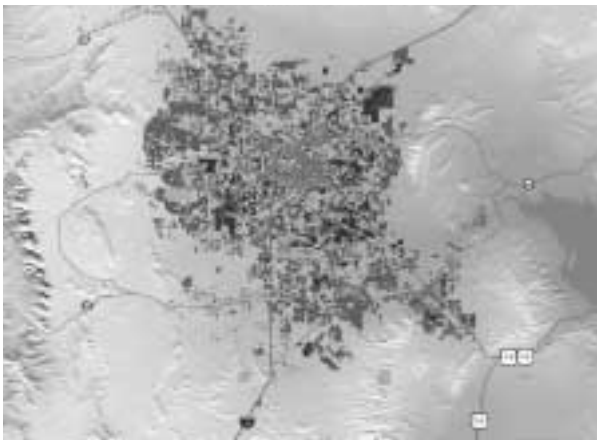

FIGURE 2 Development growth as of 2000.

We have an extremely dense urbanized area, and in fact, we have had a de facto urban growth boundary. It is not by choice; the federal government owns 95 percent of the state of Nevada. Although we would have like to have sprawled, we could not. The federal government would not sell off or exchange land where the developers wanted to build. Some people say that Portland, Oregon, is a Canadian-type city because of its urban growth boundary. Well, maybe Las Vegas is a little bit more Canadian than we think, although not by choice. This urban growth boundary has allowed us to have a compact urban core and a high density, which has paid off in some unanticipated ways.

Figure 3 shows the 2000 peak-hour congestion; darker dots indicate Level of Service F and the lighter dots are Level of Service E. In 10 years, with our population growing by roughly 100 percent, our peak-hour congestion increased by 216 percent. Three years into the future, the peak-hour congestion increases by 264 percent over that of 2000. At a population of 2.3 million in 2025, we have a mess to deal with (Figure 4).

One of the metrics TTI uses to measure urban mobility is the travel rate index. Los Angeles is at 1.53. That means that it takes 53 percent more time to travel from Point A to Point B during the peak period in Los Angeles than it does during the off-peak period. We have a travel rate index of 1.55. So in our public relations and marketing campaigns, we tout this sign, which takes that iconic sign on the south end of the Las Vegas strip that says, "Welcome to fabulous Las Vegas, Nevada," and we say, "Welcome to fabulous Los Angeles, Nevada." We won't have the beach or the nice Mediterranean climate, but we will have the smog and the traffic congestion. That is an image that resonates well with many Las Vegans who moved away from Los Angeles to avoid those things.

How do our roadways look? Congested. How does our air look? Polluted. These have been some of the negative externalities of all that growth. We invited Bob

FIGURE 3 Peak-hour volume capacity, 2000.

FIGURE 4 Peak-hour volume capacity, 2025.

Dunphy of ULI out to Las Vegas to speak to our commission a few years ago, and they were so impressed with him that they decided to start following some of the things he says. In one of its publications, ULI talks about the key elements of a balanced, integrated transportation system. We have tried to follow that by going according to these principles.

You have to have a backbone with a foundation of an urban highway and arterial system that can go north, south, east, and west across your community, and we do not have that. We have been building what

virtually is an Interstate here, Interstate 215, all with local money—no state department of transportation money and no federal money whatsoever. We have spent about $800 million over the past decade, and we have a tax initiative that will be on the November ballot to expand and accelerate the funding, because we just can't keep up.

We also recognize that it is going to be difficult to pave our way out of congestion, so we are focusing on transportation choices. Yesterday there was a question to a panel about whether there are any revolutionary breakthroughs in transit that are really going to make a difference in cost-effectiveness and getting people on transit. This is one in particular—our bus rapid transit program. I'm going to talk more about this later on, but we have another one that we are really highly touting that we think is going to be a major breakthrough—our monorail project.

Our urban monorail is being built in and around the Las Vegas strip (Figure 5). When the Regional Transportation Commission started the major investment study in 1995, there was a real division in the community. It was probably the most controversial transportation project in the history of the state of Nevada because on the west side of the strip was Steve Wynn, who had built the Mirage, the Bellagio, and the Treasure Island. He was against any type of light rail system. He would sit in those technical committees and say, "Congestion is good. I'm not going to spend a billion dollars in Las Vegas to build these megaresorts only to pay taxes so that the RTC can build a light rail system to take my customers away from my property. Congestion is good for my business. I want to keep people in my property." That was his attitude.

The attitude of some people on the east side of the strip was different, because the Las Vegas Convention Center is there. Las Vegas is a weekend-heavy tourist environment. During the weekdays, their occupancy rate isn't nearly as high. The casinos on the east side of the strip said, "If we could have some sort of good connection over to that convention center, we would do better in business during the week because we could funnel our guests back and forth between the convention center. We could go after the convention market more heavily." That was led by the MGM Grand Hotel and by the Las Vegas Hilton, which is right next to the convention center, off the strip. The Hilton wanted to connect to all of these tourists who walk up and down the strip and get more foot traffic that way. So they were in favor of the monorail.

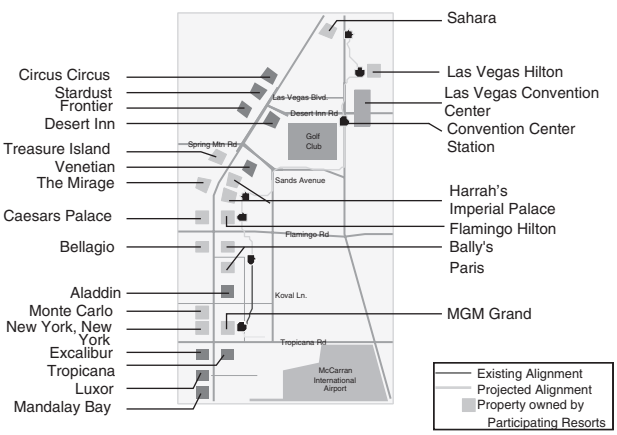

FIGURE 5 Las Vegas monorail alignment, Phase 1.

Steve Wynn and the Mirage Resort Group and the Mandalay Bay Resort Group became aware that if this monorail went through, the hotels across the street would have them at a competitive disadvantage. So they really fought against this monorail. My predecessor in the job was pushing for a publicly owned and operated system paid for by taxes on the gaming community. He didn't last very long in the job. The people on the west side of the strip made it so difficult for this monorail project to go forward that they had the community convinced that we could not spend any public taxpayer dollars or federal flex funds on this form of transit.

We said to them, "If we can build this with our own revenues generated from the private sector, and we won't spend any taxpayer dollars on it, what will you say?" That is what we did. We worked with a consortium of hotels. We secured the right-of-way for a 4-mile system that would start at the MGM Grand Hotel, go past Paris and Bally's, past the Flamingo Hilton, past Harrah's, past the Imperial Palace, and over to the convention center with stops at the Las Vegas Hilton and the Sahara. We did this by bringing in Salomon Smith Barney and a bond investment rating agency. There is enough foot traffic and convention traffic that this system will pay for itself (Figure 6). We sold $650 million worth of bonds to build this project. The construction cost was about $400 million, with the rest needed to fund debt service reserve and capitalized interest and contingency accounts. But we did this without any taxpayer dollars. It is under construction right now and will open in spring 2004.

Steve Wynn's argument that congestion was good for his business did not hold true, and the stock share started to plummet in his company. He was bought out by MGM Grand, which is now called MGM Mirage. Of course, it is favorable to the monorail and to transit in general.

So now we are actually proposing to spend taxpayer dollars on an extension of the monorail, but we had a senator from Nevada who passed some legislation saying we wouldn't have to come up with a local match because we had already spent local dollars on this [first] piece. We are in the process of extending that a couple

FIGURE 6 Fremont Street monorail alignment.

of miles from the Las Vegas Hilton, past the Stratosphere Hotel and into downtown glitter gulch, Las Vegas—another 2-mile extension. The third phase will be to McCarran International Airport.

The monorail is really designed primarily to move tourists in the resort corridor. But what about all of the other residents of the city of Las Vegas, Henderson, unincorporated Clark County, and North Las Vegas? For them we have the Metropolitan Area Express, a train on tires. It will operate much like a light rail system, although it is really a bus. I believe Las Vegas is the only transit agency in the country that has actually purchased these vehicles, which are manufactured by Aris Bus.

This technology exists in France, with one system operating in the Normandy District. It looks like an ordinary bus, with a driver using a steering wheel to steer manually. It has an optical guidance system, and as the driver lets go, as he pulls into the station platform, the optical guidance system takes over and provides precision guidance to the vehicle, just like rail does. The driver is not driving; the optical guidance system is performing the operation.

There will be stations and platforms, just like a light rail system. There will be off-board fare collection and preferential treatment for these vehicles at intersections through traffic signal prioritization. Another example is near Lyon, France, in a city called Clermont-Ferrand. It is a different-colored vehicle, but it has the same optical guidance system with the same type of flexibility. If you have light rail, you are confined to where the rail goes, but this is on tires. So you can run this as a circulator in neighborhoods and then transfer it to the main line, where it will operate in Las Vegas along the northern part of the strip in its own dedicated lane.

With off-board fare collection, it pulls up to the station, all four double doors open, and you have platform boarding, so it really facilitates wheelchair boardings. We are very excited about expanding that type of high-quality rail-type transit at the cost, in Las Vegas, of $6 million per mile. By comparison, the average cost of light rail is about $35 million per mile. It is cost-effective for us. We will connect this metropolitan area express system in several locations with our resource corridor monorail.

We also are working on light rail in the Las Vegas area, but it is not the traditional light rail. We are taking advantage of underutilized railroad rights-of-way. Using the Union Pacific railroad spur that goes right by McCarran International Airport, we will put diesel multiple unit (DMU) service there as opposed to light rail. This is inexpensive because you don't have to pay for the electrification of light rail. The track is already there. We can do that for the cost of about $6 million per mile. The community is excited about it as well. We have new intermodal transfer facilities, we will have bus, we will have bus rapid transit, we will have the DMU service for light rail, and we will have monorail at these intermodal facilities.

I also want to talk about bicycle and pedestrian improvements because we are the agency that sets the specifications and designs and funds the streets and highways, so we can make changes. We have almost concluded some very strenuous negotiations with the development community and our local governments about changing our street development regulations to be more bicycle- and pedestrian-friendly. We are doing that by narrowing local streets, in a smart growth approach, with traffic calming. The development community likes that because narrower streets reduce their development costs. In turn, we are getting 12 additional feet from them out on the collector and arterial streets so that we can add a 5-foot bicycle lane and a 5-foot buffer in between the movement areas and the sidewalk. That 5-foot buffer would be landscaped and would also serve as a utility corridor where we can put street lights and other street furniture and things that get in the way of pedestrians and the disabled. We are making it safer for bicyclists and pedestrians, and those changes will go into our standard design documents. Anyone who wants to build a street or a road will have to comply with those guidelines.

One of the barriers to smart growth in Las Vegas is that we have gated communities all over. We have a very high density, but it is difficult to take advantage of some of the benefits associated with smart growth

because there is only one access point into and out of these large gated communities. One Albertson's shopping center, for example, has a gated community across the street with several hundred homes, and many of them could walk or take a bike to that shopping center. Instead, they have to get in their car, drive a mile and a half to the entrance and the exit, and come back a mile and a half to the Albertson's, and then make the return trip. That is an impediment that we need to work on.

Truly, with the principles that we have learned from smart growth, we are seeing a greening of Las Vegas.

Whose Future Is It, Anyway?
The Essential Public Process

Robert Grow, *Envision Utah*

My talk will be somewhat different from the ones you've heard. We come from an area where they used to shoot people over water rights and fence lines and where public property rights are considered inviolable. It is a unique political and geographical climate.

The Envision Utah project started about 7 years ago to address the growth issues in our communities. One of the first things we did was remind people that our ancestors who settled that area had a history of planning. In fact, 500 cities in the West were laid out under the direction of Brigham Young, including San Bernardino, California, and Carston, Alberta, Canada. The effort back then reached parts of northern Mexico. Although we have a history of planning, it was lost, and Envision Utah was an effort to reclaim our history as citizen planners and to engage the public in a long-range visioning effort.

About three millennia ago, a wise king of Israel was reputed to have said, "Where there is no vision, the people perish." That is in the book of Proverbs; smart growth efforts, or "quality growth efforts," as ours are called, require a long-range vision.

Our challenge in Utah was quite simple. We have about 1.7 million people in what we have renamed the Greater Wasatch Area. We created our own vocabulary as we went. We don't call it "smart growth" in Utah. That term is viewed as an intellectual fetish of the self-chosen elite of the East Coast. So in Utah we call it "quality growth." We were facing a million more people, joining the 1.7 million who were already there, by 2020. We have significant air quality issues caused mainly by the bowl shapes of our mountain valleys, which trap air pollutants. We were projected by 2020 to urbanize 87 percent more land than we had in the past 155 years. We had significant new water demand projected for 2010; without extensive conservation, we would have to go a couple hundred miles away and completely pipe a new river down to the Wasatch Front area. Congestion and crowding were projected to increase business and personal costs for infrastructure and living expenses, housing costs were projected to increase, and extensive new infrastructure was required. We were running a budget surplus in Utah, and I used to remind people that what we really had was an infrastructure deficit. We hadn't built what we needed to build for the future.

Combined with those growth problems was the political layout of Utah. Figure 1 shows the Greater Wasatch Area, which consists of 10 counties, 90 cities and towns, 157 special service districts, the Utah Transit Authority, two MPOs, and of course the Utah Department of Transportation, or the Utah Department of Roads, as I sometimes call it. There are more than 500 city council members, 500 planning commissioners, 30 county commissioners, 90 mayors, and hundreds of developers, realtors, and other major stakeholders in the growth issue.

Our effort was not without political opposition. But because it was a private effort, started by a private group that invited the public sector in, it had no political clout except that clout given to it by the public response.

I would like to talk about a few things we've learned from our process. Some of them will be replicable. Some of them will not apply to you, but I hope we can

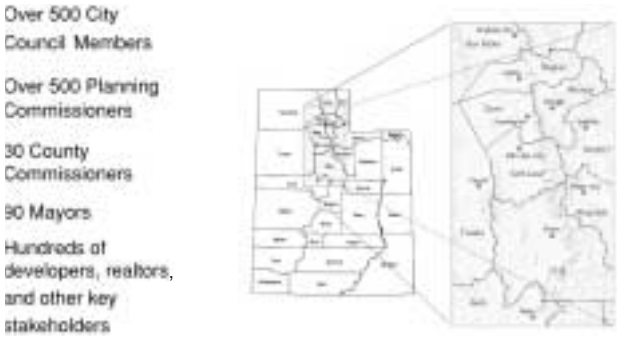

FIGURE 1 Greater Wasatch Area: 10 counties, 90 cities and towns, 157 special service districts.

help you miss some pitfalls. I want to talk about the premise on which we started the partnership we created, the process we have been going through, the vision and its characteristics, and our progress.

First of all, our premise. Nobody can disagree with this, and this is how we got everyone on board at the beginning. The premise was that the public has the right to choose its own future. That is whose future it is. Public officials should serve that vision. We invited all persons in the partnership, regardless of background or constituency, to take off their public interest hat, set it aside, put on their "I'm a Utahan" hat, and look to the future for the benefit of all of Utah and all our children and grandchildren. That is a hard invitation to resist.

Second, we all had to recognize that growth issues have natural boundaries. Water comes in watersheds; air comes in airsheds; commuters come in commutesheds; and our existing political boundaries are not aligned at all with the natural boundaries of the problems, and therefore we needed a regionwide effort to deal with the issues.

The third fundamental premise was that the public would make good choices if we gave them real options. If you poll the public and ask, "Do you want clean water?" they say, "Yes." You ask, "Do you want clean air?" and they say, "Yes." "Do you want your half-acre lots?" They say, "Yes." But choices come in packages, and we believed that if we gave the public real choices, they would make good decisions.

We set out to create a process, not a project. This coming year we will redo our baseline and scenarios, and we will move forward through the process we went through for the first 5 years, it is hoped now with better tools, better modeling, and better ways of conveying them to the public.

We have been through hundreds of public meetings and workshops. We have distributed more than 800,000 questionnaires and survey forms. We have spent more than 100,000 dedicated hours of technical modeling, and we have had scores and scores of meetings with stakeholders and decision makers along the way.

Our effort was to reach out to the public. We used television, radio, and newspaper, and part of our strategy was to involve the media in the original effort. The publishers of the major newspapers and the station managers of all of the major radio and TV stations were all in the partnership. They created a public response committee, which then directed the efforts to obtain the press support we needed. All of our work was done on annual cycles, so that when all the Christmas advertising ended in December and all the downtime came for advertising in January, that was when we went public—the beginning of the new year. We could get lots of free press and airtime. So we paid a fraction of the normal cost for the publicity.

The theory of the partnership was that we had to involve everybody who could affect or would be affected by the outcomes of growth. In 1974, Utah passed a bill that created regional planning, and a referendum dismantled that bill that fall. The current sitting governor believes his father lost the opportunity to be governor because he supported that bill. That bill was attacked by the realtors and developers in Utah, and it was overturned at a referendum that fall. As we created this process with the governor from that period, he said not to leave anybody out. He said, "I don't care how hard they are to deal with or how difficult you may think it is to put up with their perspective, but don't leave anybody out this time." So we reached out to every interest group that we thought would be affected by or could help us change the direction we were going. The group had to have stature and credibility and staying power. We looked for people already well known in the community, so if they were invited to come, even though they were busy, they could bring with them a part of the community that would trust them to be honest brokers of good information.

The partnership must not be controlled in appearance or reality by any group of stakeholders, whether public or private. To make certain that was true, we sought funding from multiple sources. One-third of our money came from individuals and from businesses. One-third of our money came from foundations. And one-third of our money came from government. Half of the government's share came from local government—the individual cities and towns—and half from the state. The fund-raising did not just raise money but provided balance to make it clear that no one entity controlled the effort.

We involved everybody we could. The partnership involved business leaders, developers, utility companies, local and state governments, senators, citizens and conservation groups, and religious leaders from across the religious spectrum. Many people view Utah as a religious monolith, but the Salt Lake Valley itself is less than 50 percent Latter Day Saints (LDS) these days. So the Catholic bishop, the Episcopal bishop, leaders from

the LDS church, a Baptist minister—we tried to make sure we had involved as many groups as possible. We also brought in education leaders, who are heavily influenced by the growth patterns—all of the new schools are out on the fringe. There are tremendous investments every year in bonding for new schools.

A tremendous amount of effort was done behind the scenes. Mike Levitt, our governor, and the Chair, Jon Huntsman, Jr., who is now the Deputy United States Trade Representative, were both involved. We did a lot of work with our stakeholder groups and with those who were important in our community to keep them involved.

What was the process? Business leaders have a low tolerance for slow processes, so we had to have momentum, clear goals, and established timetables (Figure 2). We had to tell them there were deliverables coming within a time frame they could accept. The process had to be inclusive and had to appear to be inclusive. Everything was transparent to all the participants and the public. Anybody could be in any part of the process, and the press was welcome to everything. That was important because at the end of the day we were going to present choices to the public, and the public had to accept that we had been an honest broker of real choices, real alternatives for their future.

You cannot underestimate the power of scenarios in speaking to the future. Choices come in packages, and we decided in our scenarios to hold one variable constant: population. Efforts or perceived efforts to slow down growth in Utah over the past 30 to 40 years have not been successful. That tends to be true everywhere. The Constitution guarantees the right to travel, and with that comes the fact that people will go where the economies are strong and where the jobs are and where there is a good quality of life. So we held population constant at 2020 as we did our scenario modeling. We changed the housing types, the transportation systems, the open spaces, and so on. But the constant—so we were always comparing apples to apples—was population growth.

We run on a yearly cycle, so each January we came out with a new set of things to go public with. In our first year, 1997, we brought the partnership together. We did an extensive values research project, and we created the baseline scenario. There were no alternative scenarios yet, but the 20-year baseline is designed to bang people's heads against the wall. That is out there in the future as we use up our limited resources. Unless you cause them to look out far enough, they don't see those barriers. The importance of the visioning process is that if you want to change the way people perceive a region, you have to take their vision out far enough that they come to understand the constraints.

- Must have momentum—clear goals and established timetables
- Must be inclusive (in both appearance and reality)
- Must be transparent to all participants and the "public"
- Must be viewed as an honest broker of real choices (scenarios)
- Must seek and follow the public's direction

FIGURE 2 The process.

In the first year we did the baseline. The most impressive part was a simple computer program that showed where people would be living if we continued to grow at the same density between now and 2050, even with declining growth rates. As we ate up our open spaces in those forests we love, everything became crowded, and it was clear the people did not like that.

The next year we spent in scenario development. A large scenarios committee worked together with all the government entities as well as the private sector, and we held major workshops on where and how to grow. The next spring, we took that all to the public and listened to the public response. We have been implementing the quality growth strategy that was developed in that third year.

Our first workshop, on where to grow, involved about 300 people, but we replicated this all over the area. We designed a simple game called the chip game. We gave participants maps of our area, and then we gave them density chips. There were groups of people from all these interest groups around big tables with maps. We said we are going to have a million more people here by 2020. This is the average density at which we have been growing for the last 20 to 30 years. We want you to show us where you want to grow by using those density chips. Some of them were pretty proud of themselves—they could get all the 2020 density chips on areas that didn't matter very much. When they got done with that after an hour, we handed them another 2 million people for 2050 and said okay, put these 2 million people where you want to grow. All of a sudden, they were stacking the chips, representing density increases. Nothing forced people to come up against the constraints we were facing like going through the process themselves to become a citizen planner. That became our most effective tool—to take their vision out 20 years and have them play the chip game.

The second workshop was on how to grow, and it went through a lot of questions about what kinds of communities we really want in the future. This was more community design. As we did that, we got a sense of what the public in our area really would like.

The major findings of those workshops would be different in every area. But most important, we found that people wanted infill a lot more than they wanted to expand over the areas that they considered pristine. In particular, people wanted to preserve the Wasatch Back, their playground in the mountains, which could become highly developed in the future. Rail transit came out as an important part of the long-range strategy. Walkable

communities were high on the list of things people wanted, along with preservation of critical lands.

To develop scenarios, we used some outside consultants—John Fregonese and Peter Calthorpe were working with us. You have to be careful if you use consultants, because they bring with them all of their wisdom and all of their baggage. We explained to them that they were going to be our orchestra leaders. They would help us lead the symphony, but the music would be Utah's music. So when Peter wanted to transport his California designs to Utah, we would smile and say, "Help us lead without writing the music." That turned out to be a great relationship.

We developed the four scenarios shown in Figures 3 through 6. Scenario A was continued sprawl, showing how much land we would consume if we developed like we had over the past 3 to 5 years. Scenario B was the baseline, similar to the past 20 to 30 years and slightly more dense. Scenario C had a lot more infill and redevelopment. Growth on new land was focused into walkable, transit-oriented communities that used considerably less land. Scenario D was a very intensive infill design.

When we took these to the public, we showed them what they meant in terms of land consumption (Figure 7). For example, in one of them we would use another 409 square miles, whereas in C, which was a more dense transit-oriented approach, we would use only 126 square miles. Every mile you develop is another mile of farmland, because in Utah the developable land is all farmland.

We talked about the vehicle miles traveled (Figure 8) and the total emissions in tons (Figure 9), but we also did spatial modeling using Mobile 5 for each of the plans to show which were best.

What shocked our legislature the most was an estimate of total infrastructure cost. We put in not only the public cost but also the private cost. In Figure 10, the first part of the bar is the municipal and developer local cost for infrastructure. The white is the regional roads. The next light shading near the top is regional transit and then regional water. Between Scenarios A and C, there is a difference of about $15 billion in spending on infrastructure.

We took all this to the public in 600,000 newspaper surveys. While this was going out, the governor and about 15 of the most prominent people in Utah were on TV ads constantly saying, "Join us in helping choose Utah's future." About 20,000 of those surveys came back. From that, we could see what the public was interested in. Then we used the survey work we had done at the beginning to make sure that we had normalized it across the interest groups in Utah and the public. Figure 11 shows the selections of the public, which were

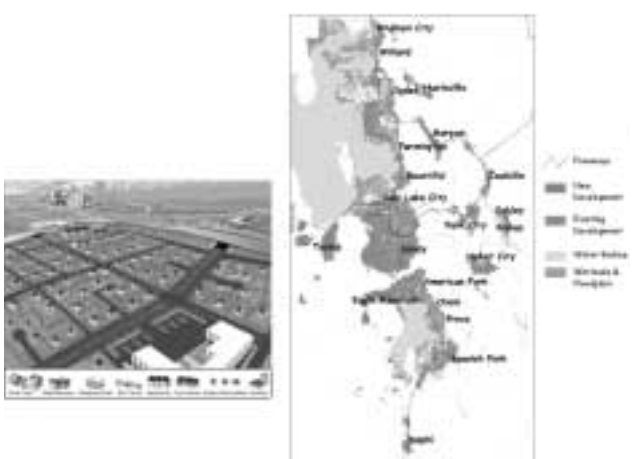

FIGURE 3 New and existing development, Scenario A: continuation of recent trends; larger lot sizes; more auto-oriented development.

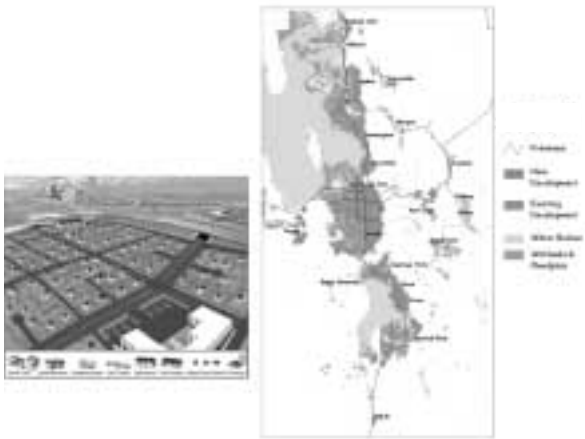

FIGURE 4 New and existing development, Scenario B (baseline): implementation of adopted plans; dispersed development pattern common in past 20 to 30 years.

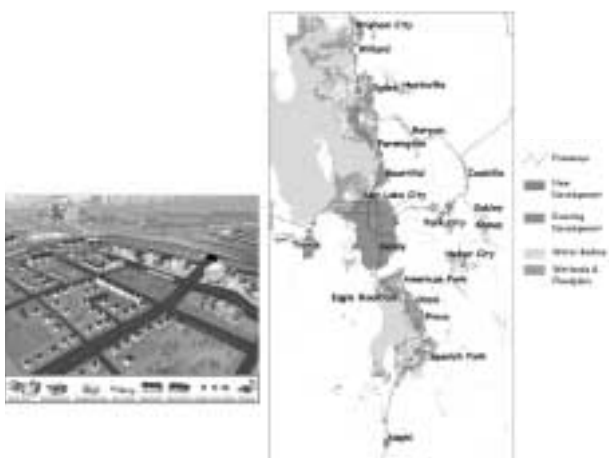

FIGURE 5 New and existing development, Scenario C: more infill and redevelopment; growth on new land focused into walkable, transit-oriented communities.

FIGURE 6 New and existing development, Scenario D: significant increase in densities; extensive infill and redevelopment; extensive transit system.

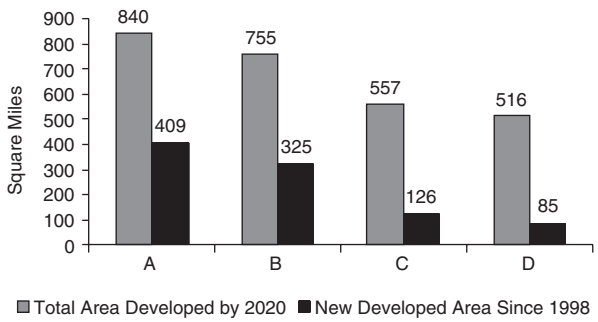

FIGURE 7 Land consumption.

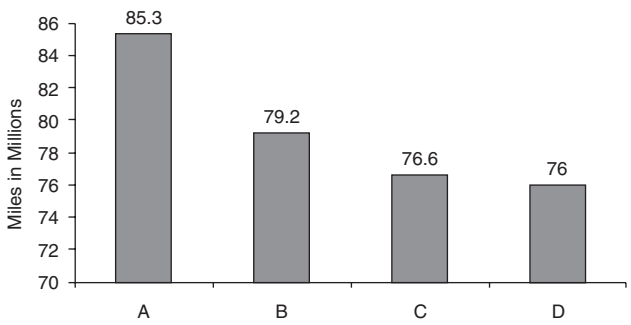

FIGURE 8 Vehicle miles of travel per day.

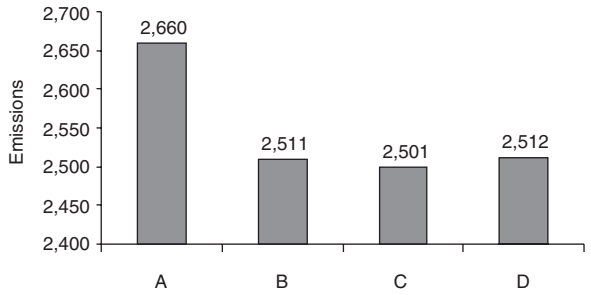

FIGURE 9 Total emissions (tons per day).

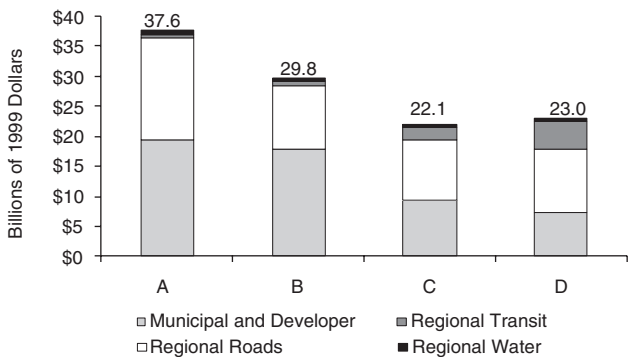

FIGURE 10 Total infrastructure costs.

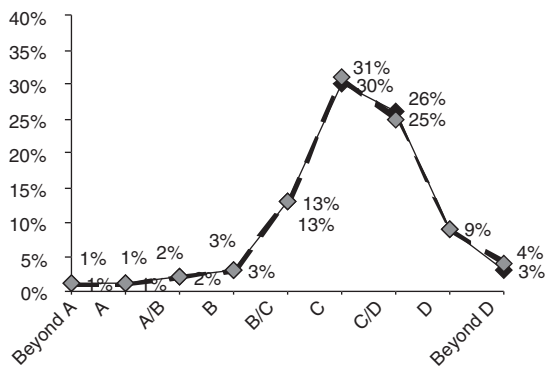

FIGURE 11 Choosing a scenario (weighted versus unweighted results). Unweighted results (represented by the dark dashed line) are nearly identical to weighted results.

weighted heavily toward Scenarios C and D. This would surprise most people: Utah residents would choose a much denser lifestyle with rail transit and other forms of public walkability and transit-oriented developments.

From that, we created the long-term vision. Part of what we learned along the way was that if you are going to do a visioning process, it must be at a high level. You can't get into the details of what goes in this city or that city. It is really a regionwide plan—very little changes on the basis of particular developments for purposes of visioning.

Second, it must be long term. There is a freeway proposal in Utah called the Legacy Highway, which is currently the subject of significant litigation. The environmentalists wanted to model the baseline and all the scenarios without Legacy in it. The MPO and others wanted the model with Legacy in it. We finally modeled it both ways so everybody would be happy. But we

tried to look to the long term. Legacy was already approved, so we stayed out of a lot of fights by looking out 20 years and then took a second cut at 2050.

The vision must be clear and easy to understand. I just read our MPO's recent 2030 plan. You would have to be an engineer and a lawyer combined to understand it. As you take these things to the public, you must make things understandable and clear. The public will engage only if you can give them clear choices that lead to implementable goals. They want to see change and they are not going to engage unless they think they can affect the outcome. Your effort must be value driven.

We have developed goals from all of the public input. They look much like the smart growth goals that you would find anywhere. Our focus is on implementing this through local changes because of our political structure. We will never have the statutory backing that Maryland has. We just live in a different world. We have 32 individual strategies for attaining those goals. If we implement the growth strategy, we will save about $5 billion in public funding for infrastructure over the next 20 years. We will conserve about 171 square miles of farmland. We will provide a much wider range of housing choices for people and have lower emissions and better environmental circumstances. We will reduce our water consumption or put off a lot of the cost for water development, and we will create a much better transportation system for our public.

One thing we did early on that the consultants just scratched their heads about was hire one of the nation's best political strategists and pollsters. We said, "We are not interested in manipulating the public. We want you to do a values survey as you would do for a political candidate. Tell us who lives here and what they care about so that as we speak to the future, we speak to the values they care about." We found the most common value system in Utah was that people were seeking peace of mind by doing the right things for their children. That was the main driver. Lots of things came out of this value study, and we completely changed the vocabulary of smart growth in Utah to match this value system.

With that in mind, let me define "smart growth" (although the way I would define it personally is different from the way others in my community might). Smart growth is growth in a way that reduces the cost of living for young families. Smart growth allows a young family to operate with one car or no cars. Smart growth reduces the cost of taxes to a young family by reducing the cost of infrastructure. Smart growth reduces the cost of living to young families by giving them a wider range of housing choices. Now, why did I phrase all of it that way? Because in Utah the thing people care about the most is their children being able to live there and their children raising their grandchildren—not day care. Smart growth, for some of us, is the ability for our children to choose that one spouse stay home for part of his or her life and raise the children. That is very different from what it would be in New York. Whatever the value system of your community is, you need to understand it and speak to it. That was our goal with this particular values research.

We have a lot of urban planning tools. The planners are really busy, so we have given them a big book full of tools. These are essentially explanations and ordinances that they can adopt in their communities. We have also just finished one on transit-oriented development particularly aimed at the nodes along our transportation system in the future.

We have done local planning projects like the shoreline project along the Great Salt Lake, which is a highly contested, environmentally sensitive area pressured by development, with nine communities coming together along with the environmental groups. We brought 10 cities together in southern Utah County, which is all farmland, and did the Nebo Community Vision Plan for how those 10 cities will grow. We are sponsoring a project with the nine jewels of the Wasatch Back—little towns that are now under development pressure. We are now doing a plan for transit-oriented development around 15 major transportation nodes. We are taking the process and drilling down to individual needs that are not across the region but make up a big part of the picture for the region.

We give awards every year, with the help of the governor, to smart growth/quality growth projects, projects worthy of public consideration. Envision Utah helps lead the effort to establish quality growth. The commission in Utah doesn't have power like Maryland's, but it does give leadership. Envision Utah is often credited with passing a quarter-cent sales tax increase for public transportation and affecting local plans.

When our light rail system began service, it went to the projected 20-year ridership in the first 3 weeks. That was largely due to the Envision Utah effort that gave the public an interest in alternative forms of transportation. Now we have cities fighting over who gets the next lines, so we have the leverage to develop the ridership. Cities have to bid for these lines on the basis of ridership, and the ridership depends on what cities develop around these transportation nodes. The biggest difference between Scenarios A and C is that under Scenario A, only 50,000 to 60,000 people will live within a half mile of a rail line in 2020. Under Scenario C, it is 800,000, or one out of every three.

Our process is not replicable everywhere. We do not define public process as due process under the law, in which you give people notice and an opportunity to be heard after you have decided what you are going to have them do. Public process is involving the public from the beginning in a process where you truly trust them to make wise decisions by giving them good choices.

Smart Transportation in Portland, Oregon

Tom Kloster, *Portland Metro*

This is going to be quite a challenge. Robert Grow's presentation is probably typical for Western states. Portland is like a little piece of Israel in the West because we are very tolerant of regulation in Oregon. Our statewide planning program dates back to 1973. Our approach commonly comes on the regulatory side; even though we have used a lot of other tools in our planning, it is possible for us to have a government lead the kind of project that Robert was talking about for Utah. This presentation is going to focus on how we have used public-sector planning to achieve goals similar to Utah's and on how we are using federal funding to implement those plans for our region.

Portland lies at the confluence of the Columbia and Willamette Rivers. Portland's history goes back even before the Oregon Trail—Lewis and Clark came through the same area, following the Columbia River. Part of what makes Portland different is that it is at the head of a fertile valley. There is not a water shortage, there is lots of land, and so Portland really evolved historically more like a European city, unlike the boomtown growth that has affected almost all Western cities. If you go back to the 1840s, Portland's immigrants were farmers. They were coming to the area to grow crops in the European tradition. The entire valley was laid out in a grid, just like the European designs. By the 1870s, Portland was, by far, the largest settlement in the western half of the country, serving as the provider of crops and raw materials such as timber to the boomtowns where the gold was being sought. Towns like San Francisco and Seattle were booming but needed resources from Portland, which had an agricultural and timber base.

In the early part of the 1900s, Portland was a typical streetcar town, and San Francisco and Seattle were passing Portland up in size. By the 1940s, we had our first peek of being a multimodal, mature city and established as a metropolis. Then a period of decline began. We began putting freeways in, like every other city in the country. By the 1960s, we had knocked down about half of our traditional downtown for urban renewal and freeways. We put in a loop system that still occupies the east bank of the Willamette River downtown. And ever since 1970, we have been trying to undo the damage and put back together a city that was quite nice in the 1940s.

Our economy, which is very diverse, is still based on a lot of those same traditional legs. Energy, agriculture, timber, and shipping are the major parts of the economy. Emerging now are technology and athletic accessories—Nike and Adidas and Reebok are now based in Portland. Technology is our largest sector, which is why Oregon currently has the highest unemployment in the country.

The needs of the technology-based economy are constantly being balanced with the area's preservation of nature and natural resources. Portland is the only sea-level route through the Cascade Range of the interior of the West. Because quality of life centers on the Columbia River and the Columbia River Gorge, there is tension between respecting the environment and bringing commodities out of that environment.

Portland's growth curve is similar to that of other parts of the West, though not quite as steep. We gained about one-half million residents in the past decade,

which was a lot for us to deal with. We have had an urban growth boundary since 1979, and we had to begin expanding it in the past 10 years to accommodate that growth.

Over the next 20 years, we expect to see about 700,000 new residents, not as extreme as Las Vegas and the Utah Front Range area, but still for us a very steep increase to contend with. Also, there will be a lot of job growth, which is a good thing, but we are actually quite short on employment land.

I work for Metro, which is a regionally elected government. Metro is made up of seven council members and one council president elected regionwide and six representatives elected by their districts. Our function is to do growth management and transportation planning for the region. We have a green space department that operates regional parks and a solid waste plan. We run the landfill and recycling programs for the region. We also handle the revenue-producing parts of the agency, which include several attractions that are operated by Metro.

Our planning activities increased from simply being an MPO in the late 1980s. This is one of those lemons-to-lemonade stories. We had a western bypass freeway proposed in the western suburbs, which is the technology corridor in Portland, and there was a lot of debate about how the region should grow and a lot of concern about the fact that this particular facility would go outside the urban growth boundary. It started a discussion of alternatives to the status quo. Our land use watchdog group, 1,000 Friends of Oregon, which was established by the governor at the time our statewide planning came into place in the 1970s, came out with the Land Use Transportation and Air Quality alternative, which tried to look together at all of those things on a major transportation investment.

The good thing for Metro is that linking land use and transportation became a new ethic in the Portland area. Metro upgraded our regional modeling tools to actually do this work. It put us in a good position to begin public agency sponsorship of this kind of planning.

We started a project called 2040 back in 1990. It was 50-year vision for the region, because in addition to this freeway project, we also had this larger issue of our urban growth boundary getting tight. We were up to the edges and we had been developing at 1970s densities within that boundary. There wasn't a plan for how to develop inside the boundary. It was just a belt around the region. We were trying to develop a series of alternatives for the region. We also had our powers expanded dramatically in 1992 by voters, giving us direct land use planning authority over local jurisdictions. We can enact regulations on local development codes. That made it very handy for us to then talk about growth for the region.

This was very similar to the Utah case. We look at different ways to grow in, out, and up. They came together as a 50-year growth concept. It is very centers oriented. To give credit where credit is due, this is stolen from Vancouver, British Columbia, one of our neighbor cities in the Northwest. We aspire to emulate them because they are doing good planning in Vancouver—probably the best in North America. So the centers idea really came out of Canada. We adopted that and ended up with seven major centers, about 30 town centers, and a lot of main streets.

A three-point summary of the mandate for transportation planners like me: (*a*) We focus growth in centers that are easily served by existing infrastructure—a theme in smart growth. (*b*) We preserve freight access to industry and ports. (*c*) We avoid unintended effects on rural reserves. These are areas outside of our urban growth boundary that in our 2040 plan are permanently rural—we will never go into those areas. But because transportation does occur through those areas, there is a potential to undermine that vision. We used these in our regional transportation plan as a way to implement that vision. It took us 5 years and $2 million to develop this plan. Beyond the 2040 vision, it took a lot of effort to lay down these details.

I like the carrots-and-sticks theme, so I'll start out with regulations and then I'll talk about how we use funding programs on the carrot side of the equation. Figure 1 shows the five key regulations that we know will result in changes in mode choice. That is what we are really after—what can we do on the transportation side to allow people to select a different mode of travel if they are given that opportunity? We have answered the land use side of the equation in our vision, as well as some very broad transportation questions about it. Centers-oriented system classifications, level of service, parking, street connectivity, and a long-term mode share vision are all part of our plan and regulate local jurisdictions in the region.

Our street design concepts, shown in Figure 2, are essentially zoning for streets. This is a specific design clas-

1 Centers-Oriented System
2 Land Use–Based LOS Policy
3 Parking Ratios
4 Local Street Connectivity
5 Non-SOV Targets

FIGURE 1 Carrots and sticks: five key regulations.

FIGURE 2 Street design concepts.

sification for different parts of the major street system based on land use. Boulevards, streets, and roads are the three most important. We use common terminology.

These were specifically intended to empower citizens to ask for better design on their system. Boulevards are tied to centers; streets are tied to neighborhoods; roads are tied to industrial areas.

We also adopted a level of service policy tied to land use. Our old policy, which many people still think is a great policy, is the level of service, to ensure that streets maintain Level of Service D or above during the rush hour. You would be hard pressed to find a "D" in Portland on a major street right now or even 10 years ago, even though it was in our plan up until the mid-1990s. We knew we were operating at Level of Service F during the peak hour in most places, because we don't have pricing or any other way to keep people off the system when everybody wants to be there.

We had a fairly unpleasant 1-year process with our elected officials to grind through this, due to the financial complexities. We wanted to give them options. We laid out the fact that building to Level of Service D costs us $13.5 billion, while tolerating our current congestion level during the rush hour, which still requires us to build a system to keep up with growth, costs about $5 billion. Our current revenue stream for that period was a little over $1 billion. Being poor helped us because the elected officials were faced with a 20-year congestion problem or an immediate funding problem. This was not a happy outcome, but it was a "coming to grips with reality" outcome.

The other important part was putting a face on what that Level of Service D looks like. The idea behind a 2-hour peak is to make sure that tolerating congestion during the rush hour doesn't erode economic viability. We are keeping an eye on that shoulder half hour on the other side of the rush hour to make sure our peaks are manageable. When we talked to businesses, they said they know it is busy during the rush hour and avoid going on time-sensitive deliveries. The long-haulers take those deliveries because they are going to Reno or to Las Vegas anyway. So it turned out the issue was more about confining that congestion than trying to eliminate it during the rush hour.

We did a pricing study, a pilot project under federal funding. The elected officials are not going to adopt pricing on an existing facility in Portland. They will consider it in planning for new lanes, but it is a volatile topic. We don't have priced facilities for the most part.

The level of service policy helps you eliminate a lot of bad projects. If you look at our 1995 Regional Transportation Plan, only about 25 percent of projects come from that previous plan. That is a dramatic change in the focus of the plan. We essentially carried over projects that made sense and dropped everything else. Level of service was key to making those decisions.

Another important point is that half of the projects in the planning came from a citizen-based workshop process that we did. We asked people what the improvements ought to be to help achieve the land use vision.

Parking ratios are another important regulation. They were relatively easy to adopt. Retailers wanted them. They set maximum and minimum ratios for two different zones tied to transit access. These have been adopted in almost all of the local plans now. This solves the problem of competing jurisdictions: because everyone knows they are going to adopt the regulations, you don't worry that someone else will capture an employer because you have a tough regulation. This is a distinct advantage of regulatory authority.

We have established connectivity requirements shown in Figure 3. We have again used a lot of scientific analysis showing that 530-foot spacing is about the right amount for connecting local streets. That is about twice the spacing of Portland's historic grid, which features small 200-foot blocks. But at this level, we are able to show that we could drop volumes on adjacent arterials by about 17 percent and reduce delay enough not to have to widen the intersections and install turn

FIGURE 3 Connectivity requirements.

lanes on intersections. A detailed analysis of this issue is available.

We also have an accessway requirement: when you go up to that 530 feet, anything over 330 would trigger an accessway connection. This is about pedestrian and bike access to transit. There is also a limit on cul-de-sacs to 200 feet and no more than 25 housing units. These regulations have been adopted in all but a few jurisdictions now.

Finally, we have non–single occupant vehicle targets shown in Figure 4. This is basically the total share of people who aren't driving alone. These relate to the various 2040 land use geographies, especially the centers and the central cities where we are focusing. Local plans must aspire to these targets as they make decisions about land use and transportation. They allow us to evaluate their plans in the statewide planning program to make sure that when they make decisions on a Wal-Mart or another new development, they keep these future targets in mind. These targets are our way, at the regional level, of complying with a statewide rule that requires a reduction in vehicle miles of travel per capita over time. The state is very interested in how we actually implement this.

I'm going to switch over to the funding side. Our gas tax has been stagnant for a long time, and we don't have a sales tax in Oregon. Since that is not a resource for us, we use property tax occasionally for transportation. Our registration fee for cars is $35 for 2 years. This is a crummy system for financing roads. A lot of people in Portland think that is good. We have had to persuade people that to achieve this 2040 vision, we have to spend money on roads because we have a lot of growth coming into the region. But we are going to change our ways and build different kinds of facilities and put that money into different kinds of programs. We are using five programs to leverage those projects that are alternatives to the stereotypical ugly arterial and freeway projects.

We put together a handbook called *Creating Livable Streets* for the street design classifications. We spent about $200,000 on this back in 1996. This essentially provides guidelines for engineers, planners, citizens, and planning commission members. Although I recommend using them, I actually recommend composing your own guidelines, because the process gave us ownership and connection to our region. The $200,000 was a good price, considering the amount of money we pour into transportation. These guidelines set up, especially for the boulevard category, specific dimensions that we're going to be looking for on boulevard projects. Like the Maryland Department of Transportation's plan, this focuses the money on centers. The handbook becomes a threshold for all our regional funding, but the boulevards actually become a category. We have allocated about $16 million so far. We will be allocating more to additional projects this fall in the next round of funding. We have been through two rounds of boulevard projects so far.

FIGURE 4 Non-SOV targets.

In our breakout sessions yesterday, I was complaining about working with the DOT and National Highway System designations and all manner of problems with state and federal engineers on building those. Our current problem is that we have designed and funded all these projects, and now we can't get sign-off at the state level. We are hitting boiling point on that right now, but money created the pressure to actually get to the table. So it was still an important step.

Next we have regional transportation demand management (TDM) funding. This comes out of our flexible funds at Metro. We also have a special category that primarily funds citizen-based alternatives to the public agency TDM programs. It is called 2040 Initiatives. Our bike program has received approximately $26 million since flexible funding was instituted. Flexible funding is almost entirely devoted to regional system improvements that are too costly for localities to fund. They are often missing link improvements or bridge improvements.

Our pedestrian system is also receiving money. A large number of pedestrian improvements are funded by $16 million. These are on major streets, commonly county roads that were not built with sidewalks. Successful projects include the addition of street trees and wider sidewalks.

One unique program is our transit-oriented development program, funded out of those flexible funds through our Metropolitan Transportation Improvement Program (MTIP). We have done a whole series of projects since the program began back in the mid-1990s. In these cases, we are not actually building the transit-oriented development. We are leveraging the difference between that site development with that density over developing it someplace else, on the edge or on a piece of vacant land somewhere. Commonly, these sites have baggage, so we are trying to make up that difference with these funds. We became eligible to use federal funds and buy land for this purpose in 1994. Our first grant was officially signed off on in 1996, and we have been handing out money ever since to these projects. By definition, they are all on light rail transit stations: not just on a line, but within a few steps of a station. They are pedestrian oriented. Residential development density is

about 35 dwelling units per acre, depending on the local market and conditions, and we are pushing toward 80 in downtown areas and a couple of our suburban downtown regional centers. Commercial densities are about 0.5 to 1.5 floor area ratio—higher than 0.2 or 0.25 in a typical development. Since these are increased, it is hard for developers to do them without funding assistance.

One of our new projects illustrates how we do this. In Gresham, an eastern suburb, a big vacant 85-acre parcel has a light rail line going through it. There is a project funded to put a light rail station in the middle. Several blocks on the south side of the diagonal rail line were privately developed by the landowner. Metro has bought seven of the blocks because we want to be involved in designing residential right around that station. The developer has put in some really progressive commercial buildings, but Metro wants to be involved in making sure we get residential at that station.

One more thing outside of our MTIP is through the Transportation and Community and System Preservation (TCSP) program. We used about $600,000 from that program and another couple hundred thousand from a terrific state-funded program in Oregon called Transportation Growth Management. It has done a number of model codes and development guidelines. Between those two sources, we came up with about $800,000 to plan an area of around 3,000 acres that we had brought inside the urban growth boundaries. This is a new area for us. This is our first expansion since it was established, so this is new town planning. We contracted with Portland State University's urban studies program to document our public involvement. We are using federal funds to develop a concept that, in turn, guides local zoning, which needs to be adopted before they can actually issue permits. Again, there is a lot of benefit from having our planning authority, but nevertheless, the groundbreaking thing here is doing master planning with this kind of money.

The bad news is that the TCSP program got completely earmarked in the last round, and money that was supposed to go to smart growth went to freeway projects in the worst cases. So we and others are lobbying to make sure this goes back to its roots as a grant-based program based on project merits.

We are going to do a concept plan for a very large expansion of our boundary—20,000 acres likely to come in during the next few months—to do essentially a new town. We have taken $1 million out of our federal funds, not TCSP in this case, for that work. We are hoping that TCSP funding will be available in the future.

As an aside, I am optimistic that even the retail sector and consumers are actually interested in place, because I've noticed that development names are changing. The old joke is that they cut down the trees and named the streets after them. Since you have to come up with a second half of the name, you had Tall Cedar Terrace, Pine Grove Estates, and Big Oak Gardens—very backyard, "my property" oriented, up until the mid-1980s. Now the developers are actually marketing with terms that planners use. Now you see Tall Cedar Place and Pine Grove Village and Big Oak Station.

The last thing I'll mention is our green streets project. This was a case where we had a gun to the head but also a lot of public interest in developing street designs that were more environmentally sound. Like Seattle, we have salmon and steelhead endangered species listings. That is a very serious issue for us. We developed two handbooks that really expand on our livable streets program. One is called *Green Streets*, and one is *Trees for Green Streets*. They are essentially best practices guides for designing streets that are entirely infiltrated so that they don't have storm water runoff or pollutants that come off of the street surface. This is a brand new program for us, so we will be adding this into the whole divided pie of MTIP dollars that we allocate.

In the past 10 years, we have allocated approximately one-third of our MTIP funding to transit, about a quarter to roads, and the rest to all these new categories. That money is important; even though it seems that 4 percent for boulevards isn't very much, that is 16 projects across the region. When you count in local match, you have quadrupled the money in some cases.

In this round we are going to add green streets, including retrofitting culverts that block fish passage, as another federal funding category. We will also increase our focus on centers. We are planning to spend more money on centers in the future than we already have and emphasizing more leveraging of local dollars, because we think we can. There is also a concern that we are slicing too many thin pieces of this pie. Of course, the obvious answer is that we need a bigger pie, but that goes without saying.

Discussion

Tom Downs: There seemed to be several common themes. One is that each of these presentations focuses on a rapidly growing population. Each of them is in a community that cares profoundly about, or at least has deep relationships to, the natural environment. And each trusts the democratic process to build consensus from the ground up. It would be interesting to question whether communities such as Pittsburgh, a region that has lost population consistently over the past 20 years and has an ambivalent feeling about its environment, would have the same set of approaches to trying to manage sprawl, which they are all struggling with, even in a declining situation.

Audience question: Could the panel talk about the institutions—the MPOs, the state planning processes—that we have, and how they help or hurt?

Jacob Snow: In the MPO planning process, there is really no federal requirement to have a planning factor for land use. We pay lip service to it, but we are left to our own devices to decide how we are going to deal with it. But I think the MPO process is good because we have a process that looks at transportation. There is a definite link between transportation and air quality. The federal government has always eschewed this completing the triangle—the Bermuda Triangle of transportation, air quality, and land use—because it has always felt that should be a decision left up to the locals. I think that, in effect, it divorces the development process from the transportation planning process by not having that link at least somewhere in a stronger capacity.

Robert Grow: I think our MPOs developed a love–hate relationship with Envision Utah. We gave them an opportunity to be involved in this visioning process in a big way. Honestly, the MPOs could have led it if they had wanted to. They have the political base and the money to do it, but I'm not sure it is a role that MPOs are comfortable with, and many directors are road engineers. We had an interesting experience working with the MPOs. Sometimes they were helpful and sometimes they were not. They were scared to death of scenarios because they were afraid that running scenarios would demonstrate that their conformity modeling might have holes. They were scared to death that the legislature would know that they have choices and could spend less money. So we were dealing with a tough political situation because every political entity you deal with has its own objectives. MPOs, at least the Wasatch Regional Council, tend to do this—negotiate with each city about what it wants. It is more of a consensus-building process than it is a leadership or visioning process. That ought to change.

Neil Pedersen: I want to add that not just MPOs but local governments ought to change. We were finding that the initial reaction to smart growth (and, in particular, the decisions we had made on pulling the bypasses from the project list) from local governments and therefore the MPOs was that smart growth was a stick approach. We found that we really needed to concentrate on marketing the carrot part. We needed to market all of the programs so the local jurisdictions saw that there were benefits from the smart growth approach. I think once they started to see the carrot side we turned the corner.

Tom Kloster: Several questions came up yesterday about whether you need something like a Metro with

the regulatory authority to implement these initiatives. I think it obviously helps to be able to put everybody on the same playing field on regulations. I would point out that we at Metro care about areas outside of our boundary. "Rural reserves" is just a name we gave to areas that we care about outside our jurisdiction. We are at the mercy of the counties and what they do in those areas on the state planning program. We have relied on intergovernmental agreements (IGAs) in those areas. We have set up something called Green Corridors on state highways that connect us to other cities that have their own urban growth boundaries, to make sure we don't grow toward each other and don't develop those corridors and keep those areas rural. Those IGAs are flimsy right now, but we are working on them.

I would make a case that Metro is actually *our* agency in that it is elected. This is really an outgrowth of the fact that there was a decision in the 1970s to bring parties to the table. The tool came about because we agreed there was a problem. I don't think you start out by saying "we need an agency" to get to these things. You actually need to have consensus at the table to know what the problems are. I think that can happen in any metropolitan area.

Audience question: This question is for Jacob Snow. I am interested in the notion that the monorail, at least in its first stage, was financially self-sufficient and could be privately financed. I was then curious, once the east side landowners bought out the west side landowners, about the consensus that for the next stage you would use taxpayer dollars. I was wondering whether the second stage could have been privately financed and whether the taxpayers questioned the public funding of the second phase. I am wondering if and how you dealt with it.

Jacob Snow: Interestingly enough, the financing for the second phase is going to be one-third revenue bonds, one-third from a Transportation Infrastructure Finance and Innovation Act loan, and then the final third will be from New Starts 5309 money. We are still not using a large amount of local taxpayer dollars. But for the first time we will have a small amount of Congestion Mitigation and Air Quality funds in the Phase 2 extension. All the $650 million worth of bonds for Phase 1 will be repaid just from fare box revenue and advertising. About two-thirds of the downtown extension will be paid off by fares and advertising. The dynamics of the downtown area of Las Vegas are such that there just isn't enough passenger traffic to support it solely from a private revenue bond placement. It is just not as dynamic as the south end of the strip, where most of the foot traffic is.

Audience question: A question for all of the speakers. From the presentations that we've heard, it seems that among the keys to real success are effective leadership and leadership coalitions that can advance a process, the development of effective technical analysis accounting for impacts so that we can actually see what the effects of different choices are, and then a process of engaging the public in values. Yet in many regions of the country, we seem stuck with fractured local leadership and governance structures that impede the emergence of effective leadership to advance that process.

Robert Grow: When we did our original survey in Utah, we asked the public who was in the best position to solve growth-related issues. About 18 percent of the people said government officials; another 18 percent said community and business leaders; about 50 percent said citizens like you and me. The citizenry wants to be engaged on these issues. The problem is that things are so complicated and you have to go through an extensive process to get to where you can present the public with choices. Any organization could sponsor something like Envision Utah. We started that as a branch of the Coalition for Utah's Future. An MPO could sponsor an Envision Utah project. The state governor could. The state legislature could. They need to make certain they get all of the interest groups involved at the outset and create a sense of momentum in the process.

We just lucked our way through it. We did a lot of things right. But we started out knowing that we are going to have the public make the choice in the long run. You always start with a sponsoring organization that does not match the group that needs to come together. We were not that organization, but we decided to help create it. In Utah, that was a long-term group called the Coalition for Utah's Future. I don't want people to get the impression that we just popped out of the grass one day. A group of which I was chair said, "We're not it—but we will create the big roundtable for everybody." Once we did that, it wasn't a government organization anymore. So the level of cynicism that attaches to government did not attach to the organization.

Neil Pedersen: In all candor, I think the process today in many metropolitan areas and states is primarily driven by federal regulations and by technical requirements. We have technical tools that we all would agree are inadequate. My experience, in terms of moving forward, is that leadership really comes from people who have a vision, who clearly articulate that vision, who get the public involved in helping to define the details of that vision and then trying to move forward. They are not bound by the federal regulations that limit the current process. They are not spending too much of their time debating the nitty-gritty of technical tools that can't address the real issues.

Tom Kloster: I actually don't buy into the cynicism thing. I've been worrying about that ever since the notion that government is the problem and not the solution—which started in 1980, when it became a theme in

the presidential campaign. In my experience, individuals don't care about the rhetoric if they believe they have a say and are being heard by someone at whatever the sponsoring agency is—whether it is public or not. The regulations are part of our program. What has helped us the most is being nimble and actually embracing the brushfire approach: when something comes up because someone is unhappy and was probably excluded from a process that happened on the public side, we are able respond to that quickly. We make a point of responding to every public comment we get in writing. We had thousands come in on our various projects. People become selective in their cynicism. They still are cynical about the Oregon Department of Transportation, frankly. But they are fine with Metro on many of the things we are doing because we have gone out and taken the time to talk to them. That openness and that ability to be nimble are costly and must come on the front end. You have to have people to do that job. But the elected officials have supported us because they have seen that that paves their way as well—people support them in the end.

Neil Pedersen: You need a champion, and it doesn't necessarily have to be a politician, although it can be. You need someone who has respect and credibility in the community to bring those people together. More often than not, that is a single political figure. In Maryland it's the governor. In Utah it was the governor. In Las Vegas it was a county commissioner. Some people just happen to ooze credibility. You need that kind of person to be part of your process.

Audience question: My question is to Neil. You mentioned in your presentation that the Maryland Department of Transportation shifted its priorities on the basis of the governor's mission. There were several elements: directing toward priority areas, existing and planned developments, and emphasizing modal choices. The fourth one sounded like you look for opportunities for engaging communities in smart growth. I was wondering how that was done.

Neil Pedersen: The fourth one that I recall was supporting other programs, specifically by engaging communities. That is one of the linchpins of our success, as far as I'm concerned. It comes back to a common theme among all the presentations. We try to work with communities on developing projects that the communities end up seeing as assets and that help in their revitalization efforts. The neighborhood conservation and urban reconstruction program that I said was the centerpiece of our smart growth program—every single one of those projects is developed by a team of community leaders working with our project managers to define what the project elements should be. Often those elements end up including things funded by parties other than the state department of transportation, whether by other state agencies, local jurisdictions, or the private sector. So we are able to leverage the state transportation funds to get something much larger in terms of community revitalization goals.

I also want to emphasize that we really need to think about transportation supporting other smart growth programs as well, through things like our access control program and our enhancement program, and combining money with a number of these other programs to achieve the broader goals.

Audience question: How do state DOTs help or hurt in the drive for smart growth?

Tom Kloster: I will be really frank here. State DOTs are difficult right now for us. I've talked to people in various states about this, and it is a common theme. There is a triangle between FHWA, state DOTs, and AASHTO, which is the highway engineers' association that sets guidelines that then turn into standards. We're getting blocked on implementing a lot of projects that have support from our governor and our Transportation Commission. Our plan has been adopted by the Transportation Commission into the state highway plan, including our level of service policy. All of our local elected officials have shown political support. We have connected the dots the way you should to build a boulevard project on a state highway. We are now getting end runs on the design level. The state engineer is not stamping the plan because FHWA won't certify it as a National Highway System route, perhaps because it will lower the level of service or create safety issues—for example, you might be requested to add in a 3-foot shy distance, which would really undermine the basic concept of the design.

We are now working through that. I almost shouldn't be talking about it because we are trying to work that out and come up with a fix because Oregon DOT is getting embarrassed on these projects. But I still see the reaction to treat these as isolated examples and come up with a backroom fix as opposed to doing a systematic fix. But it is a change of course for the agency to treat arterial streets differently from freeways. That is a huge step we have yet to make.

Neil Pedersen: I think there is tremendous variance among state DOTs in terms of the degree to which they have adopted context-sensitive design, which is a specific issue we should talk about for smart growth principles in general. To be candid, one of the things that has enabled Maryland perhaps to go further than a lot of other states is that we don't have the same tort liability issues that a lot of other state DOTs have. State engineers are largely driven by tort liability concerns. That needs to be looked at on a broader level. We have been frustrated, quite frankly, within the AASHTO community in terms of the conservativeness on a number of these context-sensitive design issues being driven by liability concerns.

Robert Grow: I sometimes refer to our department of transportation as the department of roads. The attitude is, somebody else plans it, and we just build what you want. You grow there; we'll build it. That philosophical attitude is taking a long time to change. We have a lot of younger people in the department who are moving in that direction, and I see that changing. But it has been very strange to me that they have no concept like Maryland's, that what they are going to build has an impact.

Jacob Snow: I think that state DOTs, around the country by and large, are a problem for the process of smart growth going forward, because many of them refuse to suballocate flex funds. Those flex funds can be valuable in implementing a local or regional smart growth program. If a state DOT is going to take the unilateral approach that come hell or high water it is going to use those flex funds for roadways, then we are not going to see the things that need to happen in the regions and local areas from a smart growth standpoint.

Who

Who Must Be Involved to Achieve a Smart Growth Transportation System and What Are the Institutional Obstacles?

Introduction

John Horsley, *American Association of State Highway and Transportation Officials*

Let me introduce your panel and give a brief background on each of our four speakers and ask them to kick off the discussion.

First is Maryland Transportation Secretary John Porcari, our host. John runs one of the most multimodal departments in the country, from Baltimore–Washington International Airport to the Port of Baltimore, to highways and mass transit. John runs an incredibly effective operation, highly regarded around the country. Before being named secretary by Governor Glendening, he served as Deputy Secretary of Transportation and as Assistant Secretary for Economic Development Policy for the Maryland Department of Business and Economic Development.

Jim Codell, the Secretary of the Transportation Cabinet in the state of Kentucky, will become the President of the American Association of State Highway and Transportation Officials (AASHTO) starting with our meeting in Alaska [October 2002]. In the area of context-sensitive design, Jim has joined Maryland and three other states in being a national leader in adjusting the state approach to design to be more responsive to community concerns. Jim was previously the chair of AASHTO's standing committee on the environment. One of his emphasis areas when he takes over as president will be environmental leadership. We held an exciting conference in Lexington, Kentucky, earlier this year on historic preservation and transportation, and I don't know of any state doing more toward investing in historic preservation than Kentucky. Before joining the state department of transportation and being appointed by Governor Patton, Jim was a construction contractor.

Bob Dunphy has been with the Urban Land Institute (ULI) forever. ULI has been working on the smart growth issue for many years. As you may know, ULI represents developers around the country, who, from what I have witnessed, are taking a very progressive attitude toward smart growth. There are a lot of positive changes taking place as they design their work. Bob has his B.S. in civil engineering from Catholic University and a master of science and civil engineering from Texas A&M.

Ron Kirby, who was added to the panel after the program went to print, has been the Director of Transportation in the Metropolitan Washington Council of Governments for many years. He runs the metropolitan planning organization (MPO) for the greater Washington, D.C., area. Ron received his undergraduate and doctorate degrees from the University of Adelaide in South Australia.

I wanted to indicate some positive developments that AASHTO is engaged in. We just held a national competition on smart growth sponsored by the Federal Highway Administration and the Environmental Protection Agency. We had 32 applications from 22 states, and at our conference [in October 2002] in Anchorage, we will honor eight winners from that competition. I won't tell you who the winners are here, because we are going to announce that in Anchorage, but let me give you a flavor of some of the competitors. The state of Wisconsin, for example, had been trying to improve US-12, a route that goes north from Madison to Minnesota. There is a terrible fatality rate on that heavily traveled route. But it goes right through the

heavily populated Dane County, through a rural county just north of Dane County, and then through the Baraboo Hills, a sensitive geologic area that the Department of Interior has been trying to protect. The concern was that if they four-laned that route, instant sprawl would occur in the outer reaches of Dane, the next county, and then threaten that sensitive Baraboo Hills area. Finally, the Council on Environmental Quality brokered an agreement. So of the $78 million improvement to four-lane this U.S. route, $18 million will be spent on improvements beyond the right-of-way, including $500,000 on a community growth plan, a substantial investment in transit in the greater Dane County area, and somewhere in the range of $10 million going into the purchase of development rights to preserve farmland and preserve view corridors along the route. That is an interesting case study in Wisconsin.

Five states in AASHTO—Kentucky, Maryland, Utah (interestingly enough), Connecticut, and Minnesota—are our lead states on context-sensitive design, using the flexibility in our design manual to embrace and make possible community-sensitive solutions. New Jersey has also decided to advance that idea. It is using one of my favorite design firms, Project for Public Spaces out of New York City, to train 600 of its engineering staff in how to use the full flexibility in context-sensitive design. In addition, New Jersey is implementing an urban villages concept by using transit assets to reinforce downtown revitalization through investments in transit-oriented development.

California, through the Metropolitan Transportation Commission, is using all sorts of small-scale investments to reinforce quality development and smart growth initiatives in the communities in and around the Bay Area. So there are some exciting things going on at the MPO level and at the state department of transportation level, and two of the most progressive states in the country are represented here.

Incentives for Smart Growth in Maryland

John Porcari, *Maryland Department of Transportation*

I am with the Maryland Department of Transportation, which includes a number of separate authorities. We have tried to use the entire department and the transportation authority as tools to implement smart growth. At the risk of stating the obvious, that is where the money is. If it is an important public policy goal, you have to have transportation as one of the leading elements in the vanguard of smart growth.

We began this journey several years ago. One of the first acts was to review our entire capital program, and we took projects out of our capital program that were not consistent with smart growth. Several bypasses around small towns and cities throughout Maryland had been on the drawing boards for 10, 15, 20 years. We had never had the construction money in for them, but these jurisdictions certainly believed that they were going to get a bypass at some point in the near future.

It was a very sobering experience to get the reaction from these towns when they no longer had that project on the books. One of the things we learned quickly was that the interaction with other state agencies and especially with local jurisdictions is absolutely critical to this. In Maryland, as with many other states, the land use planning is actually at the local level. We have a state-level Department of Planning, but until the enactment of smart growth legislation, it largely played a coordinating role. It plays a much more substantial role now.

In several of those early cases, we took highway bypasses out of our capital program and turned them into positive experiences. For example, we worked with the city of Westminster on the goals of the original bypass. What were they trying to do? What is the balance between main street being a state regional highway and being the lifeblood of commerce for this town? By listening and making sure we were listening before we were talking and by having an elaborate process with our local jurisdictions, we were able to reach at least a rough consensus on how to go forward without building a highway bypass. That has worked fairly well.

We are doing the same thing in other areas of the state. We cannot have a smart growth orientation in transportation without taking that step into land use. Another example is called the Perryman Peninsula at Harford County, north of Baltimore, which was zoned for about 13 million square feet of industrial property. There was no possibility, from an adequate public facilities perspective, for all of that property to be developed that way. In a collaborative process with the State Planning Office, the Governor's Office of Smart Growth, and the county planning and transportation staff, we were able to work out an end result that substantially changed the density and made for a much more rational development plan.

You heard earlier in some of the discussions from Neil Pedersen, for example, a little bit about the neighborhood conservation projects and how some of the specific smart growth projects work in Maryland, but let me give you a budgetary perspective. We have gone from a standing start to more than $170 million over the next 6 years of what we call neighborhood conservation projects. Typically, we would mill and resurface and do storm drainage work. Now we do a much more comprehensive program with landscaping, median

work, brick pavers, street furniture, bus stops, and pedestrian-level lighting.

It is important to understand when you interact with elected officials that if you do it right, smart growth programs could be one of the most politically popular things that elected officials do. These neighborhood conservation projects have become wildly popular in Maryland, to the point where our state highway staff is welcomed in communities. You have all been at public hearings where it is the other way around, so this is quite refreshing and rewarding for our employees.

There are two reasons for this. First, some of the earliest neighborhood conservation projects that were done in Maryland were in rural areas, luckily. We didn't have the rural-versus-urban fight over smart growth because even the most rural areas of the state have a county seat or a township where the main street was eligible for a neighborhood conservation project. If you look at the legislative power in many states, many of the chairs are from rural areas. Having this eligibility helped get through that portion of the discussion quickly and made it a statewide program.

The other important thing about these projects is that as our highway, transit, and other transportation projects get more complicated and harder to build every year, 8-, 10-, 12-year cycles for major transportation projects are fairly typical. These smart growth projects are something that you can promise an elected official and actually deliver within a 4-year election cycle. You shouldn't minimize the importance of that. They very quickly figured out that these are projects they can fight for, turn a shovel on, and take credit for. They could cut the ribbon on it before they ran for reelection. That is part of the dynamics of how these programs work in Maryland, and it is one of the reasons that smart growth, even for the initial skeptics, has been adopted heartily and virtually across the board by many of the elected officials that more typically would be opposed.

I mentioned the neighborhood conservation program, but within our transit and transit-oriented development program, a key part of our business plan for transit is to maximize the investment we have already made through transit-oriented development. There is a good example in Baltimore, where we had assembled some property to build the light rail station. We left derelict buildings there that were boarded up for a number of years. We subsequently demolished them and built structured parking and have a mixed-use development that has been successful. We have others under way as well.

I know we have a number of panelists here and that you would like to get to the questions and answers. That is a very brief overview of some of the smart growth issues related to transportation. I will tell you that in a relatively small, compact state like Maryland, where we have a little more than 5 million people and we are going to have 1 million more in the next 20 years, even if we weren't disposed to pursue smart growth, we would have to, and we are doing so wholeheartedly.

Selling "Quality of Life" in Kentucky

Jim Codell, *Kentucky Transportation Cabinet*

Kentucky had several bills dealing with smart growth legislation with the words "smart growth" in them, and none of them even got to a vote. With two or three exceptions, we are, for the most part, a rural state. As you might expect, it became a controversial, divisive subject. That being said, since we couldn't get to first base with our smart growth bills, we are endeavoring to use the planning process, and the transportation process specifically, to improve the quality of life, using that angle as opposed to the smart growth angle. It seems to be catching on because we are selling the fact that it is the responsible and right thing to do.

Our governor, who was and is a supporter of smart growth, couldn't get to first base with it. He is using his powers, both his executive power and his power of persuasiveness, to alter the mind-set of the citizenry. He is a former coal stripper, which doesn't really sit well with some of the environmental community, and they look at him and wonder what he is doing. He is also a mechanical engineer, so I don't know whether that helps him or hurts him. I'm a former contractor, so you have two champions of the quality of life endeavor, let alone smart growth, who are both a little suspect. We are both working at this and trying to alter the culture or the ethic of our troops.

To that point, the fact is that we are being welcomed in some of the communities across our commonwealth because of our change in attitude and philosophy. This reputation of the Transportation Cabinet (the old Department of Highways) in Kentucky wasn't formulated or created in the past year or two. We've worked long and hard to create a less-than-desirable reputation. So trying to turn that ship requires a little work. But after 6½ years of trying to alter this ethic or culture, they have realized that Codell is not going away, and Governor Patton is not going to let me go away. So here we are, still trying to right the ship. I think we are making progress because we are selling it as the right and responsible thing to do. It is clearly demonstrated by the employees of the cabinet.

We have engineering liability and all this business in Kentucky. But you cannot permit that to be used as a crutch. We have limitations, obviously, but we have to work hand-in-hand with the Federal Highway Administration, and most important, we have to tune in and listen to what the customers, the taxpayers, want. We have to demonstrate clearly to them that we are trying to address their needs, their desires, and their demands. They are paying for the facilities. In Kentucky we have transportation enhancement projects, community projects, and what we call a Renaissance Kentucky project, where we are using transportation enhancement funds to revitalize the cities and leveraging those funds to make improvements and rejuvenate and rehabilitate downtowns across the commonwealth. That is working. But first and foremost, to do the right thing and the responsible thing, we have to change the ethic of the workforce. When that is done, the credibility issue goes away—it becomes a positive as opposed to a negative.

We still cannot talk about "smart growth" in Kentucky, but we can talk about improving quality of life, and we are doing that effectively. Certainly, we have progress to make in some areas, and there is always the cost issue to overcome. But we have a proj-

ect in northern Kentucky right now where doing it the right way and the responsible way will cost millions of dollars. Doing it the economic way, or the way the developers and a minority of people in the community want to do it, costs less, but the majority of the people would rather do it the responsible way, $10 million to do a complete urban renewal.

We have had context-sensitive design. We have the Paris Pike project, which goes through the horse farms and the agricultural areas of Kentucky, between Paris and Lexington, and we have used context-sensitive design philosophy on that effectively. We have a project in downtown Lexington called the Newtown Pike extension, where we are addressing the environmental justice issue quite effectively. It is 3 or 4 years down the road.

All in all, it is listening, engaging, and demonstrating that we are doing the right and responsible thing.

Smart Transportation and Land Use

The New American Dream

Robert Dunphy, *Urban Land Institute*

If you are in the transportation business, then you're in the real estate business, and you ought to support smart growth. Regardless of what terminology you use, you know what it is, and there are good reasons to support it.

The first obstacle to making smart growth and transportation part of the normal mind-set is convincing the consumer. It may be that you have done too good a job of providing transportation. That is a surprising message. But a survey done by the National Association of Home Builders (NAHB) and the National Association of Realtors asked people who had purchased homes in the past 5 years about the most important aspects of buying a home. They found that the most important factors by far were larger homes, at an affordable price, in a good neighborhood, with proximity to work coming in a distant third. Clearly, the buyers don't quite get it. Gary Garczynski, president of NAHB, commented that the survey demonstrates that home buyers are quite conscious of the trade-offs they make when buying a home. Gregg Logan pointed out in his presentation that people tend to drive for value. I think unless we can convince people that they should stay for value, there'll be a continuing contradiction between individual decisions and public policy. The mantra in real estate is location, location, location. We need to get the message across that being there is the best transportation solution.

As part of the survey, they asked, "What would you like to change about the house?" About one in four people said it was an awfully long commute. Maybe this is just buyer's remorse, but the only way you can explain this inconsistency, to the extent that we would expect consumers to be consistent, is that they are looking for a house at a price and a location, but if they can't get all three, they go for the first two and then they present the problem as a traffic problem for you, the transportation agencies, to solve. I think the great opportunity is that with a smart growth policy behind you, the transportation agency can afford to just say no. You've made your compromise.

Governor Glendening pointed out that we have spent seven decades getting ourselves into this current pattern of development that we call sprawl and it will take a while to get out of it. If you look at the components, the widespread availability of cars has been a big factor. On the government side, so have the Interstate highway system and Veterans Administration and Federal Housing Administration mortgages. Developments on the private side include Levittown—mass-produced, cheap tract housing—and shopping malls (this is according to a survey of 150 urbanists). I think the critics dismiss the results of this as sprawl, but for millions of home owners, it is the American dream, and we have enjoyed huge success in the past 50 years. Changing public policies can certainly affect development patterns, and to make them saleable, we need to keep the dream alive—that is an important component.

In my opinion, the biggest impediment to linking smart growth and transportation from the policy side is one of changing public attitudes. In the public sector, we have preserved a separation between land use and transportation, and it is somehow seditious for transportation planners to consider the impacts of mobility improvements on land markets and development. These

decisions seem to be the province of local developers and local planning officials. As a result, you have the situation in which state departments of transportation have a huge stake in transportation investments that have been highly suspect, and they are very nervous about getting involved in land development. Regional agencies have been equally skittish. In the Metropolitan Washington Council of Governments, the former chairman said they couldn't even put land use and transportation together on the same page. Les Sterman, Executive Director of the East–West Gateway Coordinating Council, said land use is the third rail of public policy for an MPO—touch it and you're dead.

Of course, the federal reluctance to deal with it is legendary. One of my favorite stories is about the Transportation and Community and System Preservation (TCSP) program, which was originally supposed to be called the Transportation and Land Use Demonstration Program, but that name was considered offensive to some of the members who were putting it together. They did a search and replace and changed the name of the program to its current name.

The challenge in beating sprawl is to replace it with something better and something that avoids the problems but still offers more choices—this new American dream. We need more choices in housing and transportation. We talked about two examples yesterday, infill and its reverse. Infill has the benefit of providing transportation, building housing, putting people where the transportation choices are. It's all about choices. This is the greatest and most effective way to deal with it. It is also probably the one that is least accessible to a transportation agency because somebody else is responsible for the development program. But there are places with rich choices of transit, walking, taxis, and everything.

A good example is in Kentucky. The Renaissance Kentucky program encourages downtowns as vibrant places with lots of choices. Traditionally, we have been moving away from that, but it involves state investment and local encouragement to help make these great places.

We know that among the benefits of smart growth infill development are reduced transportation costs and being able to take advantage of existing infrastructure. You may want to create a prime properties list—a place where there is already infrastructure and where the transportation agencies would like to see development in preference to out there on the fringe. You can do this without legislation.

There is a project in Bethesda, Maryland, called the Bethesda Row Project, that has been widely written up. It illustrates a lot of the challenges of infill development—problems with land assembly and land cost, approvals, financing, and even parking. They successfully overcame the challenges with strong support from Montgomery County. But it illustrates how difficult that kind of development is and how everything has to go right for it to work, including, in the case of Montgomery County, a 1,000-space parking garage that was done as part of the plans.

That is the infill. The edge is less clear. What do you do about managing the edge? What are the obstacles to greenfield development in these areas? Generally there are none, which explains why most of the development has been on the edge and not as infill.

Part of the answer may be to make it more difficult to do that. However, we realize that these areas probably are going to account for 80 percent or more of the new development, so it is important to get them right and to consider a broad range of transportation choices up front.

If we accept that transportation agencies are in the development business, they have much to contribute—funding, staffing, and leadership. We have seen many examples at this conference. Transit agencies have a special opportunity and need, since they are often subject to the deteriorating market within prime transit districts—the places where transit works best. Pointing out good locations for development, which builds transit ridership and facilitates planning and property, helps advance a transit agenda and a broader livability context.

I'll close by asking how many of you are in the transportation business. How many consider that you are in the real estate business? All hands should go up, and you should support smart growth.

Metropolitan Planning Organization Perspective on Smart Growth, Land Use, and Transportation

Ron Kirby, *Metropolitan Washington Council of Governments*

Our involvement with smart growth as an MPO really came most recently out of a visioning process we went through in the mid-1990s to try to reestablish the policy component of our transportation plan, which was long outdated—it was developed in the 1970s. One of our overriding concerns was that every major transportation project that came through our process was questioned in terms of how it fit into the big picture. Whether it was a highway project or a major transit project, we were asked, "What is its impact on sprawl and land use?" We were not very well positioned to answer that question.

In developing this vision from the transportation perspective, we argued that for transportation planning we needed a composite general land use and transportation map of the region that identifies the key elements needed for regional transportation planning: regional activity centers, principal transportation corridors and facilities, and designated green space. The MPO adopted that in 1998, and then we began working with other committees at the council of governments that deal with the land use side of the equation to develop that map. From a transportation point of view, we put forward our long-range plan, which we had adopted through 2025. It was a fiscally constrained plan to meet federal requirements. That was all we could afford. We had a number of study corridors on that map.

Then we went to the committee of planning directors from the local governments and asked them to put together the other piece of this map—the land use piece—and designate activity centers and green space and tie them into our transportation corridors. We had, going into this exercise, adopted forecasts of population, employment, and households through 2025 by small traffic zones, which we used for transportation planning. Those forecasts came through the land use side of our operation, and the planning directors put them together.

We started with a whole set of forecasts, which were essentially what the local governments collectively believed would be the future development pattern in the region. It was reasonably tied to the transportation plan. Certainly, there was a lot of development around the Metrorail stations, which was already built into the forecasts.

But going back into those and trying to aggregate those forecasts into distinct centers that could be identified in the region as places where we wanted to have growth and focus our transportation resources was not a simple exercise. I think everyone recognized that we were looking at a multinucleated development pattern. In metropolitan areas, it is not just the downtown or central area anymore. Employment is going to the suburbs and outer suburbs. But how can we get it developed and concentrated so that we can serve it efficiently with transit and not only highway access?

We spent many months of effort in interplay between the technical planning staff and our elected officials. We had an oversight committee for this exercise composed of elected officials from both the MPO and the local governments. They looked at all of our products, and if they didn't look right, they sent them back for further technical analysis. There was a lot of back-and-forth

about how we would define centers and whether the right things got in as centers. Is this what we expect to be a center, or is this the criterion that we want? There was a lot of iteration before we got a final product.

We ended up with 58 centers designated: 5 in the central core area of the District of Columbia, 15 so-called mixed-use centers, 9 employment centers, 20 so-called suburban employment centers, and 9 that we designated as emerging employment centers—places that may not now or even in 2025 have a lot of employment or be fully developed. But they are clearly developing locations, and we wanted them explicitly noted, because the lead time for transportation investments and land development is such that you have to look way into the future at areas that are beginning to develop, as well as those that are already developed. We used primarily employment criteria to define these, although we used residential density as well for the mixed-use centers.

Everyone involved was concerned about how this was going to be used. It could imply that where the growth is going is also where the transportation is going, and where the growth is not going the transportation is not going. Or it could be the reverse—that it meant we ought to put more transportation investment to encourage growth in areas that don't have it currently. Or it could be some combination of the two.

The fact that the current forecasts were not necessarily what we wanted to see in the region led right up front to a declaration that when this map is done, it will be descriptive, not prescriptive. We recognize that it describes our current forecast but does not necessarily prescribe the way we want the region to go or where we want our investments to go. The first thing we may do when we finish the map is start figuring out how to change it to make it look different in terms of development, concentrations, and transportation investments.

Another development was that we used the term "green space" in developing this map, and we put quotations around it because we didn't know what it meant. It turned out to be prescient because the planning directors couldn't figure it out either. They had completely different definitions of green space in different jurisdictions and were not able, in this time frame, to reconcile those definitions or decide what they wanted the term to mean. So the whole issue was put on the back burner to be revisited later.

We did agree at the end of this that we had a tool. It was published several months ago, and to respond to Bob Dunphy's concern, the title is "A Tool for Linking Land Use and Transportation Planning." We were a little hesitant about using that. We asked, "Is that too strong? Is anyone not going to like that?" But nobody has objected. We consider it a tool, a basis on which we can improve these linkages. Early versions had these disclaimers. There was a resolution that said the board of directors accepted it, and it had a big disclaimer that it was descriptive and not prescriptive. Somewhere toward the end, that was dropped and I was delighted. We agreed that it was a tool and that it is to be used to encourage mixed-use development and increase the percentage of jobs and households in regional activity centers. It got to be a fairly proactive description in the end. We also agreed to update it every 3 years as we get new forecasts. Over time, it will reflect the way we want the region to look as opposed to what our current forecasts say.

A few obvious questions and uses come out of this right away. As soon as we started putting the map together, we immediately asked ourselves, "Where is development forecast, where does it exist now in forecast, and where do we not have adequate transportation and particularly transit?" There were some major concentrations—Tysons Corner, Virginia, and the Dulles Corridor, where we have a tremendous amount of development and continuing development and no rail transit.

The other question was, "Where do we have transportation and not a lot of development?" We have a number of Metrorail stations where there is virtually no development projected, even in 2025. That raised some questions. There are certain parts of the region where that is more prominent than others.

There was a reaction by some elected officials that not all of those stations are in places where we can have high-density development or even mixed use. They are residential areas. Just because you have the transportation access, it doesn't mean you will be able to put in a lot of high-density development. There are issues with local land use and people who live there. They have a certain vision of that area that has to be recognized.

Some of our citizens groups asked, "What about the gentrification issue?" As they look along some of those rail lines and stations that were designed to serve medium- and lower-income areas, and the kind of development that has occurred around some of the other stations, there is the question of whether we are going to continue to permit enough low-income/medium-income housing and development in these new developments. It brought that issue to the table.

Finally, going back to the green space issue, we asked, "Where we do want neither development nor transportation?" It would be helpful if we could "rope off" certain areas of the region and allow nothing there except very low-density development. There would be no more development or transportation. One official used the term "stay away" zones—zones to rule out for both transportation and development. We are still working on that. I think the concept is important.

What the map did for the first time was graphically illustrate data that we had been using for many years. But we had never put the data on a map, defined activity centers by using employment criteria, and then illustrated them graphically. I think it has really raised everyone's awareness of what our future projects are, what some of the issues are, and helped us come to grips with what we need to do.

I want to close by mentioning one successful smart growth and transit-oriented development project that had all the right characteristics. Time and again, at the MPO level, projects are controversial. Everything that comes forward has something wrong, and we have to struggle and struggle. Well, this one got all the green lights because it hit all of these criteria. It's a new infill Metrorail station at New York Avenue, where there is fairly good highway access and potential for a transit station—the Red Line goes right through the area. There is a lot of development potential, being in an older warehousing area, and some creative developers put together a program, which is one-third financed by the private sector. We got the federal government to pay for one-third and the District of Columbia paid for one-third—about $84 million total for a new Metrorail station. When we did our plan update, we put in 6,000 more jobs that were coming as part of the development. So there was an opportunity to add a new transit station and a lot of new development that was part of the package for that particular transportation improvement to the long-range transportation plan. The land use and the transportation really came together in that instance, and frankly you wouldn't have gotten one without the other. If there were no transit station, we wouldn't have had the development. If it were not for the development, we couldn't have afforded the transit station. It is a nice example of that linkage, and it has obviously raised the idea of looking for others like that.

The Environmental Protection Agency has evaluated that particular measure, along with some others around the country, and has done a report in which it tried to quantify the impacts of that development on land use, air quality, and vehicle miles of travel as compared with that development going to other locations in the region. In one scenario, we looked at distributing it throughout the District of Columbia. In another, we put it in a suburban transit location. Although I won't go into the details, I would say, on the basis of our work and the case study done in Portland, that suburban transit-oriented development can work well for the region because we have a lot of development there already. That is where a lot of residential development is. You can get jobs close to where people live and get transit ridership concentrated in suburban locations. It gets back to the multinucleated development concept for the region. In this particular example, the suburban alternative wouldn't have been that much worse than the one downtown in terms of vehicle miles of travel and air quality; these results surprised a lot of people.

Discussion

Audience question: Over the past decade, we have really seen a dramatic change in state transportation planning in terms of MPOs and their incorporation of land use issues in their planning, which I think has been driven at least in part by federal legislation [the Intermodal Surface Transportation Efficiency Act (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21)]. With the new round of federal legislation coming up, can we look forward to AASHTO and some of the states taking the lead in perhaps institutionalizing some of these smart growth ideas, either at a policy level looking at funding flexibility, or perhaps championing new funding streams to support community revitalization or transit-oriented development? Can we look for support going forward in the next round of federal transportation legislation?

John Porcari: The short answer is yes, at least from Maryland's perspective. We are active on a number of levels on reauthorization, and at the risk of stating the obvious, the most important thing is that the pie gets a little bit bigger this time around if we are going to do all these great things. Having said that, there is a lot of flexibility in TEA-21, perhaps more than we use. There are certainly some obstacles on smart growth projects in using transportation dollars, but I have to say by and large, if you push the envelope, you can do it. The obvious set-aside categories like enhancement, for example—I think at least the states could certainly use more of that. But the real issue is how we are going to accomplish our first priority, rebuilding what we have as it becomes 25 to 35 years old, and still have a new construction program and a smart growth reconstruction program. You can't do both—at least we can't—within the existing funding constraints.

Jim Codell: To amplify what John said, obviously funding is the main issue, and maintaining our existing infrastructure is first and foremost. But infrastructure and maintenance and even expansion, in some cases, will have to be done in a different vein or in a different light, as opposed to initial construction. So those factors will have to be considered.

I would agree with John's comment about using federal money for transportation enhancement projects. In my opinion, we have the flexibility that we need. FHWA has worked with us, certainly in Kentucky and across the nation, to enable us to have the flexibility we need to address the various projects. Transportation enhancement projects, specifically, are popular and will continue to be popular in the future. But first and foremost is the funding level: where we are going, how we get there, and whether we can increase the program. We have to increase the program if for nothing else than to maintain the infrastructure that we have.

John Horsley: Let me give you some specifics that the state departments of transportation and AASHTO are proposing to include in next year's reauthorization. First, we are proposing 35 percent growth in the highway program and 44 percent growth in the transit program. We need both facets of the program to grow. In terms of sustaining the 10 percent dedicated set-aside for transportation enhancements, one of the issues on the table is what to do about the TCSP program. We haven't taken a position on that, and I have asked our reauthorization steering committee to develop a posi-

tion and present it to our board during our meeting in Alaska.

Audience question: To follow this discussion, financing for transportation increased about 40 percent as we went from ISTEA to TEA-21. Yet during that time, a greater number of states cut their gas tax than raised their gas tax. The Amalgamated Transit Workers Union has a proposal to provide a funding incentive in TEA-21 reauthorization for states that offer flexible state funding as opposed to this set-aside just for roads. Is that the kind of incentive that perhaps AASHTO could get behind to help us reform the funding flexibility to support smart growth? In addition, would AASHTO consider increased suballocation of federal funds to regions and local communities to help support these kinds of smart growth planning and investments so that we don't end up with the situation we have today, where one out of four Congestion Mitigation and Air Quality (CMAQ) dollars is going unspent because it is shifted over to National Highway System or other road expansions?

John Horsley: First, let me get the facts straight and then ask my panelists to address the substance of your question. During the past 10 years, investment from all levels of government went up substantially. You're right that the fastest rate of growth was the federal government, but the largest growth came from state governments, then county and city governments. So there was substantial growth in transportation across the board, but the single largest contribution came from state departments of transportation, which have contributed about twice the growth that came from the federal government. Growth is coming from all three levels of government, but the greatest share is from the states.

John Porcari: At least from the Maryland perspective, we flex funds all the time from one category to another. I do think it is a valid point that at the state and local levels, if you are not willing to match those funds and if you are not going to put your money where your mouth is, then it is going to be difficult to ask for more at the federal level in a reauthorization process. By the way, we would be happy to take that unspent CMAQ money, because we are over the top on that category. The dynamics are obviously different in each state, but I think that a smart growth approach in the process of building a transportation program consistent with smart growth is also a great opportunity at the state level to build political support for more revenue from the state. To be blunt, if you do it right, the kinds of projects you are delivering are exactly the kind that would enable an elected official to make that tough vote for a gas tax or other increase.

Ron Kirby: I think going from ISTEA to TEA-21 and on, there will, it is hoped, be a gradual evolution in the federal program away from categorical—here is the highway program, here is the transit program—to a structure with more flexibility. I think that is what we need. In terms of overall funding needs, mention was made of rehabilitation and maintenance requirements. That is a big requirement in our region, for transit as well as highways. That will take up a lot of the money. I think that leads you to many of these new facilities requiring mixed funding. It is not going to be the 80/20 federal match anymore. The example I used here, the New York Avenue station, is one-third federal, one-third private. Some of the major road projects we are looking at are mixed funding with development districts, tax districts, and so forth. That is probably a good thing because it forces the land use linkage. If you don't get the land use, you can't get the facility because you don't have the demand. I think we will see more of that. The federal share may go down, but the federal program is still critical. In terms of the structure of the program, it gives you the ability to do it right, but it also allows you to do it wrong. You have complete flexibility. I'm not sure how much more prescriptive the federal program can be, but I think, in general, flexibility to move funds across these categories is important.

Audience question: Bob, you mentioned the need to have the different sectors work together and particularly to bring in the private sector in reinventing suburbs, which is something you've done a lot of work on. I'm wondering about dealing with parking lots and surface parking in grayfields and how institutions can work together with the landowners or private developers who have already taken ownership of that area. Doing a pedestrian-friendly redevelopment of an existing shopping center means creating sidewalks and walkways in a totally privately held place. I'm curious about the institutional arrangements that have worked for that situation.

Robert Dunphy: Are you talking about a private strip center or a private failed mall? I mentioned in one of the meetings that ULI took on this issue of the suburban strip—the ugly, deteriorating suburban strip—and put together about a dozen experts who brought in a retail perspective and an engineering perspective and a design and planning perspective to create some choices and options. That is available online at our website at www.uli.org.

For a failed mall, and there are a number of examples of those, if the numbers work and the market works, it could be an entirely private operation. I think the growing trend is to create more of a town center kind of pattern. Then there are a couple of examples of ones where they have actually "de-malled" it. The recent one I'm thinking of, a project in Colorado, was a transit-oriented development around one of their light rail stations, City Center Englewood. It was a failed mall and it is a mix of public and private where the transit agency has the station, the city has a plaza, it is in front of the City Hall offices, there

is private development, there is infill housing, and there is even a big box on the perimeter of the property. Nobody wants to admit it is there, but in fact it provides a very valuable financial component to the project and to the city for taxes.

Audience question: I would like to go back to the question that Charlie asked at the end of the last session. Bob Grow quoted some statistics from your survey in the Greater Salt Lake area that about 15 percent of the citizens said they trust government, about 15 percent said they trust the private sector, and most say they trust themselves and they have to take the initiative. Then other questions were raised: Do AASHTO and the state departments of transportation embrace or oppose creative solutions and community-responsive designs? Can we have our investments and our design decisions in sync with smart growth? This is a group from the Transportation Research Board perspective addressing smart growth. In yet another world, you have your community development directors at the city and county levels, and there is a bureaucracy of state planners and state community development directors. How do we get a better dialogue going between those of us in the transportation world and those in the land use world? They are different parts of the bureaucracy, the approach is different, and, Bob, you are in the crosshairs for both of us.

John Porcari: One easy way you can get a dialogue going within the public sector is—and I think Governor Glendening mentioned this—a smart growth subcabinet. Ours meets regularly, and in addition to the secretary of transportation, we have housing and community development, planning, health and mental hygiene for some of the social service issues, and the environmental secretary. It is a very nuts and bolts forum to work out some of those issues. Probably the most important parties, the local jurisdictions, are not at the table on any given project using that mechanism, so we have to bring them in on a project-by-project basis. But that is one very quick-and-dirty way that you can do that.

Ron Kirby: The local jurisdictions are at the MPO table, and that is one of the opportunities we have to link the land use planning with transportation. You are absolutely right—the land use issue comes down to the local jurisdictions, the local planning directors, and the local officials. All of those decisions are going to involve those people and the local community. If we don't make that link, we are not going to be able to do these kinds of projects. It is absolutely critical.

Robert Dunphy: You also need to have a long-lasting, high-visibility aspect to this notion that everybody buys into, and keep it up. If the economic development director isn't on board, it wouldn't be out of line for the director of the department of transportation or the state agency or city level to say, "This is what is going on, and you need to get with the program." I'm thinking of Arlington County, which has had a program to concentrate growth along its two transit lines for 30 years now, with huge impacts and benefits. Everybody buys into it and even the citizens understand it, know it, and support it.

Jim Codell: In Kentucky, we obviously have two different situations. As I said before, we are mostly rural, and dealing with the MPOs and the few metropolitan areas that we have is one thing, as opposed to dealing with the other regions of the state. When we go to the other regions, we are there to facilitate and to listen to what they have and show them what they might have or what they can create, and try to glean from them what they want. We take those measures in non-MPO regions because the MPOs normally have a more defined way of going about what they want and they have a better idea of where they want to go and a better vision. But at the same time, everything being equal, I think it is incumbent on us as a transportation cabinet to listen, to engage, and to explain to them that we can't be everything to everybody. We can tell them what they might get and offer them the various choices, give them the various options. We ask if they want to do this or that and try to focus on what they want first, rather than telling them what we can do for them or the way they have to go about it. You need to explain to them that you have some flexibility and you will use it.

How

How Can Transportation Agencies Support Smart Growth? What Tools Are Available?

Introduction

Effie Stallsmith, *Office of Planning, Federal Transit Administration*

I've been working in the area of transit-oriented development and joint development for the past 13 years, and I can remember when the words "transit-oriented development" and "joint development" were like a foreign language to most planners across the United States.

In 1997, thanks to the state of Maryland, I became involved in smart growth. I had been a project manager for a number of land use and transportation planning projects. I immediately saw the connection between transit and this new concept called "smart growth." Needless to say, the Federal Transit Administration felt it had a role to play in this.

Being involved in smart growth efforts has solidified our commitment, along with that of the Federal Highway Administration, to providing information, technical assistance, and training to our state and local customers. These are available through programs such as our capital and planning programs that support transit-oriented and joint development and the Transportation and Community and System Preservation pilot program, as well as programs to support building road capacity needed for the safe movement of people and goods.

The U.S. Department of Transportation (DOT) as a whole continues to disseminate noteworthy and successful practices and assist communities in exchanging their experiences. DOT supports continuing applied research in such areas as value pricing, modeling, and land use. To sum it all up, I would like to quote Secretary Mineta, who wrote in a recent smart growth article for *On Common Ground* magazine: "To promote smart growth, the federal government can use its resources such as existing funding programs, technical assistance and information to help ensure that infrastructure works with local development patterns and simultaneously encourages compact, multiuse developments." If you have not seen his article on smart growth, it is in *Realtor Magazine*, published by the National Association of Realtors. To set the tone for this session, let's take a quick look at the past 2 days. You've heard a lot about smart growth and transportation, why it is a transportation issue, the land use transportation nexus, and what a smart growth transportation system looks like—from enhancing the smart growth pedestrian environment to providing the appropriate transit and major roadway capacity.

You've had discussions on the issues and challenges within your immediate regions and states, from political to financial to efficiency and safety. You've heard from Governor Glendening of Maryland and his commitment to smart growth and the work that is still ahead.

We have addressed the issues that suburbs and exurban areas are experiencing—how they look different from the systems that serve our urban environments, what the institutional considerations are, how they can be and have been incorporated into state and metropolitan planning and programming processes, how they are communicated to the public, and how they can be funded.

Finally, let's look at what tools are available to transportation agencies to support smart growth. In this session, we hope to help you learn about practical tools to plan and design transportation facilities and services;

what agencies can achieve with those tools; and how, by applying them, transportation agencies can support smart growth and discourage sprawl.

Our first panelist is Sam Seskin, a principal professional associate of Parsons Brinckerhoff Quade & Douglas, Inc., in Portland, Oregon. Sam consults widely on relationships between transportation and land use for local and state governments. He was the consultant project manager for the award-winning Land Use, Transportation, and Air Quality Connection project. He has been a contributing author of such TRB publications as *Transit and Urban Form*, Volumes 1 and 2; *The Costs of Sprawl—Revisited*; and *Costs of Sprawl—2000* and to the update of the 1997 AASHTO Redbook. Sam will talk about how transportation agencies can improve their projects by doing one or more of the following: incorporating context-sensitive design (CSD), accommodating multiple modes, improving the pedestrian environment, integrating new urbanist principles, locating in brownfield or infill sites, enhancing main streets, integrating the adjacent urban land uses, and reclaiming and reusing urban land.

Then we will hear from Tracey Winfree. Tracey is from the city of Boulder, Colorado, and she has worked with the GO Boulder project, which has continually created new programs and projects that encourage people to use alternative transportation. Tracey has been a key player in designing and implementing such successful programs as the University of Colorado's student bus pass program; an unlimited use bus pass called ECO that employers purchase for their employees; and the Hop shuttle service, the Skip shuttle service, and under Tracey's leadership, the Jump, Leap, Bound, Stampede, and a new one coming, Dash. Transit programs have enjoyed a modal shift away from single-occupant car use among Boulder residents. With a bachelor's degree in architecture from Princeton and select advanced degree courses in regional and urban planning and business administration, Tracey has now become the Transportation Director for the city of Boulder. Tracey's presentation is going to feature Boulder's multimodal system, the leadership direction, how the system connects with land use, and the important role partnerships have played in making all of this successful.

Then we will hear from Jim Lewis, who is the Manager of the Bureau of Statewide Planning in the New Jersey Department of Transportation. He was recently appointed Acting Director, Division of Systems Planning and Research. Jim's responsibilities include preparing the state's long-range transportation plan, providing the liaison to the state's three metropolitan planning organizations, managing the planning elements of the state's access code, and coordinating the department's implementation of the state development and redevelopment plan—New Jersey's growth management plan. In this last capacity, Jim represents the Commissioner of the New Jersey Department of Transportation on the State Planning Commission. He has a master's of city and regional planning from Rutgers University, and he is a Licensed Professional Planner in New Jersey. Jim is going to discuss several projects in New Jersey that show how highway projects have been changed to better support community redevelopment goals, how access has been managed for new highway construction or relocation, how CSD has been used to support smart growth, and how bicycle and pedestrian accommodations have been incorporated into these highway designs to make a better New Jersey transportation system.

Last but not least, we will hear from Catherine Rice of the Maryland State Highway Administration (SHA). She will lead us through our breakout session. Cathy is a Special Assistant to the Deputy Administrator for Planning and Engineering at SHA. She is a Licensed Professional Organizer with degrees in civil engineering and urban planning. She has 19 years of experience in a variety of transportation planning and design activities, including leading the implementation of Maryland's smart growth policies within SHA. Cathy will be setting up and leading us through the last part of our session today, which concerns the potential transportation solutions you will come up with for dealing with smart growth issues on Maryland's 210 corridor.

Examples of Smart Transportation Projects

Sam Seskin, *Parsons Brinckerhoff Quade & Douglas, Inc.*

What does a smart transportation project look like? I participated some time ago in a TRB-sponsored online chat room about new paradigms in public transportation. There were a lot of people going back and forth about where the profession is headed in the area of public transportation. The answer, not surprisingly, was transit-oriented development. As one of the members of the planning committee for this session, I participated in a discussion about what we wanted to do at this point in the program. The challenge was to identify and present best practices in the form of specific projects and programs, to try to bring to a culmination all the things you've heard in the past several days.

I volunteered for this duty to try to figure out what a smart transportation project looks like. For me, the challenge was to move beyond the paradigm of transit-oriented development, which still has a lot of room to be implemented but represents only one aspect of smart transportation projects.

In this presentation I will illustrate examples of the things that Effie listed. These topics all relate to one another, and individual projects often have elements that relate to many of these things. I've shown my own taxonomy (see box). These are examples of what smart transportation projects do today. Without a doubt, the profession's projects have changed in a generation. One way to demonstrate that is to start the process by talking about CSD. I am really thinking of CSD primarily in terms of aesthetics. It isn't, by any means, the limit of what the term means, but I think it is a good way to start off this presentation.

Taxonomy of a Smart Transportation Project

- Incorporates CSD.
- Accommodates multiple modes.
- Improves pedestrian environments.
- Integrates "new urbanist" principles.
- Located in brownfield or infill sites.
- Enhances main streets.
- Integrated with adjacent urban land uses.
- Reclaims urban land.

The first project we will look at is US-93 in Montana, which goes through an Indian reservation (Figure 1). Historically, the engineering profession drew a straight line right across the desert and whatever was in the way didn't matter, you just graded it and built it. In the opinion of the planners and engineers, this had to be corrected. US-93 is a 55-mile road. It bisected the Flathead Indian Reservation and needed widening to four lanes, but the controversy over its original design was paralyzing the process. The plan needed to be revised to protect and enhance the tribe's cultural and environmental values, and rerouting around important habitats such as the one that was previously destroyed was necessary. The new plan installed wildlife crossings, selective passings and widenings, interpretive opportunities, and paths and conservation easements, all of which set a high standard for projects across the West. This project won a merit award from the American Society of Landscape Architects. Construction is expected to start in 2003.

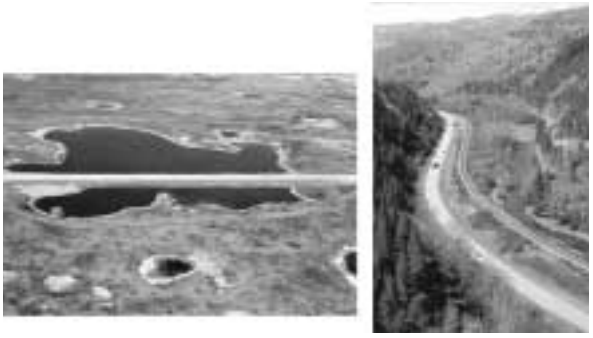

FIGURE 1 US-93, Flathead Indian Reservation, western Montana.

Another project in the West is the Pima Freeway in Scottsdale, Arizona (Figure 2). Like the last one, this is basically a highway project. The question here is aesthetics. Residents wanted a new freeway, but they also wanted it to be an attractive gateway to their city. They were concerned about aesthetics and noise, and if you are from the Phoenix–Scottsdale area, you know a great many of the highways are visually much more interesting than they were a generation ago. In addition, the project included bike and pedestrian paths, stone walls, privacy walls, and landscaping. Southwestern designs were combined with decorative handrails incorporated into bridges and walls. The project, a cooperative effort between the city and the Arizona Department of Transportation, was completed in 1997. It won an outstanding award for engineering excellence.

The Lexington Road in central Kentucky (Figure 3) is an area noted for its scenic beauty. This project is a reconstruction of a 12-mile historic highway linking Lexington to another community, Maysville, and traveling through horse farms, agricultural areas, forested areas, and historic areas. The proposed widening of this facility had been opposed since 1969 and had been tied up in court for decades. The problems with the facility were evident. They included lack of shoulders and emergency lanes, narrow lanes, and poor sight distances. A multiagency process began with significant

FIGURE 2 Pima Freeway, Scottsdale, Arizona.

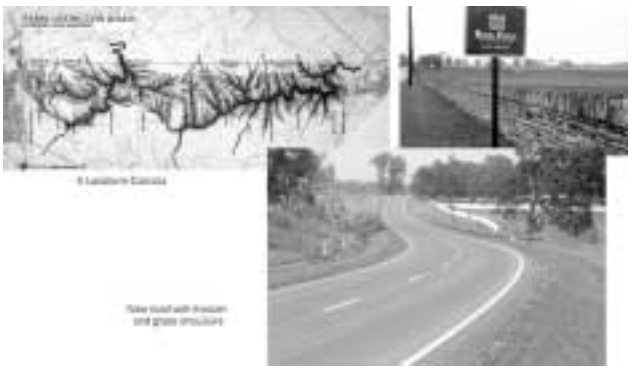

FIGURE 3 Paris–Lexington Road, Bluegrass region, central Kentucky.

public outreach in the 1990s, and the result has been a well-received project with an attractively designed two-lane roadway with medians, grassy shoulders, protected viewsheds, and a variety of other scenic amenities that met the community's needs.

Figure 4 shows an urban project in Clifton, New Jersey, the last link in a state-constructed freeway facility, Route 21. The last 2-mile section went through an urban historic area and posed interesting challenges in many respects. The freeway noise walls mirror the architectural features of local neighborhoods and industrial buildings that give this community its character. The park structures indicate the rooflines of the sheds and the former mills and clothing manufacturers that were located on the site, and the river stones in the lower level represent the Passaic River, the mills' power source. This facility opened in December 2000.

Next we have a whole genre of animal underpasses and overpasses. I recall living in Massachusetts in a community in which, at a certain date in March, all traffic was stopped on a local road in the dead of night so that some amphibians could cross the road from the wetland up to a slightly higher elevation so they could carry on their existence on dry land. No one knew exactly when this would happen. All of a sudden, when

FIGURE 4 Route 21 freeway, Clifton, New Jersey.

the night came, the policemen were posted on the street and traffic stopped for the night.

Since then, many communities have developed and designed animal underpasses and overpasses. There are examples in Florida, Arizona, Massachusetts, and throughout the United States. Many of these have won environmental protection awards from the Federal Highway Administration and other agencies. They help animals of all sizes to get under or over the roads in question. We have taken multimodalism to a new dimension.

Figure 5 shows a parking facility in Santa Barbara, California. The cultural heritage of Santa Barbara is from the Spanish colonial days, and urban design codes for the city mandate this kind of treatment for all buildings. This parking garage has arches, balconies, and a rooftop parapet reflecting traditional architectural forms. It won local and state awards. It represents an interesting way to deal with transportation features, not for movement but for storage of vehicles, and it takes local design and aesthetics into consideration.

Let's talk about some facilities that accommodate multiple modes. One of the signature projects of this decade was the deconstruction of the Embarcadero Freeway in San Francisco and its replacement with a popular Bayfront boulevard that passes the new baseball stadium. Figure 6 shows a boulevard with wide landscaped sidewalks, bike lanes, and six lanes of vehicular traffic divided by a landscaped transit median. Trolleys operate in the median connecting the north and south ends of the waterfront with the rest of the city and with other forms of rapid transit—ferries, buses, and the like. Adjacent to this facility there have been extensive development and redevelopment of public parks and piers; multiple land uses; residential, office, and mixed-use development; and a variety of tourist attractions, like PacBell Park, one of the great new stadiums in the United States.

On a much smaller scale, the same basic concept played out in a transit center in the small community of Robbinsdale, Minnesota (Figure 7), one of a series of initiatives to rebuild a historic downtown in this suburb of Minneapolis–St. Paul. The transit center project included rerouting a main street and constructing heated and lighted shelters for buses and pedestrian links. Adjacent to the center have been extensive new development and redevelopment of mixed-use retail and apartments, a farmers market, and a music pavilion. There are also complementary transportation projects, including traffic calming.

FIGURE 5 Parking garage, Santa Barbara, California.

FIGURE 6 Embarcadero, San Francisco, California.

FIGURE 7 Robbinsdale Transit Center, Robbinsdale, Minnesota.

Let's turn to the pedestrian environment. Figure 8 shows a project from my home city of Portland, Oregon, the Eastbank Esplanade. This is a 1.5-mile facility on the east bank of the Willamette River, parallel to an Interstate freeway, I-5, the major north–south freeway on the Pacific Coast of the United States. The project connects neighborhoods and provides connections across the river at the various bridges. It is basically a pedestrian and bicycle corridor offering great views of downtown. Many people, including me, were cynical when this was built. I always thought it would be the epicenter of drug dealing for the whole city of Portland, since you can wander down there and be unnoticed. But we skeptics have been proved wrong, and it has been a phenomenally popular way to circulate around our riverfront and experience the city from a point of view that would otherwise be impossible.

Figure 9 shows an unusual amenity for pedestrians located in Tacoma, Washington. This facility opened in

FIGURE 8 Eastbank Esplanade, Portland, Oregon.

FIGURE 9 Chihuly Bridge of Glass, Tacoma, Washington.

FIGURE 10 East Water Street/Dock Street, Toms River, New Jersey.

FIGURE 11 Safe Routes to School Program, Marin County, California.

2002. It is a new pedestrian connection linking downtown Tacoma, the city's waterfront, and several municipal attractions. The pedestrian bridge spans an Interstate highway and directly connects the Washington State Historical Museum and a new Museum of Glass, which has been one of the local signature crafts in Tacoma and the vicinity. The walkway is filled with Dale Chihuly glass pieces and stained-glass windows, creating a very exciting urban environment and making the connection visually and symbolically between the art museum and other features in the community.

On a much different scale and on the other side of the country, in Toms River, New Jersey, two streets form a southern bypass of the city. They had poor geometry and heavy traffic volumes, which resulted in numerous accidents. A project was done to improve the geometry and at the same time to use CSD to protect the visual and historic assets of the community. On the section of road shown in Figure 10, the pedestrian environment was integrated into an arboretum, creating a much more exciting and satisfying pedestrian experience than had been possible previously.

Since children are auto-free, it is important that the pedestrian environment work for them. Figure 11 illustrates a project in Marin County, California, part of a national program to promote walking, biking, and nonmotorized means of getting to schools, which improves the health and safety of the students and reduces traffic on neighborhood streets. The Safe Routes to Schools Program in Marin County is a community-based solution, which includes identifying safe routes to school for all students who live within 1 mile of schools. The program includes not only improvements to physical facilities but also education for parents and students and better traffic enforcement. It also involves a variety of promotional events and prizes. Proponents of the project say that the proportion of students who walk to school increased from 21 to 38 percent in its second year as a result of this comprehensive program.

In another small-scale project, in the city of Mount Rainier, Maryland, a roundabout was constructed to improve traffic for cars and buses while enhancing the pedestrian environment at an intersection on US-1. It is the central focus for a major revitalization effort in the city to create a town center. The construction of the roundabout provided several transportation and aesthetic elements for the revitalization plan.

Let's talk about incorporating new urbanist principles. Here one has to begin with the whole variety of traffic-calming techniques, which, in the last genera-

tion, have happily become much more common on streets and roads across the United States. Both full and partial street closures can control traffic volumes. Diverters, medians, and forced turn islands are designed to dampen traffic volumes on neighborhood streets. Vertical speed controls can include speed humps and speed tables to slow traffic, as well as changes in road texture, striping, and signage. A raised crosswalk at an intersection can accomplish the same thing. Horizontal speed controls include roundabouts, signage, and the enhanced visibility associated with certain landscaping improvements. Chicanes are slight lateral shifts in traffic; bulb-outs, chokers, and neck-downs are also techniques that can be used to slow traffic speeds in communities. Those are all project-level or street-level improvements.

One can clearly go up to the next scale in the implementation of new urbanism, and I'll illustrate here a rural and a new urbanist community (Figure 12). Twin Creeks is in a high desert environment in southern Oregon. We don't emphasize the transit orientation here because there isn't much transit in this part of Oregon, but a well-planned community consistent with new urbanist principles is an unusual thing to find in this part of the state. Also in the Pacific Northwest, Issaquah Highlands is a planned community of about 2,000 acres 17 miles west of Seattle. It is associated with a new interchange on I-90, the principal east–west Interstate highway in the Puget Sound region. This is already becoming a new pedestrian-oriented, mixed-use community, including retail, entertainment, and various employment and residential uses. Features include traditional new urbanist designs of grids of narrow tree-lined streets and wide sidewalks. The town center will be adjacent to a new Microsoft campus where 15,000 people will eventually be employed.

The location of smart transportation projects is critical, and brownfield and infill sites are an important dimension of that. In Portland there is a district north of downtown called the Pearl District, in which a combination of private and public investment integrated transportation and land use to create a new neighborhood essentially where one never existed before. An arterial ramp that had once dominated an industrial landscape was demolished and replaced with both renovated and new apartment and condominium developments, as well as a light rail car that runs by lofts near an old sign (or a new sign with an old idea)—Go by Streetcar. That sign is the signature for this particular development. It clearly marks, in the minds of the people who live there as well as the people who promote and develop the district, the importance of this kind of transportation investment as part of a package to enhance and reuse this area.

Another great signature project of our decade is the Atlantic Station project in midtown Atlanta, Georgia, a 130-acre mixed-use redevelopment of a former steel plant (Figure 13). The essential component of this project is the construction of a bridge that would cross an Interstate highway adjacent to the site and link the surrounding community with the Metropolitan Atlanta Rapid Transit Authority rapid transit station. The bridge will improve access for all modes of transportation, motorized and nonmotorized, and the site design serves as an excellent example of a new urbanist development already under construction.

The trend to turn arterials into places used solely by high-speed vehicles is reversing in our generation. Martin Luther King Boulevard in North Portland is one example. This traditionally busy, cluttered arterial street was "improved" by the introduction of median barriers and the prohibition of left turns 20 to 30 years ago to the point where all the local businesses were adversely affected. Today, at some expense, it has been improved again by taking out all those barriers to pedestrians, which coincided with renewed interest on the part of residents in the neighborhood involved. The improvements are shown in Figure 14. We have gone back to the main street, after moving too far down the path of focusing only on one mode of transportation.

FIGURE 12 Twin Creeks transit-oriented development, Central Point, Oregon.

FIGURE 13 Atlantic Station, Atlanta, Georgia.

FIGURE 14 Martin Luther King Boulevard, Portland, Oregon: (*a*) then; (*b*) now.

The goal of the Route 235 project in Maryland was to create an attractive boulevard and main street by providing safer access to businesses and enhancing environmental features (Figure 15). This road serves as the primary access point to the town of Lexington Park and the St. Mary's County peninsula. The project widens into a suburban arterial, adding a travel lane in each direction, but accommodates multiple modes.

Mockingbird Station is an example of integrating transportation with adjacent land uses in a dramatic, visual fashion (Figure 16). This Dallas project is a mixed-use development built in the suburbs next to the newly opened light rail line. It is built on a 7-acre abandoned Western Electric brownfield site. It is fully integrated with transit through the use of the pedestrian bridge, which is very much a part of the image of the project from the point of view of residents and developers alike. The pedestrian bridge is considered the front door to this project, connecting amenities within the site to areas around it.

Another great signature project is Hollywood/Highland in Los Angeles, where a transit-oriented community constructed above the Metro Red Line subway station has links to Grauman's Chinese Theater, an extensive array of land uses, and 1.3 million square feet

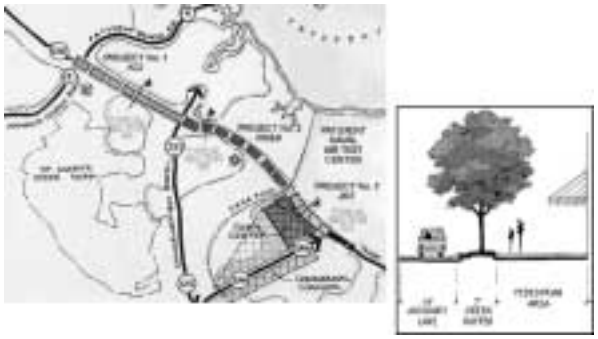

FIGURE 15 Maryland Route 235, St. Mary's County, Maryland.

FIGURE 16 Mockingbird Station, Dallas, Texas.

of retail, theaters, restaurants, and hotels (Figure 17). It is substantially more dense than the previous uses and directly linked to transit. In Los Angeles, this is pretty new. There has been a corresponding increase in the use of public transportation, particularly on the Red Line.

Keeping the same theme but going in a very different direction is I-97 in Maryland (Figure 18). This project is notable in a sense for what it did not do rather than for what it did. It did not provide interchanges in parts of the state and the corridor where urban development was not consistent with state and local plans.

FIGURE 17 Hollywood/Highland project, Los Angeles, California.

FIGURE 18 I-97 (I-695 to US-50), Anne Arundel County, Maryland.

Development has successfully been steered toward other areas targeted for growth.

Finally, several facilities reclaim urban land in exciting ways. In Cincinnati, Fort Washington Way was originally built in the early 1960s to provide access to the central business district and later became part of the Interstate system. Over time, it became congested, unsafe, and physically deteriorated since there were a great many structures involved. A major reconstruction and realignment freed up a substantial amount of urban land for two new stadiums, a riverfront park, and a museum facility planned for the area (Figure 19). It accommodates both transit and highways, and foundations were built for decks, which will eventually be constructed over several of the urban blocks, creating still more urban land.

The granddaddy of these projects is the Central Artery/Third Harbor Tunnel in Boston, Massachusetts, which removed six lanes of elevated freeway through the central business district and put them underground in an 8- to 10-lane facility, freeing 30 acres of land, 10 acres of which will be developed with up to six-story buildings. The remainder will be parks and open space. In the short term this causes huge dislocations in the city, but in the long term it will pay all the dividends that a project like that should pay.

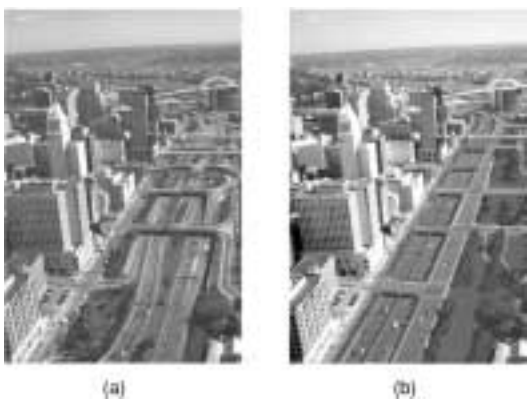

FIGURE 19 Fort Washington Way, Cincinnati, Ohio: (*a*) before; (*b*) after.

FIGURE 20 Riverfront Plaza and Founders Bridge, Hartford, Connecticut: (*a*) before; (*b*) after; (*c*) after.

A final example, in Hartford, Connecticut, uses the same basic idea. Part of the plan to revitalize Hartford's central business district faced the challenge of an Interstate on a river by taking down a viaduct of I-91, creating a landscaped deck over the new facility, and then opening up the waterfront to city residents once again (Figure 20).

You have seen here a variety of smart transportation projects. Those who began this presentation hating highways probably still hate them. Those who don't like transit projects probably still don't like them. Many of you have undergone a conversion experience. I think we can see how the practice has changed materially in a generation and how the ways that we handle, design, plan, implement, and construct transportation projects have dramatically changed.

The Many Transit "Connections" in Boulder, Colorado

Tracey Winfree, *City of Boulder*

My focus will be on transit connections, but "connections" can have lots of different meanings. It can mean how transit connects with other transit; how it connects to land use; and how you connect with your partners, your regional agencies and your neighbors out in the region. I'll discuss several themes: the importance of multimodalism, the leadership it takes to accomplish certain projects, our own local discovery of the importance of land use coordination, and the partnerships we have needed to get things done.

Our population is approaching 100,000, but we are about 145,000 during the day. While we are a suburb about 25 miles northwest of Denver, we are sort of a subregional center in our own right, in part because we are home to the University of Colorado, which has more than 26,000 students and 7,000 faculty and staff. We also have federal laboratories, high-tech industry, and so on. In Boulder, one of our ethics is the value of preserving the natural setting. One of the major reasons people move to this area is that it is just a beautiful place.

We have some important guiding principles for transportation. Our goal is to hold traffic at 1994 levels. We want to provide for increased mobility, and we'll primarily be doing that through a multimodal system. One of the core parts of that multimodal system is a transit grid system with a core area shuttle.

Some people ask whether land use or transportation comes first. What is really the driving force? Our experience locally is that they both come first. They take turns going first. It is an iterative process. We will have some discoveries in the transportation area that will inform our land use and vice versa. This cycle goes in both directions.

I will talk a little bit more specifically about transportation and multimodalism. We have certain pedestrian objectives in our transportation master plan. We have carved the city up into 29 areas (Figure 1), and we are going into each area to complete missing links, to install access ramps at corners and at crossings. We are creating a lot of pedestrian crossings and installing other amenities such as benches and shelters.

In the bicycle program, we actually started with the regional transportation district, which is the six-county

FIGURE 1 Mapping out pedestrian objectives. Seven out of 29 areas and 32+ miles of sidewalk repairs have been completed; 3,408 access ramps, 47 transit shelters, and 116 benches have been installed.

transit provider. Now there are bike racks on all of the buses in the entire six-county area. We do other programs such as underpasses and bicycle system improvements, including multiuse paths and bike lanes on the street.

I'm going to spend a little bit of time talking about our transit story. The transit system that the Regional Transit District (RTD) started with consisted of classic 40-foot diesel, dark-window buses. We have a story to tell in Boulder about creating a community transit network with much smaller buses, cleaner burning and lower to the ground, with wide doors. These buses have a distinctive character.

Back in the early 1990s, the Hop service really broke the mold for us. The Hop services three main activity centers: the university, downtown offices and retail centers, and a retail mall. Our community said, "We're not really sure about this transit system. We don't see a lot of people riding it. We haven't really paid attention to it before. Why don't we go out and talk to the public about how it could be done differently." So we did. We got together with the citizens and we asked, "What does a service need to look and act like for you to use it?" They told us, and out of the very first round of Intermodal Surface Transportation Efficiency Act funding, we got funding to try this service the way the community asked us to. It is a core area shuttle that links three main activity centers. Our original ridership goal was 2,000 riders per day (Figure 2). We surpassed that in the 6th week of service. By the 4th month of service, we were carrying 4,000 passengers per day. This was beyond anyone's wildest dreams, and we were having real capacity problems just after 4 months of service.

Then RTD was interested in trying another test. We took one of RTD's older established services, Route 202. It was the classic 40-foot bus, white, stripes down the side, one frequency in the peak hour and another in the off peak. Together, we created a new model of service that replaced the 202: the Skip service. Once again we saw a remarkable ridership response (Figure 3). On the basis of these successes, there is a whole network of core area shuttles within a high-frequency grid. In addition to the Hop, the Skip runs north–south on Broadway, the Leap

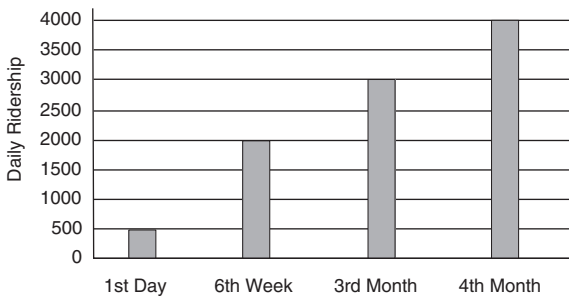

FIGURE 2 Early Hop results.

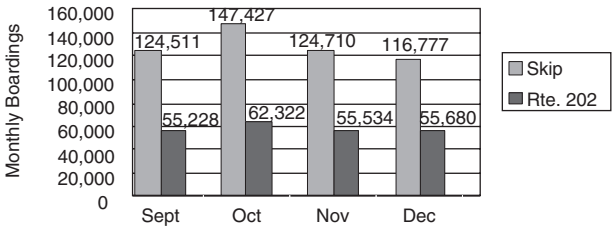

FIGURE 3 Ridership: Skip (1997) versus Route 202 (1996).

runs east–west on Pearl, the Bound runs north–south on 30th, and the Jump runs east–west on Arapahoe.

What is different about this community transit network that people have asked us to provide? They said it has to be schedule-free. Every single service I just discussed is 10 minutes or better between 7 a.m. and 7 p.m. Not only can you rely on one of those services, the Broadway service comes within 5 minutes once you get to the stop. You can rely on transferring between these services. It really functions as a network.

We converted some of these services to a grid system, although it is not exactly a grid because of our geography and our streams. But we took a lot of kinks and loops out of these services, so there is a great deal of direct routing. The vehicles are distinctive and inviting. They are a part of the marketing program, which is also important.

Since we are a subregional center, once we started to get the confidence and experience of these local services, we started moving regionally. We established a connection with one of our neighboring communities, Lafayette, called the Jump. Believe it or not, we have a Short Jump that goes on Arapahoe, and we have a Long Jump that goes all the way out to Lafayette. Moving regionally is important to solving our transportation problem. We had citizens from both Boulder and Lafayette sitting around a table together designing this service. Toward the end of the process, I remember one of the citizens saying, "I can't remember anymore who is from Boulder and who is from Lafayette," and that was a rewarding statement.

The Stampede started last month; it is an east–west service that connects the main campus area with a research park and some other campus activities to the east. The Dash is another regional service that will connect us with neighbors Louisville and Lafayette.

It is so important to form partnerships. With the Hop, we formed a partnership with the community because we were taking a big risk and we weren't really sure what to do. We asked them to help us figure out what to do so we would be in this together. We then joined with RTD for the Skip service. Now we are joining with the University of Colorado and our neighboring communities, in addition to RTD.

It is important to remember to ask people what they want, go out into the community, understand your travel market, and give them what they ask for. It is almost like what Coca-Cola or Kellogg's might do. They ask their customers, "How crunchy do you want it? Do you want it to be soggy? How many raisins do you want?" We are doing the same kind of thing, but our product is transit. We have found that this transfers to other transportation planning efforts. We do the market research to find out what people want. We give that back to them, and we tell them that we gave it to them. We don't want to keep it a secret. Then, we always measure and continue to improve. We think those are important elements.

You've heard during this conference about getting out to community groups and including all the stakeholders. You need to include everybody—students, elderly, employers, employees. With every one of these new services, we didn't assume, "We designed the Hop right, so now we will just do the rest of them like the Hop." For every one of these services we got a new group of stakeholders together and designed the route and the frequency and the hours of service, even the service image. The ridership results show that the 202 was the most productive route in Boulder, and it has more than doubled in ridership since becoming in effect the Skip. Ridership for the Hop, the Jump, and the Bound has doubled over that of the predecessor services.

We don't have the absolute numbers that we have with the Skip and the Hop, but it takes 12 buses to run the Skip service. It takes eight buses to run the Hop service. It takes five buses to run the Bound service. So there is good productivity.

I've talked about the supply side, but the demand side is really important. The marketing and even the images that you give to your transit service, what you have on the streets, are important. The citizens told us that they wanted the service to be really fun and lively but also to have a serious commuter impression. They wanted funky commuters, so we created "caffeinated commuter" graphics (Figure 4).

Each service has those kinds of stories behind it. Also important, beyond the marketing and the image, are the pass programs. We have been working hard for the past 10 to 12 years to develop the University of Colorado student pass program. The faculty and staff participate in the ECO pass program, which is basically the employer version of the campus pass, except the employer buys the pass for all the employees. We are up to 60,000 passes in our community. With a daytime population of 135,000 people, that is a significant number. The combination of these pass programs and the service quality gets people on the bus.

I will highlight our neighborhood pass program. Through our development review process, we have new

FIGURE 4 "Caffeinated commuter" graphics.

residential developments include bus passes in their home owners' association fees. The developer sponsors it for the first 2 years, and then it is established in the home owners' association fees. It is a great way to get demand for transit in your residential development. Other communities across the country provide neighborhood pass programs, so it is not just crazy old Boulder doing this.

What have we discovered in this iterative process of taking what we learn in transportation to land use and vice versa? There are more barriers as we move east—old Boulder lies along the western side of the city, while post-1950s Boulder is on the eastern part. Pedestrian and bicycle connections are much easier in the west than in the east. It has been important for us to recognize pedestrian and bicycle barriers and to begin to break them down. Also, buses get stuck in the same traffic as everybody else. We are going to work on that in terms of transit priority in the system and in our infrastructure design.

There are different land use patterns in western versus eastern Boulder, and our land use map is starting to change to make improvements to this eastern part of Boulder. Design is very important, too. So our high-frequency transit corridors are what we now call our multimodal corridors. We still need to go through a series of steps, but we are modifying our land use around these multimodal corridors such that greater density and more mixed use would occur along these corridors, and development will be required to do more bicycle parking and ECO passes.

We are also doing transportation network plans around these multimodal corridors. The transportation network plan accompanies your classic corridor design effort, but it doesn't stop sidewalk-to-sidewalk. It casts a broader net. We are looking at how people get around parallel to as well as within and across the corridor. We

are using this transportation network plan as a long-term tool for development so that as development comes through, we know what connections to request in the review process. And we know how to add our own investments.

A particular corridor similar to this Maryland 210 is 28th Street (Figure 5). It comes up from Denver as Highway 36, goes through Boulder as 28th Street, and heads up to Estes Park and Rocky Mountain National Park as US-36 again. We are converting that classic, ugly, auto-oriented corridor to a multimodal corridor. This is an example of how we are casting a larger net to look at how we have connections crossing and going parallel to the major nodes. Right now it is three lanes heading south and two or three lanes heading north, very high speed and very intimidating, with no trees. The design for the southern section of 28th Street shows that we are putting in a multiuse path. There will be an underpass and improved crossings with median refuges to get people across the corridor.

We actually slipped the regional transit off the corridor onto a frontage road. We have pedestrian and bicycle connections along here. Transit priority will be built to move the transit right through. Transit continues on the frontage road and pops back onto 28th Street to miss the queue as part of our transit priority system. This bicycle/pedestrian underpass is associated with Boulder Creek; there are some improvements at grade with pedestrian and bicycle crossings.

In another area we had some real problems with right-of-way, so we are doing sort of a hybrid boulevard approach. There isn't enough room for both the main thoroughfare and putting the utility streets off to the side. This three-lane section has two through lanes, with the outside lane only for transit, bicycles, and right-turning cars. Once a car turns off, the transit pulls up and drops people off. The pedestrian has three refuges to get across this intimidating roadway. We will be building this treatment with 28th Street to break down those barriers for the pedestrians and bicyclists and to give priority to transit.

FIGURE 5 Transit network and 28th Street.

Here is an example of an underpass (Figure 6). The University of Colorado is to one side. The Research Park and a lot of housing are on the other side. You can get comfortably to the transit with a multiuse path that runs along that hillside. We will have lighting at night, since people are worried about safety.

FIGURE 6 Pedestrian underpass.

- Design with community!
- Align with land use
- Transportation network plans
- Partner with regional agencies
- Convert from auto to multimodal
- Create transit priority and stop amenities for current transit and future BRT
- Creative connections for pedestrians and bicyclists

FIGURE 7 28th Street comparison.

The important aspect is that this was designed with the community (Figure 7). We used the same stakeholder approach with the 28th Street corridor design. We are aligning it with land use. We are casting that broader net out there to look at the network. We are partnering with the Colorado DOTs and RTDs of the world on this design. We are working on the conversion—using transit priority to get transit out of congestion. We are looking at creative ways to break barriers to get pedestrians and bicyclists under, over, and along these corridors.

Smart Highway Experience in New Jersey

James Lewis, *New Jersey Department of Transportation*

I want to talk today about some of the experiences we have had in the New Jersey Department of Transportation in trying to achieve smart growth objectives. We like to call this the "smart highway experience."

Let me set New Jersey's experience in context. We are nestled between two large metropolitan centers, New York City and Philadelphia. We have a series of small urban centers in the state, some of which are rebounding now. But we are the state of extensive suburbs. We have first-generation suburbs. We have new suburbs. We have a whole band of suburbs in the central part of the state that some people refer to as the "wealth belt," and some of my examples are from that area.

In our state, home rule operates at the municipal level, at 566 municipalities throughout the state. Each of those municipalities relies heavily on property taxes for local revenues. This contributes to the "rateables chase" [competition for property-tax-paying development], making those changes and development patterns difficult. Sound familiar? In our state, the response dates back to the 1980s. The legislature passed the State Planning Act, which established the State Planning Commission, which prepares and adopts a State Development and Redevelopment Plan (SDRP), which is our growth management plan, or smart growth plan. The SDRP is developed with state agencies, municipalities, and counties. These entities use a unique cross-acceptance process to negotiate the two critical operational elements of the plan. There are five planning areas in the state, each of which has a set of investment policies for the state agencies to follow.

Along with the planning areas, there are centers. Centers are the focal points for growth within those planning areas. Regardless of planning area, growth should be occurring in those centers. The centers speak to the importance of design. The plan recognizes how important design is in achieving the objectives of an orderly growth pattern.

Governor McGreevey came into office earlier in 2002 and established the Smart Growth Policy Council through executive order during the first few weeks of his administration. The council is intended to bring together state agencies in a close-knit forum. The focus is on the partnerships they have to establish to achieve the objectives of the state plan.

How can highways help? In New Jersey, we have a fairly skeletal state highway system under our direct jurisdiction. The state highway system includes 2,300 of the 36,000 road miles in the state. Compared with the rest of the country, that is a fairly low percentage of state highway jurisdiction. In addition, we provide extensive aid to counties and municipalities. Some is through new formula funds, and some is through selection of projects. We can work with the counties and municipalities to select some of those projects.

Our response to the SDRP spanned a number of areas. In the policy area, in our long-range transportation plan, one of our seven goals is to use transportation investment to shape the state's development patterns so that they are consistent with the SDRP. Likewise, a similar strategy exists in our midterm or 10-year-horizon capital investment strategy.

In terms of process, we are working extensively with our three metropolitan planning organizations (MPOs).

New Jersey is blanketed by three MPOs that incorporate the precepts of the SDRP within their planning and project selection processes. We are now heavily involved in CSD techniques. In fact, a number of the examples that I'm going to address are actually, in some ways, precursors to our full involvement with CSD and help to lay the groundwork for CSD.

Finally, we have a regulatory approach for smart growth, the access code. State highway access management legislation created an access code about 10 years ago. The code is structured around the definition of access levels for the state highway system, defining what types of access are allowed on what types of functional classes of roads. Another key part of the code is the concept of desirable typical sections. These set the maximum concept for a section of state highway. That shapes the local planning decisions about what kind of access can occur on that section of highway, and it governs how we issue the permits and the guidelines we have to follow in issuing the permits.

Within the access code is a technique called access management plans, by which we partner with municipalities to create a definitive access management plan for a stretch of highway. That is adopted by the municipality through local ordinance.

After 10 years of experience with the access code, my office is embarking on a major study. The goal is to improve the consistency between access code operations and the SDRP and to use the access code to promote smart growth goals.

We are currently executing several projects that are the result of extensive coordination and collaboration with host communities. The first one is a bypass around Hightstown, which is a small, formerly rural market town in central New Jersey. Hightstown is adjacent to a New Jersey turnpike interchange. It is on an east–west highway and sees large amounts of regional traffic flow. The bypass was long sought after to alleviate congestion in the town. The key element of the bypass was the strictly controlled access. It has only one interchange, to provide regional traffic movements.

The bypass has been in operation for about 2 years. It provides a bypass about 3.5 miles around the town, and it has relieved some of the through-traffic congestion in Hightstown. It has permitted the complementary strategies of streetscape improvements along the existing state highway and a county road to allow Hightstown to evolve to its new niche in the regional landscape.

The Washington Town Center is probably one of the most widely known smart growth projects in New Jersey. It is just east of Trenton, the state capital, in the central part of the state. Crossing the middle is Route 33, a state highway. The center was developed by local planners in a rural township to the east of Trenton. While most of the centers already exist, the SDRP features a provision for the creation of new centers. The Washington Town Center is the only one in New Jersey that has been planned and designed and is currently in construction.

Route 33 had been included as Main Street. This presented problems. Through a series of discussions, we came up with the alternative of providing a bypass that would accommodate some of the future travel flows on Main Street. The key element of this bypass was the access management plan approach, which preserves and protects the future capacity of the bypass road and limits the growth along it.

Another example of successful access management planning is in a rural area along Route 34 in Colts Neck, toward the New Jersey shore (Figure 1). We performed a corridor study along this stretch of highway that focused on operational difficulties at certain key intersections. Conversations with the municipal planners uncovered a number of concerns about future development in the area adjacent to the highway. We also discussed the concept of access management plans and encouraged them to pursue that option. With our assistance, they spent about 1 year reviewing the master land use plan until they were ready to talk. Those discussions led to the development of an access management plan for this stretch of roadway.

The provision of local circulator roads adjacent to the state highway preserved some of that capacity for the state highway and regional traffic movements and provided more clustered zoning for their commercial development along this road.

Route 29 in Trenton is a project that completed the last missing link; it connected the downtown area of the state capital to Trenton's freeway network. This roadway had previously been designed as a grade-separated freeway. While it was somewhat desirable to the city and the local residents because of the traffic volumes in these neighborhoods, they were also fearful about what that freeway design would do to their waterfront access, among other things. We engaged in an intensive set of design charrettes. The roadway was redesigned on the basis of the urban boulevard concept. What was planned as an interchange in that area was brought down to at-grade roadwork.

FIGURE 1 Route 34 access management plan.

The original concept included the possibility of future development in these areas of the intersection to connect the existing residential neighborhoods and commercial uses along the street to the new waterfront uses. Development includes a new minor league ballpark along the waterfront, housing on the opposite side, and offices, with more in the planning stage. The project has been successful because it started to stimulate greater interest in redevelopment opportunities in this area. It has also led to the promotion of pedestrian uses.

The other main element of this project is the design of a covered deck over part of the freeway to provide greater access to the waterfront. There are ramps down to the waterfront and a walkway all along the riverfront that connects to the parks and other recreational facilities in that area. The park project is now in the design stages.

Route 30 is the main entrance into Camden. This highway was once lined with typical ugly strip development (Figure 2). We had the opportunity a number of years ago to leverage some state funds along with some toll authority funds, and it led to the creation of parklands along the roadway. It was the extension of a county park. To the left of the park area is the Cooper River. Just below this area is an extensive county park. This is an example of open space preservation fairly close to an urban area.

The Navesink River Bridge on Route 35 was one of the precursors to our rapid acceptance of CSD (Figure 3). This project was already in the works. It was in the final stages of design with a rather ordinary bridge design adjacent to the town of Redbank in Monmouth County in eastern New Jersey. That town center, designated a regional center under the SDRP, was undergoing quite a bit of redevelopment and reconfiguration in the downtown and some other neighborhoods. They took a great deal of interest in how this bridge would look. They didn't like the ordinary bridge design, so they worked with us through a series of design discussions, and we ended up adding a considerable amount of architectural detail to the bridge. The design allowed it to fit more naturally into the historic character of the area.

FIGURE 2 Route 30, Camden—Admiral Wilson Boulevard.

FIGURE 3 Navesink River Bridge, Route 35.

Sidewalks were added on both sides of the bridge. They were very insistent on connecting downtown Redbank's northern residential areas with a township just north of the bridge. The project was built much as they envisioned it, and it was very successful. It really changed a lot of our engineers' minds about CSD.

Route 71 becomes Main Street in Avon, a coastal shore community. They wanted to take this existing four-lane section of roadway and reconfigure it to make it much more pedestrian-friendly because it is their main shopping street. After working with us to look at this stretch of highway in conjunction with the adjacent stretches of Route 71 in the adjacent towns, we developed a redesign that reduced the lanes from four to two—one in each direction, providing some left-turn movements and bump-outs. This project is going to design this year and is moving toward implementation (Figure 4).

The Westfield Circle, in northern New Jersey, was a troublesome intersection that we have been dealing with for a number of years. The original or existing intersection was a traffic rotary that was not working. We came up with a new version of the traffic rotary that was much more pedestrian-friendly (Figure 5). It slowed traffic more effectively and accommodated the volumes with some improvements from the existing design. This project is now moving toward design and completion.

FIGURE 4 Main Street streetscape, Route 71, Avon: proposed improvements.

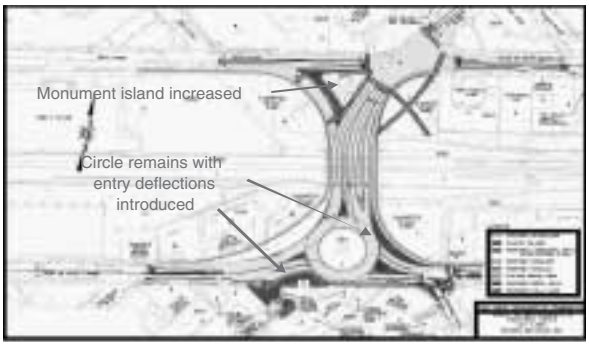

FIGURE 5 Route 28, Westfield Circle: revised solution.

FIGURE 6 Route 1, North Brunswick.

Figure 6 shows the North Brunswick example. You can do things rather quickly. This part of Route 1 is in the central part of the state. There were residential units, apartments, and houses on one side of the road and commercial uses on the other side. People were crossing the highway and the Jersey barrier anywhere they wanted. Unfortunately, there were some pedestrian fatalities. Through one of our planning design consultants, we decided to put some sidewalks along the road and a fence on the center barrier to redirect the pedestrian linkages to a nearby signalized intersection. This whole project was completed in 1 year, start to finish. Even with the most mundane of principal arterials, you can make some kind of smart improvements.

One old project still stands out as a good model of what can be done for smart growth. Market Street in downtown Trenton provided one of the direct access routes to the train station in Trenton. It was formerly a two-lane road and created a considerable bottleneck in the city. Unfortunately, it wasn't a simple widening, even though the city was in favor of that, because it cut right through the heart of one of the premier redeveloping neighborhoods. Through extensive discussions with the local residents, city officials, and other stakeholders, we designed a roadway-widening project that accommodated their concerns by including a pedestrian plaza and some additional parking spaces, which the community loved because of a severe parking constraint on side streets. This project is open and operating along with some other streetscape improvements in the area. This neighborhood has continued to thrive, and it has even increased in prominence in the city.

These examples show some of the best practices used in New Jersey to help strengthen and enhance centers consistent with our smart growth plan, the SDRP. We are taking the opportunity to maximize and optimize existing roads as multimodal facilities, and we are collaborating with the community through extensive planning and CSD efforts.

Hands-On Case Study

Catherine Rice, *Maryland State Highway Administration*

We are looking forward to your working with us on this case study for the Maryland 210 corridor. We picked this corridor because we hope it will represent something you can relate to in your area. This is a typical suburban radial corridor (Figure 1). It is south of Washington, D.C., in Prince George's County, and parallels the Potomac River. To the west of the river is Virginia, and to the south of the project is Charles County, Maryland. The north end of the project is at the Capital Beltway, just at the Woodrow Wilson Bridge.

The purpose of this breakout session is for you to help us meet the challenges of smart growth in a suburban corridor by using our transportation tools to address smart growth issues, to see if we can develop this kind of a corridor in a manner consistent with CSD principles. The following are the key issues we need to address:

- How do we apply transportation tools to address smart growth issues?
- How do we develop the MD-210 project to be consistent with CSD principles?

Figure 2 shows the 10-mile corridor from north to south, or from left to right. It is currently a six-lane divided highway with signalized intersections. The master plan calls for this to be converted to a freeway. Along the corridor are clusters of residential areas, primarily single-family houses. There are fewer as you go from north to south.

At the north end of the corridor approaching the Capital Beltway there is heavy directional traffic with commuters going into D.C. northbound in the morning and leaving southbound in the evening. Along the first 1.5 miles there are a lot of apartment complexes. There is somewhat of an urban feeling along the roadway itself. Six or seven intersections have strip shopping centers.

After the first 6 miles, it gets into some sensitive natural areas, the more rural parts of the project. In a 10-mile span, it goes from an urban area oriented toward Washington, D.C., down to rural open areas. The southern end of the project ends in a small rural town

FIGURE 1 MD-210 corridor—vicinity map.

FIGURE 2 MD-210 corridor—overview: 10-mile corridor; 6-lane divided highway; 11 signalized intersections; clusters of suburban residential communities; commercial areas at existing intersections.

called Accokeek. This part of the project, Piscataway Creek (Figure 3), is also part of the Chesapeake Bay critical area, which is further protected in Maryland beyond the federal protections.

One of the first key issues in the project is how we address or meet demand. How do we meet the demand for adequate transportation capacity and new development? How do we do this in a way that discourages additional development at the south end so that it remains rural? Currently, there are six intersections operating at Level of Service F. The average daily traffic volumes on the main roadway are expected to increase by 40 percent in the next 20 years. Theoretically, with traditional highway design, we could have as many as 10 lanes in some sections of this project if we were only doing highway widening.

Figure 4 helps put the project in perspective. The shaded area illustrates Maryland's designated priority funding areas for the project. Note that there is nothing to the left of the river, because that side lies in Virginia. However, there is no lack of density there. To the right of the river are Maryland's designated priority funding areas associated with the development around Washington, D.C., and the Capital Beltway. Priority funding areas lie along the Maryland 210 corridor and further north in Prince George's County.

At the south end of the corridor, only 30 percent of the traffic traveling on 210 comes from the local area.

FIGURE 3 MD-210 corridor—Piscataway Creek.

FIGURE 4 MD-210 corridor—priority funding areas. Housing is expected to increase by 20 percent in 20 years; 40 to 75 percent of the traffic through the corridor will be from Charles County in 2020.

Sixty percent are through trips from Charles County. At the north end, about 40 percent of the through trips are from Charles County.

Our smart growth principles only call for improvements to the corridor in the priority funding areas. We are trying to preserve and protect those unshaded areas from development.

However, we are planning for new development. A major development at the north end of the project is the National Harbor, a waterfront entertainment area with hotels, convention centers, shopping, and restaurants. The project will be located on the river overlooking the Woodrow Wilson Bridge and is expected to have 12 million visitors annually—90,000 trips per day in the peak season and much of it off peak. At this point, these visits are assumed to be primarily auto-oriented.

New housing developments are under way. Most have direct auto access onto 210. The most recent developments are in the southern section of the corridor. Few properties are still available for development. Currently, all of these properties enjoy direct access onto the highway, but that access would no longer be available if we were going to complete the conversion to a freeway.

Another issue relating to commercial development is maintaining the viability of existing commercial development. I already gave a few examples of the shopping centers at the intersections. In addition, the one at Old Fort Road South is interesting because there has been quite a bit of redevelopment at the shopping center, but the front building is still vacant. There is a gas station that went out of business and has yet to be replaced. Many of the shopping centers along the corridor are marginal in terms of their economic development now, but they rely heavily on visibility and direct access to the highway in its current configuration.

We cannot look at this whole corridor without addressing the transit and carpool demand and trying to do more to maintain and increase what we have. The Metro stations in Maryland lead into the Maryland 5 corridor. In the long run, this corridor has been identified for future light rail improvements. The website for the National Harbor development posted a question asking whether it is going to have a Metro stop. The response was that Metro follows development, and the National Harbor project has the density and smart growth design that appeals to Metro planners.

The north section of 210 is well served by local transit. All of the local transit stops in the corridor are concentrated in the first 2 miles. There are also many other bus stops along the corridor. The local transit enjoys direct access to the highway, making it more convenient.

The local transit routes support access through the residential communities. They serve commuter traffic into D.C. and into the Metro stations. The local buses serve about 500 passengers per day on 7 routes. The express bus service serves about 1,100 passengers per day. The majority come from Charles County.

Nine regional park-and-ride lots support the express bus routes and vanpools that run through the corridor.

How do we address pedestrian access across the corridor and bicycle access along the corridor? We need to maintain some pedestrian access if we are going to keep the transit running in its current routes. People cross the road to go to the transit stations and to wait at the transit stations and bus stops. They walk along 210 on the shoulder to get to the shopping centers. I think the shopping centers benefit from that feeling of community; every one of these little intersections is a place where people feel like they can walk across the road, up the road, down the road, to get to a bus stop. We need to consider that in our long-term plans.

Bicycle access is promoted along the side roads. Many of the local streets have a sign that says, "Share the Road with Bicycles." They are currently allowed on the shoulder of 210. Many streams also thread their way through. Henson Creek Park has a hiker/biker trail that runs across 210 and underneath it and connects with many of the neighborhood streets.

Preservation of communities is another important value in evaluating the long-term improvements for this project. Certainly, spillover traffic from 210 is an issue. If people can't get on 210, they will use other roads that go right through the neighborhood. As I pointed out earlier, there are neighborhoods that cross 210. The Oxon Hill neighborhood lies between 210 and the National Harbor. In this neighborhood, 12 million visitors will go through annually to get to the National Harbor. The blue sign says, "Please remember this is a residential area and don't drive faster than 30 miles an hour." It is predominantly single-family, but there are a lot of Metro bus stops throughout these roads.

For example, in Accokeek, the community is on one side and the library and the shopping center are on the other. On Fort Washington Road, there are two churches on a hill, and a day care center, shopping center, and neighborhoods are across 210 from there. There are several other examples as you go along the corridor.

The Maryland Department of Transportation is concerned about each specific section along the project corridor and how we are going to make the road fit in with the surrounding community as the character of the project changes from north to south.

[Conference attendees gathered in small groups to discuss the Maryland 210 case study. Time limitations prevented the attendees from developing summaries.]

Conference Wrap-Up

Why

Brian Bochner, *Texas Transportation Institute*

As noted at the beginning, the conference was divided into four themes: the what, where, who, and how of pursuing smart growth and supportive transportation. Background on trends in transportation and land use was presented during the first session. There was general agreement that transportation is central to determining land use and that we create problems when we treat land use and transportation separately. Integrating them will require major changes in mind-sets, as well as new visions developed with the public of how our communities should look.

Alan Pisarski presented trends in transportation over the past several decades. Alan reminded us not to confuse transportation with commuting, because transportation involves both passengers and freight, and nonwork trips make up about three-quarters of total trips. We need to pay attention to those, not only to commute trips.

Alan also said that driving alone continues to increase, which surprised him. He discussed some indications of current population changes. We should expect that there will be more changes to demographics as the baby boomers, the echo boomers, and the generation in between progress through their lives. He predicted that locations that provide mobility to the local regions and overall regions would become and remain more attractive as places for activity. That gives us a hint as to what we might be trying to accomplish.

Gregg Logan discussed land use and development. He reviewed trends over the past 50 to 75 years. Households dispersed to the suburbs, and residential development, retail, and employment followed them. His projection was that this dispersal is likely to continue, although we can influence at least some of the growth if we make an effort. He indicated that the National Association of Home Builders had done a survey that indicated that roughly one-third of the public might be interested in acquiring housing in in-town locations. Hence, there could be more people living in infill locations if we provide them housing under the right circumstances. Gregg also indicated a need and potential for more town centers, because urban areas are getting larger and we need services and products located closer to them. In his opinion, while there is no guarantee, there is an opportunity to make a difference through smart growth.

Reid Ewing reviewed land use and transportation relationships. He stated that we are not able to pave our way out of congestion and that we have to reduce vehicular travel demand to provide good levels of service. In addition, as we think about smart growth, we need to remember that land use—the locations of residential and employment and their relationships to transportation infrastructure—is the key to the solution. Urban design alone will not bring about changes in travel modes.

Finally, Charlie Howard reviewed the working definition of smart growth. It was based on the Smart Growth Network's definition and its 10 key points.

What

Robert Dunphy, *Urban Land Institute*

The next session was the "what" of smart growth—what smart growth transportation systems looks like and how they vary from place to place. We heard general remarks from Mary McCumber of the Puget Sound Regional Council; Harrison Bright Rue of the Jefferson Planning District Commission, Charlottesville, Virginia; Steve Heminger of the Metropolitan Transportation Commission (MTC) in San Francisco; and Frank Moretti of the Road Information Program.

We learned that populations have been exported to outlying exurban areas, which is a particular challenge in the Bay Area and California generally. So to California planners, smart growth means bringing people back. Infill is imperative. It has a mixed impact on the environment because it means adding 250,000 people to an existing urban area. In California, one problem has been that they like to create jobs, not houses. The Bay Area has the TLC program, under which MTC encourages incentives for good development and offers grants to localities to generate smart growth projects. Steve also reinforced the importance of centers.

This wasn't specifically related to the Bay Area, but he pointed out that in the survey of the top 19 metropolitan areas, half of the spending in the regional plans is going to transit. Most of that is going to maintaining and operating the existing system. This is a major change.

Mary McCumber discussed the argument about whether we can build our way out of congestion. The issue is not roads or transit. That is a futile argument, because you need both. The important decision is where to put them. It is essential to build more roads while expanding the transit system. She observed that the real challenge is "orderly dispersal." The goal is to maintain mobility, not build your way out of congestion.

Where

Alexander Taft, *Association of Metropolitan Planning Organizations*

The next session was on the different transportation looks of smart growth, and we heard about three. Luann Hamilton of the Chicago Department of Transportation (CDOT) discussed the urban look, Michael Cummings of the Washington State Department of Transportation (WSDOT) the suburban look, and Jim DeGrood of the town of Marana, Arizona, the exurban look.

Luann Hamilton presented a downtown plan focused on smart growth in center cities, with new residential being built in the downtown, either conversions from office space or new development on vacant land or reused grayfields. Chicago has established downtown development goals to which the transportation system needed to respond. Both official estimates and the private sector indicated that a lot of development is coming to the central city. CDOT's recommendations included transit-oriented development. Obviously there was already good transit, but transit-oriented development would create a seamless system. Parking management is needed because more cars were coming into downtown and filling up the streets. They wanted to manage that parking better to encourage the kinds of uses they wanted to take place. They also wanted to update the 50-year-old zoning code so they could coordinate development with the transportation improvements.

They concluded that they need two things: residential within walking distance of downtown to maximize the number of people and create a 24-7 atmosphere of downtown and regional policies to encourage increased transit use and discourage auto use into downtown.

Mike Cummings talked about the Seattle suburbs and the reconstruction of Interstate 405 around the east side of Seattle. It is a 30-mile corridor, with 12 hours of congestion per day predicted in the future. WSDOT recommends accommodating planned growth in the suburban areas contiguous to the Interstate; improving transit in this corridor, even though the Interstate was basically built for general vehicle travel; and increasing high-occupancy vehicle (HOV) lanes and HOV access to the Interstate. They will consider bus rapid transit in areas where there would be seamless connections from arterials onto the Interstate. Adding streets to the grid would improve local circulation in the contiguous areas because vehicles would not have to use the Interstate for short trips. They also proposed managing lanes for trucks, private vehicles, and transit vehicles.

Jim DeGrood is from Marana, a fast-growing town northwest of Tucson. In 1990, the town had a population of 2,200. It is expected to have a population of 88,000 in 2025—just as impressive as Las Vegas in terms of growth, although dwarfed by the total numbers.

Marana considered proposed smart growth legislation, but it was voted down. Endangered Species Act issues will limit growth. Interstate 10 is the main street through town. The capital program, in order to meet the mobility needs for that future population of 88,000, is estimated at $40,000 per person. The approach is, "We are going to grow, so we just need the citizenry to know what they are getting into." They want to make clear what the costs of growth will be.

They discussed a construction sales tax, which is a unique way to pay for the capital improvements through a sales tax for whatever facilities they need—mostly roadways. They are going to try to bring the jobs and retail closer to residential areas. There is a controversy over whether achieving a jobs/housing balance is always good or whether it may just mean that some people travel to jobs outside their residential area while others travel from another residential area to jobs in the first area.

I have a few comments on the breakout sessions. We had three questions to answer, and a fourth one was added. The first one concerned key elements. The urban group said that the key elements were everything. You need all available transportation modes. The suburban group said you need improved biking and walking. The exurban group said you need a vision to start with, along with a grid street system and community leadership.

The second question was how each area differs from the other two. The urban groups thought that the trips were shorter, parking was less likely to be free, and there were more travel choices (both new kinds like carsharing and traditional ones like taxis), which are not very prevalent in suburban and exurban areas.

The suburban area was different in that there was less opportunity to change. Most residents are pretty satisfied with things the way they are. They resist change because they are content with their choice and their surroundings. There is less transit in the suburban areas. In the exurban areas, it is easy to develop; there is no infill or any of the problems associated with infill. There is a faster growth rate and a chance to "do it right" the first time.

The third question was, What are the challenges facing smart growth in each of these areas? In the urban area, it is the high cost of redevelopment, the need for more and better design standards, and a fear of density. Fear of density was also a challenge in suburban areas. Changing zoning and getting new smart growth options from developers were other challenges. In the exurban area, there is a skeletal transportation network. The challenges are having few staff, no infill possibilities, and much faster growth.

The last question was how to measure whether growth is "smart." The responses did not differ as much among the three groups. They included measuring the following: the number of people in an area, vehicle miles of travel per capita, access, mode choice, air quality, quality of life (which we all know is difficult to measure), the amount of green space available, attractive public space, and walkability.

My overall impression of this whole session is that change is possible in all three types of areas. Today's exurban development is tomorrow's urban area. There is going to be development; they are waiting for it to come, and they will have to address it. Today's suburban area is like the urban area of the past in many ways. It is congested and mature. They need solutions to maintain what they have. Finally, the exurban area is somewhat like the suburban area of the past. It is growing rapidly and it likes that growth.

Where and Who

Mary Kay Santore, *U.S. Environmental Protection Agency*

I'm with the U.S. Environmental Protection Agency in the Smart Growth Division, and it was a great pleasure to serve on the organizing committee for this conference. It has been great to hear from the transportation community about the innovations that are out there, the potential obstacles, and the ways that transportation can be used as a tool to move smart growth forward.

I pulled together several key themes from the presenters from this morning's first session on how to achieve a smart growth transportation system process and the institutional considerations.

The diversity of panelists—Neil Pedersen of the Maryland State Highway Administration, Jacob Snow of the Regional Transportation Commission of Southern Nevada, Robert Grow of Envision Utah, and Tom Kloster of Portland Metro—reflected the range of experiences that regions might have on the basis of their cultural heritage or their geographic location. Different levels of government have different roles in smart growth, and in the case of Envision Utah, a nongovernmental organization, a privately led effort carried the smart growth message forward.

All of the panelists showed that smart growth can happen in very different statutory contexts. Oregon has a history of strong growth management, so it can move smart growth forward in a more regulated framework, whereas places like Utah don't have that kind of background but are still able to advance the issue.

All of the panelists showed how transportation is one of the many tools in the toolbox that helped move smart growth forward. As Tom Downs pointed out, all of these places shared a few characteristics. One was faith in the democratic process and public opinion and recognition that the public should have a say. Another was that all of these places cared about the condition of their natural and human environments.

In my summary of each panelist's remarks, I pulled out the innovative parts of their presentations. Neil Pedersen said that Maryland's program is directed toward providing capital funding to designated priority funding areas throughout the state and that smart growth is an organizing framework for how the Maryland Department of Transportation spends its money.

Smart transportation is focused on a system that is balanced, supports existing communities, and uses transportation dollars more efficiently. To implement a smart growth transportation vision, you need to consider the projects in your capital improvement plan with a smart growth lens and a set of screening criteria.

Jacob Snow, in his presentation of how smart growth is playing out in Las Vegas, mentioned that the area has doubled in population every decade since 1950. Most interesting to me were some of the statistics about how dense the region already is. However, there are problems with that density because in places it is a concentrated, single-use density. Furthermore, because many properties are gated, there are access issues.

The monorail project is innovative in its funding, with the first phase funded solely from the private sector. A strong bus rapid transit program is in progress. They are purchasing new, high-tech vehicles, and future stations will have off-board fare collections, signal pri-

oritization, and multiple wider entries into the vehicle itself.

Robert Grow of Envision Utah outlined the premise of the program, which is similar to that of most smart growth programs: the public has the right to choose its future, and the role of the public official is to carry out the vision. If the public is provided with the necessary tools and information, it can share and help promote that vision.

Envision Utah was a privately led movement supported by the governor. The program was successful because it was an inclusive, transparent process, and the press was engaged early and became a significant conduit of information. Some of the key features of the program were conducting hands-on activities, surveying the public, finding out from them how communities should grow, and modeling, all designed to engage citizen planners.

Tom Kloster presented Metro's experience in implementing its 2040 plan. Oregon has a strong regulatory history of working on growth management and combining transportation and land use planning. Metro uses a combination of regulations and incentives to carry out its program, which is based on having a centers-oriented system. The street design manuals provide guidance for zoning streets and analyzing the surrounding land uses to develop boulevard, street, and roadway design. They give citizens ideas about what to ask for in their transportation system.

Tom also said that they recognized having a Level of Service F in some areas is fine, because you can save a substantial amount of money by keeping that intersection or roadway segment at a more congested level rather than upgrading it.

The next session was on institutional obstacles to smart growth and transportation systems that support smart growth. John Porcari pointed out that when the Maryland Department of Transportation went through its list of capital projects and found five projects that simply didn't meet the goals of smart growth, it worked with those communities to find out what need the bypass would have filled. The department has been able to work with the communities to find a more smart growth–oriented way to deal with those problems.

One provocative statement was, "State DOTs need to take the step into land use." So often we hear that state DOTs have no authority over land use. I find it encouraging to hear the secretary of a state DOT make such a bold statement.

He also mentioned that many of the programs the Maryland State Highway Administration is instituting make them very popular not only with neighborhoods but also with politicians, because the programs can be implemented fairly quickly and can serve both rural and urban areas.

Jim Codell from Kentucky talked about the culture he operates in. Using the term "smart growth" didn't work in his state; it had to be called "quality growth" to make it palatable to Kentucky's citizens. He felt that you needed an overall change in the workforce ethic to get transportation agencies to realize that the projects they build should be designed to improve the quality of life more broadly, rather than just to improve mobility or access.

He briefly mentioned the innovative Renaissance Kentucky program, which uses enhancement funds to revitalize cities and towns throughout Kentucky. He also mentioned that there have been some significant cost savings in projects that have used smart growth as their guiding force.

The next presentation was by Bob Dunphy. He had another of my favorite quotations, from Les Sterman of the East/West Gateway Metropolitan Planning Organization, on the idea that land use is "the third rail—you touch it and you are dead." How do you get transportation agencies to start thinking of themselves as being in the real estate business, that there is a direct relationship between the two? He discussed the notion that infill puts people where the transportation choices are and that by targeting development where infrastructure already exists, state DOTs can reduce their expenditures.

Finally, Ron Kirby of the Metropolitan Washington Council of Governments in the D.C. area talked about a new project that has, for the first time, directly linked transportation and land use and displayed them graphically. That tool was designed to be descriptive and not proscriptive. They are already looking for opportunities to try to change those outcomes, to support a concept of different types of centers throughout the region. Finally, we need to address two types of situations: those in which development is forecast but there is no transit and those in which we have transportation investments but not much development.

How

Catherine Rice, *Maryland State Highway Administration*

This has been a great conference, and what set it apart from other TRB conferences I've attended is that we have been practical and applications oriented. Speakers discussed not just theory and concepts, but actual application. I commend the organizing committee for making a very practical conference.

This afternoon we talked about tools. Rather than summarizing each of the presentations, I will identify a few crosscutting themes from all the speakers. First and most important is that smart growth is about working with the community and stakeholders to develop solutions. We need to find out what our customers want and respond to that. The second point is that we cannot propose modal alternatives because we need multimodal solutions.

The third is that context-sensitive design is a critical tool to implement smart growth. The fourth is that we need to make investments that enhance the vitality of existing developed areas, rather than just investments that support new development. The fifth is that good planning identifies both existing and planned centers for development. Our job as transportation planners is to find ways both to connect those centers and to provide better multimodal accessibility to those centers.

Sixth, we need to think outside the box in terms of innovative approaches, particularly those associated with marketing. I was particularly struck by the clever names of the bus routes in Boulder, Colorado. I hope we can come up with some innovative names for our bus routes in Baltimore.

Seventh, transportation and land use planners must work in partnership. They must be joined at the hip. We can no longer say as transportation planners that land use is the responsibility of the land use planners, and vice versa. We need to work together as partners.

The final point is that we need to think as much about bicycle and pedestrian issues as we do about highway and transit solutions.

We had the opportunity this afternoon to apply some of these tools in the real-world context of the Maryland 210 corridor. In my group a number of good ideas came up. I intend to discuss them with Prince George's County, particularly land use issues within the corridors that relate to transportation issues.

Conference Closing

Charles Howard, *Washington State Department of Transportation*

I want to give my own summary of what I got from this conference. This "highways versus transit" issue is posed so often, and it is really a futile argument. It is much more complex than that, and we need to get beyond that rhetoric and into what is really needed in transportation. I hope all of us can be part of this transition in transportation planning.

I've thought for a long time, and it was reinforced here, that we should quit saying that transportation doesn't "do" land use. Transportation *is* a land use. And land use *is* a transportation strategy, and we can't ignore it in our planning processes. It is incumbent on us to continue this dialogue among the states, metropolitan planning organizations, transit agencies, land use planners, developers, and our leaders to see how we can move the transportation planning process into a new era and actually link them and make some rational decisions about land use in transportation.

I appreciate everybody's involvement, and I want you to commit yourselves to continuing the dialogue that started here in Baltimore. Let's not allow this to stop here.

Breakout Sessions

What a Smart Growth Transportation System Looks Like

Breakout Session Report

Instructions

Harrison Bright Rue, *Jefferson Planning District Commission*

To quote my favorite mayor, Maui Mayor James "Kim" Alana, our land was not given to us by our parents and grandparents. It is on loan to us from our children and grandchildren. Of course, that was handed down from Thomas Jefferson and we now know that he ripped it off from the Iroquois Confederacy's planning for seven generations.

Today's question is, What did you hear this morning that you would like to try in your region? You can bring ideas in from somewhere else too, but start off thinking about the ones we already talked about today. What impediments do you face? We are going to ask you to do that in the first session—20 to 30 minutes. Then you will report back on the impediments. Then we will reconvene and put it back to you to brainstorm the solutions.

Some simple rules: You are agreeing to work together, not to agree on everything. We don't have the money to build everything anyway, so we can only build what you agree on. Try to generate innovative solutions that address those real problems you identify. Keep it simple. Be creative during the brainstorming. You have to wait a couple minutes to shoot down the idiot's idea. So, while you are brainstorming, let it flow. Then refine the ideas during discussion. We are not going to expect a final product. You are just looking for some doable things you can take back to your region.

The consensus is on the potential solutions. I think you will find that even if you have personal favorites at the beginning, you will probably agree at the end.

I want to remember the "hat's off" rule. You might be sitting next to somebody else from your area. You are taking your official hat off so that even if you are sitting next to your boss, you do not have to worry about whether you are being too "out there." Even when you get the top 200 executives in the Department of Transportation together, they follow this same principle.

Break up to organize into smaller groups, six to eight per group. Work together to generate the ideas. Try and solve the problems. Summarize your ideas and report back.

First, introduce yourselves to each other and then note what you've been working on in your region that is related to what is going on, and then take off from there and ask yourselves the first question.

At the end, we are going to ask you to review what you produced, see if you covered anything, if anybody's idea was missed. Then one of you will report back.

Question: What Are the Impediments to Smart Growth?

Overarching Impediments

- While a region may have a vision, costs to implement it are prohibitive.
- Incorrect assumptions about modal choices (i.e., will people really walk, bike, and use transit?).

- Lack of funding.
- Housing prices: infill housing tends to be expensive.
- While the public generally wants mobility, specific neighborhoods focus on design issues.
- "Transit versus road" argument: people get bogged down in this argument when the issue should be design.
- Car culture: Americans are reluctant to reduce driving and car ownership.
- Perception that high density means slums.
- Race and class issues: people prefer to live near others of their own race and class.
- Focus is on serving *through* traffic instead of *to* traffic.

Institutional Impediments

- Segmentation of staff and agencies.
- Fragmentation of responsibility and decision making; not always clear who is responsible.
- Suspicion of government by the public.
- Disconnect between land use and transportation planning.

Public Involvement Impediments

- Need to include the public early in the process.
- Public doesn't understand what their choices are.
- Lack of good/accessible visualization tools.
- NIMBYism (not in my backyard): People oppose development in their neighborhoods.
- Lack of effective techniques for engaging the public.
- Difficulty of bringing together polarized positions to achieve a common vision.

Transit Service Impediments

- Transit has a poor public image.
- Most service is radial; transit service changes are needed to accommodate suburb-to-suburb travel.

Tools Impediments

- Cost of tools (for both modeling and visualization) is prohibitive for nongovernmental organizations and small communities.
- Cost to provide incentives may be prohibitive.

Land Use Alternatives Impediments

- Smart growth may be interpreted as loss of local control.
- Perception that smart growth may interfere with freedom to live anywhere; may smack of social engineering.
- Lack of incentives for infill.
- Insufficient market understanding.
- High costs and time constraints to infill development.
- Local land use regulations are more lax on the fringe.

Regional Issues

- Political power has shifted to suburbs, and they may oppose smart growth.
- Lack of regional vision or support from local government agencies (county and city).
- Communities focus on getting their fair share, not on regional planning.
- Transportation policy is not effectively linked to the provision of housing.
- Winners and losers in the regional process are often measured by the regional tax base.
- Difficulty of getting people to think on a regional level.
- In large regions, difficulty balancing the needs across a region.
- Many municipalities have local land use control.

Tax and Financial Issues

- Lack of funding flexibility.
- Concerns about tax base.
- Financial community is risk averse and may not lend to certain projects.
- Tax structure supports growth at the fringe.
- Government subsidies and policies may have unintended consequences.

How Can These Impediments Be Overcome?

Overarching Solutions

- Education.
- Create missionaries or champions of smart growth.
- Expose subsidies for sprawl.
- Increase public awareness of current plans.
- Help the public answer the question, "What's in it for me?"

Institutional Solutions

- Find interdisciplinary champions; these could include a political appointee, elected official, or permanent staff.

- Change governmental subsidies and policies to reflect smart growth priorities (such as the Maryland Priority Growth Areas).
- Legislate required coordination between land use and transportation agencies.
- Provide leadership (for example, AASHTO could step up).
- Mandate state involvement in local or community planning and fund it (i.e., at the master planning level).
- Streamline the development process in target areas.

Public Involvement Solutions

- Communicate the advantages of accessibility.
- Be clear about the vision and goals.
- Use marketing to garner public involvement.
- Give a voice to the YIMBYs (people who support development: yes, in my backyard).
- Increase the public's sense of ownership.
- Publicize successes, because success breeds success.
- Use visualization and public surveys to get the public on board and to guide decision making.
- Create more community-oriented planning and investment programs with federal transportation funding.
- Enlist citizen planners.
- Be inclusive from the beginning; don't leave anyone out of the process.

Tools Solutions

- Improve modeling techniques (for example, models shouldn't assume people make housing decisions on the basis of transportation alone).
- Build toolbox for small projects, including virtual reality, access management, and connectivity.
- Develop lots of visual examples of good design.
- Back up visualization tools with data.
- Develop a standard set of low-cost tools for modeling and visualization.
- Develop local plans such that they can be combined into a regional plan.
- Standardize inputs (for comparative and integrated planning purposes).
- Build programs around small projects.
- Develop and publicize successful case studies or "best practices."
- Use context-sensitive design solutions, such as traffic calming and modern roundabouts.
- Carry local and through traffic on the same roads with segmented design.
- Implement carsharing.

Transit Service Solutions

- Engage transit agencies in new thinking.
- Improve the perceived poor quality of transit service, including faster service, on-time service, clean vehicles and facilities, the accommodation of suburb-to-suburb trips, and increased safety.

Land Use Solutions

- Adopt enabling smart growth legislation at state, regional, and local levels.

Regional Solutions

- Metropolitan planning organizations (MPOs) should take advantage of their ability to create regional solutions.
- Create lots of examples of good design.
- Integrate local visions into the regional plan through regional cooperation.

Tax and Financial Solutions

- Enhance flexible funding at both the state DOT level and the MPO level.
- Tie funding decisions to the regional vision/goals.
- Provide incentive and rewards for "delightful places"; these could be financial, regulatory, and amenities incentives, or reinvestment.
- Allocate federal funding to MPOs and local agencies directly.
- Use federal funding for community planning.
- Eliminate restrictions on federal programs.
- Reduce the risk of building smart to developers.
- Create disincentives to long-distance single-occupant vehicle travel.
- Reform property taxes (split rate, regional tax sharing) to reduce disincentives for jurisdictions to create housing.
- Implement parking cash-out programs.

The Different Transportation Looks of Smart Growth

Breakout Session Report

Breakout sessions were held to consider smart growth in three separate development environments: urban infill, suburban redevelopments, and fringe developments. Each of these groups was asked four questions:

- What are the key transportation program elements needed in each of these areas—the urban, the suburban, and the fringe?
- What are the challenges smart growth faces in each of these areas?
- How does the situation in each of these areas differ from that in other areas?
- How do you measure what is "smart"?

The items below were raised in the breakout groups.

Urban Infill Area Breakout Session

What are the key transportation program elements needed in each of these areas?

- Core areas need everything—transit, walking, bicycling, parking, and taxis—but integrating them is complex.
- Design is critical.
- Special concerns: delivery vehicles, pedestrians, parking management.

What are the challenges smart growth faces in your type of area?

- NIMBYism (not in my backyard); opposition to new development (people may feel density is already high enough).
- Difficulty of right-of-way acquisition (unavailable or prohibitively expensive).
- Declining areas may take any kind of growth, and bad decisions come back to haunt them.
- Difficulty of equity issues.
- Fear of cities (perceptions of crime, low standard of living, etc.).
- Costs of redevelopment are high.
- Despite living in high-density areas, people still want to own cars.
- Need different standards than in suburban areas.

How does the situation in your area differ from that in other areas?

- Tends to have shorter trip lengths.
- Common to have paid parking.
- People need choices such as taxis and carshares.
- More diversity and density.
- People demand a wide array of choices.

How do you measure what is "smart"?

- Percentage of people living downtown or near transit.
- Accessibility.
- Infrastructure costs per capita.
- Spending on transportation.
- Vehicle miles of travel (VMT).

- Mode split.
- Number of cars.
- Transit seamlessness (reduced travel time, minimal transfers or smoother transfers).

Suburban Panel Breakout Session

What are the transportation program elements needed in each of these areas?

- Establish/maintain community centers.
- Provide mobility for older people.
- Provide walking/bicycling options.
- Retrofit roads while maintaining service.
- Provide good access to schools.
- Allow pricing mechanism to signal appropriate transportation choices.

What are the challenges smart growth faces in your type of area?

- Difficulty in communicating to local developers.
- Difficulty in changing zoning.
- Insufficient funding.
- Inflexible zoning.
- Making changes that meet the demand of the public.
- Difficulty in conceptualizing change over a long period of time.

How does the situation in your area differ from that in other areas?

- Fringe areas: newer; greater flexibility; less appropriate for transit; land use emerging.
- Suburban areas: fewer options to change patterns; need for redevelopment; opportunity to change things during redevelopment; established land use patterns.
- Core areas: chance to redevelop; transit more vital.

How do you measure what is "smart"?

- Air quality.
- Consumer satisfaction.
- Modal split.
- Transportation options.
- Jobs/housing balance.
- Land consumption.
- VMT per capita.
- Protection of green space.
- Adequate housing.
- Accessibility: how much area is accessible in a certain amount of time.
- Nonmotorist mobility.
- Sense of community.

Fringe Breakout Session

What are the transportation program elements needed in each of these areas?

- A vision and a way for citizens to visualize it.
- Education process for volunteers, elected officials, and staff.
- Cluster system as a way to deal with desire for space and need for density.
- Transitional plans—think about walking and transit up front, while recognizing that may take years to implement.
- Preserve right-of-way/connectivity.
- Specific transportation elements:
  - –Gridded streets
  - –Access management
  - –Through movement separated from local access
  - –Support alternative modes through crosswalks and bus pullouts
  - –Bikeways (may be disagreement whether bicyclists are better served with paths or on-road lanes)
- Leadership elements:
  - –Trust (parties need to trust each other)
  - –Facilitators can help run meetings
  - –Meeting style and format can affect outcome

What are the challenges smart growth faces in your type of area?

- Skeletal transportation network; few transit options.
- Elected people may not be well educated on the issues.
- Lack of professional staff (fringe areas are more likely to have part-time and volunteer staff, who may be overwhelmed on a policy level).
- Accomplishing smart growth depends on relationships with neighboring communities.
- Political culture may be antiplanning.
- Cities haven't done any financial analysis, so they don't recognize costs of growth.
- Smaller jurisdictions don't like to engage in regional discussions.
- No understanding yet that they need something other than highways.
- Lack of transit agency long-range planning to go along with land use planning.
- Lack of transit resources—fringe areas are last to receive transit service.
- Tax structure drives agricultural land into development use.

How does the situation in your area differ from that in other areas?

- No infill issues.

- Lots of space and developable land.
- Smaller role for transit than in other areas.
- Economic incentives to develop in outlying areas.
- Chance to do it right the first time—not bound by past mistakes.
- Skeletal roadway network.
- Much faster growth rate (at least for next 10 years—may change with demographics).
- Can lead to faster implementation of smart growth policies.

How do you measure what is "smart"?

- Quality of life.
- Shorter trip length.
- Attractive public spaces.
- Sense of community.
- Town center.
- Walk trips.
- Sustainability definition.
- Accessibility or mobility.
- Safe and convenient.
- Number of people within walking distance of bus stop.

Participants

Susan Absher, *U.S. Environmental Protection Agency*
Albert Algazi, *Hardesty & Hanover*
Danielle Algazi, *U.S. Environmental Protection Agency Region 3*
Allyson Anderson Reynolds, *Parsons Brinckerhoff Quade & Douglas, Inc.*
Mary Bell Austin, *U.S. Environmental Protection Agency*
Uri Avin, *HNTB*
William Barker, *William G. Barker, AICP*
Richard Bautch, *Minnesota Department of Transportation*
Edward Beimborn, *University of Wisconsin–Milwaukee*
Harvey Bloom, *Baltimore Metropolitan Council*
Mary Jo Bragan, *U.S. Environmental Protection Agency Region 4*
Jean Brittingham, *CH2M HILL*
Caryn Brookman, *Federal Highway Administration*
Cindy Burbank, *Federal Highway Administration*
Gayle Burgess, *New York State Department of Transportation*
Anne Canby, *Canby Associates*
David Carlson, *U.S. Environmental Protection Agency*
Donald Chen, *Smart Growth America*
Michael Chong, *Federal Highway Administration*
Jim Codell, *Kentucky Transportation Cabinet*
Joana Conklin, *Multisystems*
John Coscia, *Delaware Valley Regional Planning Commission*
Michael Cummings, *Washington State Department of Transportation*
John Davies, *U.S. Environmental Protection Agency*
Jim DeGrood, *Town of Marana, Arizona*
David Dickson, *National Association of Local Government Environmental Professionals*
Tom Downs, *National Center for Smart Growth, University of Maryland*
Steve Dunn, *U.S. Environmental Protection Agency*
Robert Dunphy, *Urban Land Institute*
Andrew Farkas, *Morgan State University*
Kim Fisher, *Transportation Research Board*
Lisa Fontana, *Institute of Transportation Engineers*
Steven Gaudio, *Maryland State Highway Administration*
Parris N. Glendening, *Governor, State of Maryland*
Jacquelyne Grimshaw, *Center for Neighborhood Technology*
Robert Grow, *Envision Utah*
Luann Hamilton, *Chicago Department of Transportation*
Carmeletta Harris, *Maryland State Highway Administration*
Joseph Harrison, *Maryland Department of Transportation*
Pete Hathaway, *Sacramento Area Council of Governments*
Steve Heminger, *Metropolitan Transportation Commission*
Jill Hochman, *Intermodal and Statewide Programs, Federal Highway Administration*
D. Holden, *HNTB*
John Horsley, *American Association of State Highway and Transportation Officials*

Amy Houser, *Federal Motor Carrier Safety Administration*
Charles Howard, *Washington State Department of Transportation*
David Hunter, *Local Initiatives Support Corporation*
Daniel W. Johnson, *Federal Highway Administration, Maryland Division*
Roy Kienitz, *Maryland Department of Planning*
Ronald Kirby, *Metropolitan Washington Council of Governments*
Kyle Kittrell, *Missouri Department of Transportation*
Thomas Kloster, *Portland Metro*
Valerie Knepper, *Metropolitan Transportation Commission*
Brenda Kragh, *Federal Highway Administration*
Rose Krasnow, *National Governors Association*
Michelle Kubant, *Nashville Area Metropolitan Planning Organization*
Susie Leonard, *Rutland Regional Planning Commission*
James Lewis, *New Jersey Department of Transportation*
Roger Lewis, *University of Maryland*
Feng Liu, *Maryland Department of Planning*
Gregg Logan, *Robert Charles Lesser & Company*
Kevin Magerr, *Delaware Department of Transportation*
Norm Marshall, *Smart Mobility, Inc.*
Robin Mayhew, *Federal Transit Administration*
Mary McCumber, *Puget Sound Regional Council*
Megan McDonald, *URS Corporation*
Jim McKenzie, *Metroplan*
Polly McMurtry, *Vermont Agency of Transportation*
Bob McNamara, *National Association of Realtors*
Louise Moore, *South Carolina Department of Transportation*
Frank Moretti, *Road Information Program*
Lisa Nisenson, *U.S. Environmental Protection Agency*
Joel Oppenheimer, *Jacobs Civil, Inc.*
Robert Paterson, *School of Architecture and Planning, University of Texas*
Neil Pedersen, *Maryland State Highway Administration*
Amy Phillips, *Bureau of National Affairs, Inc.*
Mary Lynn Pickel, *National Association of Home Builders*
Alan Pisarski, *Consultant*
John Porcari, *Maryland Department of Transportation*
Robert Puentes, *Brookings Institution*
Steve Rapley, *Federal Highway Administration, Maryland Division*
Michael Replogle, *Environmental Defense*
Catherine Rice, *Maryland State Highway Administration*
Karina Ricks, *District of Columbia Office of Planning*
David Royer, *Lancaster County Planning Commission*
Harrison Bright Rue, *Thomas Jefferson Planning District Commission*
Rick Rybeck, *Transportation Policy and Planning, District of Columbia Department of Transportation*
Mary Kay Santore, *U.S. Environmental Protection Agency*
Claire Schary, *U.S. Environmental Protection Agency*
Charles Schaub, *Kentucky Transportation Cabinet*
Richard Schieber, *Centers for Disease Control and Prevention*
Susan Schreiber, *Miami–Dade Metropolitan Planning Organization*
Samuel Seskin, *Parsons Brinckerhoff Quade & Douglas, Inc.*
Barry Seymour, *Delaware Valley Regional Planning Commission*
Guillaume Shearin, *Parsons Transportation Group, Inc.*
Gloria Shepherd, *Federal Highway Administration*
Shiva Shrestha, *Maryland Department of Transportation*
Douglas Simmons, *Maryland State Highway Administration*
Krute Singa, *Jack Faucett Associates*
Cliff Sinnott, *Rockingham Planning Commission*
Jacob Snow, *Regional Transportation Commission of Southern Nevada*
Effie S. Stallsmith, *Office of Planning, Federal Transit Administration*
Jeanne Stevens, *Nashville Area Metropolitan Planning Organization*
Mark Stout, *New Jersey Department of Transportation*
Thomas Swanson, *Pima Association of Governments*
G. Alexander Taft, *Association of Metropolitan Planning Organizations*
Harish Thaker, *Century Engineering, Inc.*
Mary Lynn Tischer, *State of Virginia*
Hannah Twaddell, *Renaissance Planning Group*
Kelly Tyler, *Maryland Transit Administration*
Jaki Walker, *Parsons Brinckerhoff Quade & Douglas*
James Wang, *Greater Bridgeport Regional Planning Agency*
Angela Watson, *Pennsylvania Department of Transportation*
J. R. Watson, *Outdoor Advertising Association of America, Inc.*
Patti Webb, *Whitney, Bailey, Cox & Magnani, LLC*
David Whitaker, *Maryland Department of Planning*
Parker Williams, *Maryland State Highway Administration*
Tracey Winfree, *City of Boulder, Colorado*
Richard Woo, *Maryland State Highway Administration*
Tad Wood, *Maryland Department of Transportation*
Bihui Xu, *Maryland Department of Planning*
Felicia Young, *Federal Highway Administration*