Chapter 7

Current Issues in Transportation Planning

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Relationship of Substate, Regional, Rural, Tribal Nation, and Multistate Planning to Statewide Transportation Planning

Statewide planning is not done in isolation. Increasingly, state DOTs are faced with more and more demands to be involved in planning efforts outside of their state or with new stakeholders within their state boundaries. Planning is being done at various levels of government and between various governmental and private entities, involving a host of stakeholders. Coalitions of stakeholders and governmental entities form and dissolve based on issues and boundaries, and every state has a network of planning processes and participants that works within the state's unique political, cultural, and economic setting. And although we all have some common issues, every state also has a unique set of issues to deal with as well as constraints that form the context for decision making related to transportation. It makes planning and the decision making increasingly complex and increasingly difficult to integrate.

What This Presentation Is About

First, a quick look at where planning is being done and who's doing it to deal with some definition issues and put us on the same page regarding what I mean by planning levels; second, the characteristics of the planning that gets done at each level.

Third, why does planning get done at those levels? What determines whether the solution is found at a particular level, and what pushes issues upward to another level? What do you have to pay attention to if you expect to integrate planning at the various levels?

Fourth, the April 1999 Conference on Refocusing Transportation Planning for the 21st Century identified a whole range of issues we will need to deal with in the future, and there are implications for how the various levels of planning relate for decision making and for the statewide planning process in the future.

Where Planning Is Being Done

Michigan has 512 cities and villages, 83 counties, 13 planning and development regions, 15 urban areas with 13 MPOs, 23 rural ISTEA task forces, 7 Michigan DOT regions, a DOT, and a governor, and we all do some sort of transportation planning. Add to that the interests of various private sector groups, dozens of not-for-profit interest groups, formal stakeholders in the planning partnership, regulators, our Canadian neighbors, and the traveling public. That about sums up the where and the who associated with planning (and makes it clear that statewide planning could not be isolated even if we wanted it to be).

Other states have similar situations, although the numbers and proportions may vary. But the fact remains that transportation planning is not solely a state responsibility, is not done in isolation, but is a complex network of local, regional, state, and international decision-making relationships whose combination results in a transportation system that functions very well.

The planning levels I'm referring to are related to a combination of political jurisdiction and geography. The local level refers to cities and villages and possibly counties—the planning level closest to people's homes. The next level up refers to regions, that is, groups of counties or perhaps substate divisions that are determined by some defining geographic feature like a river or valley. Regions could include local government entities within their boundaries or be formed by virtue of association with a particular issue and may not even have specific boundaries. State is self-explanatory, and multistate refers to two or more states. International planning involves any of the levels of United States, state, or local government working with another country like Canada or Mexico. Tribal nations are, in law, sovereign nations unto itself, but most are substate in size.

Urban and rural aren't really levels; rather, they have a significant impact on determining the focus of planning and the issues to be dealt with at any planning level. Being a planner at a local level doesn't mean that you are just involved in local issues. And being a planner related to binational relationships doesn't make you immune to local concerns. All of the levels are connected, and we all know that issues do not proceed nicely and neatly between the levels.

What are the characteristics of planning at the various levels? The statewide view is a broader view—both geographically and at the policy level. Take, for example, statewide long-range plans. A recent TRB technology-sharing session indicated that most state long-range plans are policy documents, not project specific, dealing with broad framing issues, taxation, and resource allocation at a very broad level. Some are used to define a range of possible futures.

The function of statewide planning is to frame issues of statewide importance and feed into decision making on issues of statewide importance. The policy-to-implementation ratio is weighed on the policy side, and these plans can feel pretty far from home to local or even regional planners.

Local, and to a considerable extent, regional planning has a smaller and geographically more compact constituency than statewide planning and is more likely to deal with the how of implementation within the framework of state-level programs and decisions.

The various levels of planning may deal with the same issues but with different aspects, making different decisions. For example, system preservation, growth issues like access and mobility, system safety, and economic development are things all levels of planning deal with. But the policy-to-implementation ratio is higher at the state level, and even where the goal is the same, local planners will have different programs and decision-making processes tailored to meeting their local transportation goals.

Quite often the decisions concerning resources to meet goals are made at the state level and carried out by local or regional units of government. Take, for example, taxation. Most states make broad resource allocation decisions at the state level that delegate further decision making concerning priorities to cities or counties or groups of

counties. Major investments, like urban freeway modernization bridge state and regional planning. These investments, which are usually large and very expensive, are of intense interest and economic significance and may have a broad constituency by virtue of their broad impacts.

Bi(multi)-national planning has become more and more common as we, as planners, have responded to social and economic changes that require us to broaden our perspectives. What happens outside the United States has significant impact on travel and our economy. Binational planning almost always has a significant policy element, because nothing of a corridor or project nature can be initiated without the complex negotiations required to enter into an agreement with a foreign government. As we heard in yesterday's discussions, even technical issues like track size and weight become extremely complex when they transcend national boundaries.

Perhaps this is also what makes planning between states and tribal nations so complex. In spite of a general feeling that the planning for tribal lands should have more of the characteristics of local or regional planning, Native American tribes are, by law, sovereign nations. The planning conducted is subject to all of the cultural and societal rules and structures that frame binational planning.

Tribal governments are not "the public"; they are sovereign governments and must be treated as such in the planning process. So where does multistate planning fit among these levels from a policy versus implementation perspective? Much of the current cooperation between states is geared toward coalition building related to moving people and goods in multistate corridors, both rail and highway. These efforts are much more heavily weighted toward implementation than policy setting, although there are goal-setting framing issues that must be settled as a prerequisite to success.

Multistate planning and the corridor focus seems to be an outlier—in the general trend toward the larger geographic planning area having the higher policy content issues.

Switching gears a little, let's look at some of the things that determine whether we're likely to find solutions for a problem or deal with an opportunity at a particular level of planning. What pushes issues upward from the local level? What are you going to have to pay attention to if you expect to integrate planning at the various levels?

Common Interest

To a large extent, the common interest defines what you can deal with at a particular level. For example, if you are making a decision that affects everyone in the state, it is unlikely that you can make a decision locally that will stand the test of time and implementation. Conversely, if the common interest can be found at the local level, you're likely to run into considerable resistance if you try to establish the same solution on a statewide basis. You would be seen as usurping local authority.

The common interest limits what will be dealt with nationally or binationally. Nationally, a good example is TEA-21, which deals in policies, broad program, and resource allocation based on national goals and funding levels. You could never deal with the detail, so it's cascaded downward through the states, regions, and local governments. Binationally, the common interest is focus or broad economic issues and gateway issues like border crossings, the corridors leading to them, and the connections to Canadian and Mexican highway systems.

Urban versus Rural

As I mentioned earlier, urban-rural designations really aren't planning levels, but they are definitely related to and have an impact on finding the common interest. States that are predominately urban face different issues than those that are predominately rural, and the planning process has been adapted to find a balance between urban and rural constituencies. One of the most complex aspects of planning is allocating resources between urban and rural needs, regardless of the planning level.

Precedents

If an issue is precedent setting and will take away or limit future decisions that your constituency cares about, the issue tends to move upward from the local setting. It's hard to make a local decision stick if the local decision imposes solutions that a wider constituency must live with.

Benefits of a Coalition

If a state or local unit of government cannot participate as effectively on its own as it can as a part of a group, the issue will be pushed upward. A good example here would be the Eastern Board Transportation Coalition, a group of states that has formed a coalition to deal with northern border issues. No one state could be as effective in developing a working relationship on issues of regional and binational importance. At a local level, if groups of cities or counties have policy goals or a project need that can best be pursued as a coalition instead of separately, the issue is likely to get elevated.

Financial Commitment

If taking advantage of an opportunity implies a financial commitment outside of the local unit or a region's boundaries, the issue will be elevated, quite often to include all those who must "pay," which leads to lightening rod issues. Lightening rod issues are issues that are totally unrelated to money and quite often related to the environment or quality of life, and are issues that people care about passionately.

Consistency Needed

Plan locally or regionally where statewide or multistate consistency is not needed or is not possible. Where it is needed, you get efforts like the midwest rail initiative. In this instance it doesn't matter whether the track in one state is in great shape if your goal is to move people between Chicago and Minneapolis and the track is in poor condition—anywhere along the route. Consistency and condition are important, but so is the consistency of the standards used for construction. A train moving between states needs assurances that the same standard will be in place along the whole line. You can't plan for this with separate state or local processes. Similarly to the development of the interstate system, you can set the standards at a high level and then rely on the lower

planning levels to carry out the plan.

Consequences

Planning broadens when the consequences are far reaching or the consequences of a local decision will be felt widely. Constituents are more likely to care about something if they know that they will feel the consequences.

Complexity

In terms of

- Stakeholder diversity,
- Finances, and
- Technical solutions.

The more complex a planning process or issue becomes, the more likely it will be elevated. Complexity has several components.

Stakeholder Diversity

My definition of a stakeholder is any person or group that has an interest in a decision or outcome and has the motivation to develop a position. Stakeholders can be diverse by virtue of their social, economic, environmental, or cultural makeup; or stakeholders can be organized by issue, by geography (like urban versus rural) or by some unifying belief. Broader issues tend to have more diverse constituencies, and the bigger the issue, the more likely it is that more people with differing views will weigh in. Issues with multiple stakeholders become more complex than issues with few stakeholders.

Finances

Issues can be complex with regard to financing in terms of who has the money, who controls it, and who pays versus who benefits from the investment. If the possible methods of providing financing to implement a plan are complex, the planning process often gets elevated. Certainly the sheer size of implementing a plan can cause increased interest, more stakeholders, and more complexity. On multistate projects financing becomes complex because in order to be successful, each state must value the project similarly to ensure financing.

Technical Solutions

An issue can also be complex from a technical viewpoint. For example, applying new ITS technology in a multistate corridor, or developing a statewide GIS with multijurisdictional features.

A good example of a project that displays many of these broadening criteria is the corridor 18 effort. This group of states has come together based on the common interest

of developing a new corridor that crosses multiple political jurisdictions. For this corridor to become a reality the states will have to deal with a multistate EIS involving the issues of 14 state processes. The constituency may be one of the most diverse since the establishment of the interstate system. Add to that the technical challenges of design and the financial challenges associated with funding multiple components of a long-term project.

Obviously, looking at why a transportation issue grows up from a local issue to a regional or statewide issue isn't straightforward, and there is no formula for indicating how the planning levels relate. Issues don't move up a continuum from local to national in an orderly manner. A cynic might say that politics is the driver, but there are examples of intensely political issues related to transportation that can be settled locally, and not every state will experience the same issues being settled locally. Land use and road access issues are examples of this.

The recent April 1999 Conference on Refocusing Transportation Planning for the 21st Century identified a range of issues we'd need to be dealing with in the future—and may have the characteristics of issues that will meet at least one or several of the broadening criteria I just outlined. In the future, we as planners are going to be involved in more and more issues that must be dealt with at a combination of the planning and must be prepared to support more integrated decision making.

Our customers and stakeholders are growing in sophistication and becoming more demanding. The same can be said for the decision makers we provide information to. Perhaps it's because of easy access to information on the Internet, the growing sophistication of our technical tools, and our ability to provide better information faster to decision makers. Whatever the reasons, our planning is more visible to a wider range of constituents and our planning products (regardless of the level) are subject to more scrutiny.

This has some implications for planning in the future. First, are we preparing planning professionals for the right future? We do a good job on the traditional aspects of training, but I'm wondering if we're really providing the right skill set for participation in broader issues, multistate, and binational planning. For example, (1) strategic planning requires the ability to see the big picture and evaluate policy issues from a variety of perspectives. My concern is that fewer and fewer people in our organizations are deferring technical specialization in favor of developing the ability to evaluate policy issues from a broad perspective. (2) Negotiation skills and the people-oriented aspects of building multistate partnerships . . . the data-free aspects of planning. This is not a new point—it has been raised on numerous occasions recently.

Second, another aspect of our profession that we need to strengthen is methods to get stakeholder input early and often and integrate it into the planning process. The higher level the planning is, the more remote your customer can become. We need to stay connected to the people who have a stake in transportation decision making. This is particularly difficult when you think of the constituency for multistate planning and binational planning.

Third, our financial mechanisms for funding multistate planning and implementation efforts aren't up to the task. To a large extent, our financing relationships encourage and validate every-state-for-itself planning. It's competitive, not collaborative. For example, the border and corridor program is a good first step in rewarding multistate

applications for funding, but in each multistate arrangement, some state had to put the common interest before its own application for a home state project to ensure the priority needed to capture funding. In the multistate efforts, there is little perceived reward and great perceived penalty for being a lead state. My question is, Can these multistate plans be implemented using these financing mechanisms, and, if not, what do we have to do to ensure success?

Fourth, as our perspective has broadened, how we look at the range of solutions has broadened. For example, we've been looking for ways to "preserve and make the most of the existing system" ever since there was a system. It's just that our perspective has shifted. Instead of looking at transportation systems management (TSM)—which was a combination of capital and operational planning viewed mainly as an urban congestion relief and air quality improvement tool— we now look at "integrating operations into the planning process." We build on our urban experiences with multistate corridor planning, using ITS technology to benefit local and long-distance travel, both commercial and private vehicles through multistate corridors. A much broader view involving all of the planning levels I've discussed.

The broadening increases the likelihood of crossing jurisdictional boundaries, adding stakeholders, and making financing more complex and making collaboration essential.

The issues we will face in the coming years as the transportation planners—issues identified in the refocusing conference and in the papers Mike Meyers and various other speakers at this conference prepared—point us in the direction of using technology to broaden our planning, linking planning to other societal goals and involving new and better informed, highly motivated stakeholders.

Our challenge? Integrate these planning levels so that we can respond to the issues facing us n the future and support effective decision making.

STEPHEN LOCKWOOD, *PB Farradyne, Inc.*

Integration of Management and Operations into Statewide Transportation Planning

As Neil Pedersen reminded us in his millennium paper and Mike Meyer before him, at least one important strain in developing approaches to transportation infrastructure services that it is very strongly emerging relates to greater attention to performance service and customers and in that sense, operations and management.

This was very clearly demonstrated in the survey of changing state DOTs that we conducted last year with regard to their strategic planning focus. I will discuss a few of those characteristics. But it was quite interesting across the very broad range of diversity that is represented by states and their DOTs, that there are some of these common themes.

There are a couple of caveats that I should certainly admit to before proceeding. One is a lot of what I am going to say applies at very different levels in these different settings. As my traveling companions kept reminding me whenever our conversations slipped over to professional matters, when the endless array of mountains and glaciers and moose and so on just was overwhelming, hey, you know, not everything you are

saying applies equally to my environment as it does to your environment. So, I want to make a disclaimer at the outset; the diversity is important.

I think the other disclaimer or sort of footnote that I would like to add is in terms of Susan Mortel's very interesting perspective on the range of planning from pure policy to pure implementation. I suppose, by contrast with her presentation, I am focusing down more at the implementation level.

In my view, we, as an industry and as a profession in many of our agency operations are tiptoeing up to committing to outcomes through increased orientation to service. I think we are all constrained by the fear of being held accountable for outcomes when we don't control all the variables. And this is going to be a significant challenge.

It is not clear to me that neither I nor anybody has fully understood all the implications with respect to the opportunity and constraints that go along with being responsible for the quality of service in real time on the facilities and services that agencies operate.

I want to try and capture the contrast between two sorts of attitudes or approaches to transportation planning (Figure 1).

I had some difficulty in figuring out how to label these columns and they may be mislabeled, but let me try this out on you. Forget what the traditional and operations says on there. Somebody has suggested a good way to talk about trends in different focuses in planning context is to think of something that we called World I and World II.

On the left-hand side, imagine yourself in the planning environment of World I, which is where everybody was, let's say, 25 years ago, including the more urbanized metropolitan states and where many states are today. They are still struggling with all the challenges of developing and maintaining a fundamental infrastructure.

Distinct from World I is what I call World II: an environment in which many of you sit; where, as the term of art is a so-called mature infrastructure and the constraints suggest that little will be added. The major challenges have to do with exploiting what is there with regard to providing services.

World I and World II, everybody can probably identify for him or herself whether they are more in one or the other or maybe history is moving in most places from the left-hand column to the right-hand column. With that as sort of a framework, I just wanted to indicate what some of the characteristics are and remember them talking down at more of the implementation level in Susan's excellent spectrum she just gave us.

Our challenges are moving from an orientation focused on building things to an orientation on operating things, on doing things with the system that we have today. We are moving from an orientation that is able to focus on average conditions to one that has to cope with trying to preserve and provide service in varying conditions, whether it is varying conditions of weather or varying conditions of congestion and incidence.

For example, moving from the traditional long-range focus associated with planning as forecast driven and always talking about promises and the anonymous client of the magic land of 20/20 to dealing with the problems of today or immediate tomorrow with real clients who actually can call you up if they are unhappy is very difficult. Clients of tomorrow, who were going to be the clients of improvements envisioned in World I, have been preparing for and dealing in an environment of rapidly changing technology. An environment that we are trying to capitalize on and in many respects catch up on and

ITS and Transportation Planning Contrasts

	Traditional	ITS / Operations
Orientation	- Major capital facility (build/perserve) - "Build" - New capacity/service expansion - Solves, recurrent or "average" conditions - Aimed at capacity, LOS, and safety	- Systems operations & service provision - "Do" - Efficient Mgt & Op. of existing system - Response to variation in conditions - Solves different problems reliability, security, incident response
Temporal	- Problems of tommorow - Forecast driven - Long-term, multi year implementation - One time decisions - Static once in place - Fixed, predictable technology & characteristics	- Problems of today - Response to current conditions -Short term immediate implementation - Continuous, incremental - System evolves through feedback - Rapidly changing technology and characteristics
Costs /Funding	- Medium/high Major Capital Facility - Low/medium operations & maintenance - Federal aid context & requirements	- Low/medium Capital/infrastructure - Major life cycle operations costs - Often implmented using local funds
Implementors	- Public Agency - Const. ind., real estate, current users	- Public and private partnership - High tech. ind., small current constit.
Other Attributes	- Stand alone - Separable - Facility based - Low/medium technology - Capital, service improvements - Major construction - Visible & permanent	- Piggyback on other projects - Connected through communications - System based, core central systems - Advanced Technology - Non capital services, processes - Minor to no construction - Often hard to see

Figure 1

where the technologies that are, in fact, necessary for our work are being developed outside our industry by other industries.

While there is a continuing struggle with problems of capital resources and capital programming, now there is an increased need to struggle with the problems of operational resources and operational funding. For implementation we were once largely independent and self-contained in the development of standards and products and services and design and construction and so on. Now we are going to be increasingly dependent for the delivery of services on other entities, many of them outside of the transportation arena altogether, many of them in the private sector. We have had a long tradition of an arms-

length relationship in a kind of a client-vendor situation that is very hard to overcome in this new world, as some of you are acutely aware.

Finally, there is a need to deal with not only transportation but also communications as part of transportation solutions. The intrusion of communications and information-related technologies goes to the heart of the actual facilities, as well as the planning and information side. But the actual facilities and the delivery and operations of our systems that require new skills and systems engineering, electrical engineering, and even leadership that comes out of that kind of background as distinct from the traditional civil and planning backgrounds that most of us have.

These are just a few of the contrasts. You can quarrel with the details and you could add and subtract from this list. In fact, I would welcome any comments along those lines. But I do think it suggests, in general, at the implementation end of Susan's spectrum that we really are moving at different paces and in different places in different ways from one world to another and, hopefully, trying to get prepared. I think our AASHTO study of last year suggests that many states really are trying to grapple with these changes.

I think we need to start chanting this mantra to ourselves to try and make it real: What does a performance orientation really mean? I am sure for the next 20 years we will be going to conferences on performance measures and getting in touch with our customers and delivering services.

But some of the institutional issues that I won't talk about very much this morning are really some of the toughest. These occur at the state level, as Susan suggested. But they certainly also occur, in spades, at the regional level, vertically and horizontally, in a fragmented jurisdictional situation in between public and private sector, which is so institutionally intense that to make a small move requires most of the time of senior people. In fact, I think staff constraints are perhaps the principal problem in moving in many of these directions.

Turning to some of the more implementation-level planning aspects, I am constrained as being a certified ITS person to mention a few words and a few things here down at the nitty-gritty implementation level that are interesting to think about how you have to bring these back up into the planning level. When you are talking about operations on an integrated basis, on a regional level across multiple jurisdictions and perhaps involving public and private entities as well as state and local government, you are talking about systems engineering. You are talking about a whole new approach to what it is you are having to implement, no longer isolated pieces.

As many of you are aware, there is a technology and an annoying jargon that we have imposed on this technology such as architecture systems integration. All that stuff some of you are involved with, and most of you hear about but are, in fact, real important and central and at the heart of an integrated operational approach to really making things happen in a progressive way at the regional level, urban and rural. Whether you are talking about road weather information systems in Alaska or in Montana, or whether you are talking about incident-management systems in the Washington, D.C., area, there are the same kinds of problems; the same technology. If we don't understand it at the high level, it is going to be very difficult to make it happen down at the regional level.

It is not only understanding the technology but the need to integrate operational planning with the longer-range planning that is important. The cycles of development

and, increasingly, specific focuses somehow nesting operational planning, medium-range and long-range planning is going to be a very tough challenge that we have to meet.

Figure 2 illustrates some of the challenges and barriers involved in integration of planning and operations. Down the left side I drew a picture of the conventional, regional planning kinds of activities and where they end out; either in capital projects that augment the systems or the preservation and maintenance focus in the middle.

When it comes to operations planning—by which I mean developing the infrastructure and conducting real-time systems operations such as a bad weather situation in Montana or an incident response in Washington, D.C.—right now the people who do the stuff on the right and the people who do the stuff on the left are entirely separate. The processes and the way they think are not integrated, and this is the challenge that we all need to kind of struggle with.

The interesting thing is that the right side of the figure has something important to offer to the left and vice-versa. That is why integration is very important. For example, in talking about real-time operations, monitoring, and feedback in real time is central to that operation. This generates an enormous amount of information that can be useful to middle- and long-term planning.

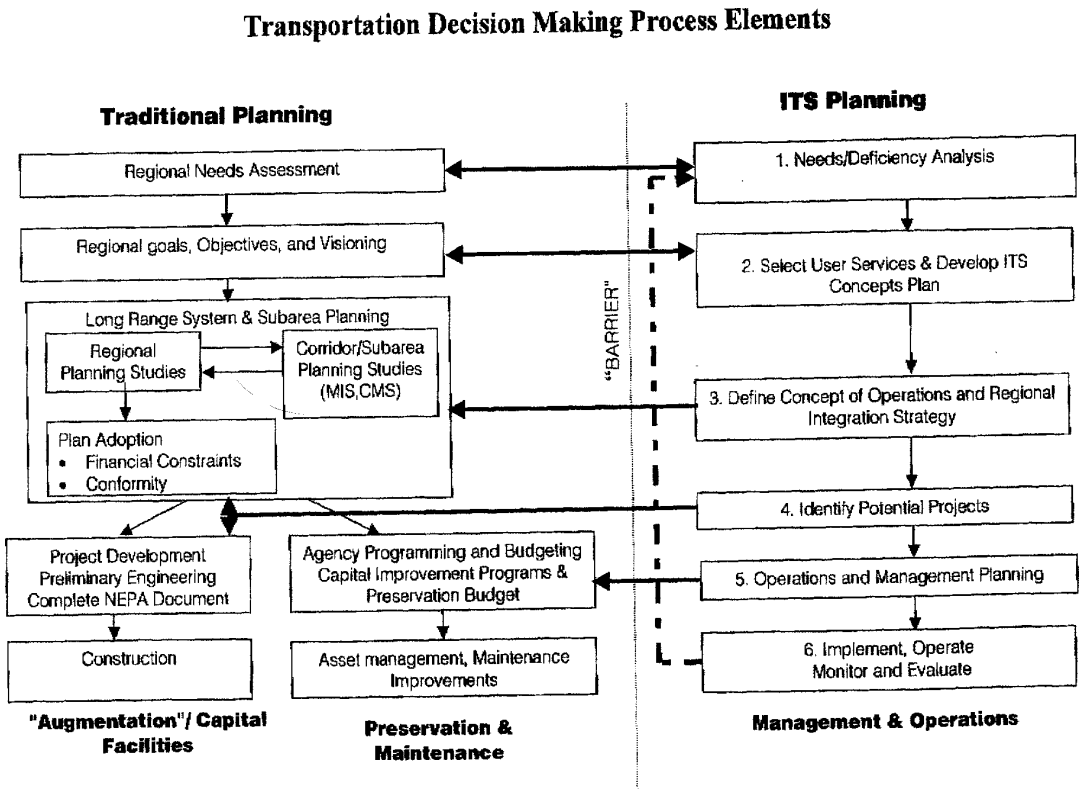

Figure 2

On the other hand, operations-oriented planning and ITS improvements are very specific in the targets of the improvements in terms of user groups, geography, etc. This kind of specific commitment to traveling customers that you can actually touch and feel is an important discipline that can help inform the longer-range planning as well.

In any case, figuring out how to draw the lines across that barrier is a major

challenge for those of you who are interested in that kind of thing. Work is just beginning on this with some important support from FHWA and FTA.

Where are we from a technical point of view, as well as an institutional point of view, in beginning to integrate operational planning and the application of systems in ITS in regions in urban and rural? Well, we are really back at the beginning. Early-deployment programs, EDP activities have swept like a wave across 70-plus metropolitan areas over the last four or five years.

A number of state DOTs, both with strong metropolitan focuses or with strong rural focuses, have begun to sponsor thinking about operations planning at a statewide level. There are six states that I am aware of that have undertaken a kind of systematic top-down operations planning approach. Sometimes it is called developing a statewide ITS plan. Sometimes it is called a state systems-management plan.

This whole technology, as well as the concepts that go with it and the planning with that focus at that level, is still something that we are learning about. The systems engineering application into planning and civil engineering and the resulting professional orientation is still moving very slowly. So many states are constrained with regard to staffing, at bringing in new talent with this background; that it is very difficult.

The planning and programming that goes along with ITS typically has been carried out as a separate process from traditional transportation planning, and that is a real problem.

Let me close, then, with a couple of comments. I am trying to persuade you, I guess, of the importance of the challenge here, but also the difficulty of the challenge. Start at the top to determine whether or not and the degree to which each owner/operator of an upper-level transportation system in our states are truly committing to operations and management. By that I mean being concerned when you get up in the morning with what quality of service is on the facilities that you have right then and there.

Committing the first dollar after preservation is going to maximize the efficiency and the service that can be produced out of those facilities. Service these days goes well beyond speed and capacity to reliability, security information, and so on. So there is plenty to think about in that regard.

Also, I think it is very interesting to think about how operational management fits with asset management. We have defined asset management substantially as dealing with the physical facilities rather than their operational performance. That may change over time.

I tried not to use the word ITS too many times today. ITS is the infrastructure for systems management; it is not a separate kind of facility to be walled off and handled as a separate part of the planning and implementation process. It really has to be integral and integrated, and maybe only by eliminating the term will we achieve the integration that is really necessary.

The major constraint in state after state that I talked to is that there are the very small but dedicated staff focusing on this issue. Because moving into operations is so interinstitutional intensive an activity, requiring a lot of meetings and protocol development, memorandum development, as many of you know, the pace at which one can move down that path is literally constrained by the number of middle and senior staff that can devote the kind of time that is necessary to make that happen. As usual, institutions turn out to be the major path as well as the major barrier to significant change.

Finally, there is a question as to whether state DOTs are, in fact, going to lead the convening of the stakeholders in improved operations, given our traditional, somewhat attenuated relationship with customers, both household and commercial, in the transportation arena. I think that simply getting in a regular dialogue with people about what is going on in our systems on a day-to-day basis will keep reminding us and drive us in a more service-oriented direction.

LORI KENNEDY, *Kissinger Campo and Associates*

Incorporating Environmental Justice and Related Issues into Statewide Transportation Planning

Let me ask a question. How many of you have seen the executive order on environmental justice and have read it? Because about a year and a half ago, my TRB subcommittee on environmental justice did a survey throughout all the transit agencies and the MPOs around the country. I had gotten a ton of telephone calls and also responses on what is environmental justice. This was two years after the executive order had already been out and signed.

Some of this may be repetitive, but my presentation will review what the executive order says, what the DOT final order on environmental justice says, some of the existing legislation, and also discuss two cases where environmental justice has risen, one in Atlanta and also out in Los Angeles. I hope that it can stimulate some thoughts in your mind to discuss whether you are dealing with these issues properly in your planning process.

Some of the resources available to understand environmental justice include a resource paper that I wrote on environmental justice for the conference, "Refocusing Planning for the 21st Century," the executive order itself, the final DOT order, the FHWA DOT order on environmental justice, CEQ final guidelines, and a list of state DOT community impact-assessment contacts for each state DOT. Also, there is the community impact mitigation case studies publication that FHWA most recently put out.

What is environmental justice? Many professionals are struggling with the name environmental justice. Suggestions have been made to call it something else. Does environmental justice mean discrimination? Is environmental justice an equity issue? Is environmental justice inclusive of social and community impacts? Can environmental justice arise at a project specific level? Should environmental justice be evaluated in the planning stage?

The answer is simply yes. As transportation professionals, we should focus on the evolution of the term environmental justice through the many cases and legislative acts it is found in and not so much on the terminology itself. One will find in the review of these cases and legislation that environmental justice is very broad reaching. It can be transportation project specific and interrelated to transportation projects and planning.

Is there an obligation of transportation professionals to speak up for disadvantaged persons? There is an obligation of transportation professionals to utilize existing legislation and regulations and tools available to them to identify disadvantaged populations in the planning phase and project stages of the programs and include these

populations in the decision-making process at the planning program level and the project specific level. That is kind of my all-encompassing definition of environmental justice.

One of the existing statutes and guidance that deals with environmental justice issues is the NEPA Act of 1969. The environment that the NEPA Act talks about certainly was intended to include not only the natural environment but also the human environment.

Title VI of the Civil Rights Act requires no discrimination when federal funding is involved. Other legislation includes Title VIII, the Fair Housing Act, Relocation Assistance Act, and ISTEA.

The executive order on environmental justice was signed by the president in 1994 (Figure 1). I don't think it was intended for this to create new legislation, but it was to remind everybody of the existing legislation that is out there and to not forget the human side of the equation when dealing with the environment.

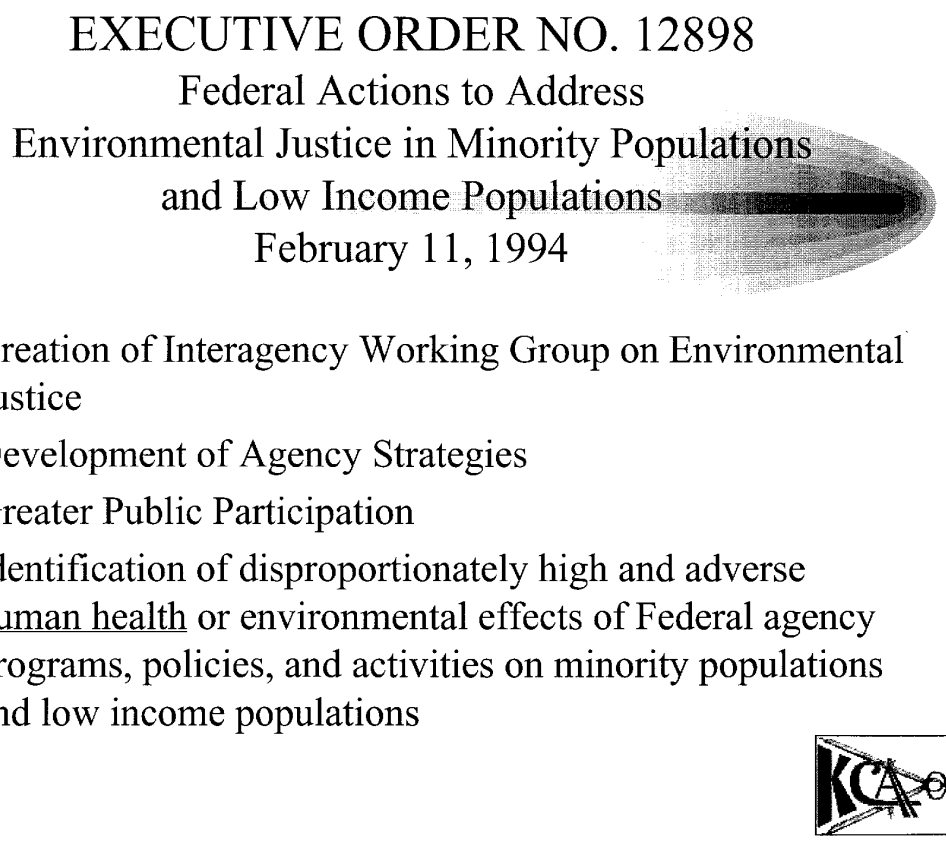

Figure 1

The Final DOT Order on Environmental Justice was signed in 1998 and finally we also now have final CEQ guidance on environmental justice.

The NEPA Act of 1969 specifically says the human environment includes the natural and physical environment and the relationship of people with that environment.

Title VI of the Civil Rights Act says no person in the United States shall on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving

federal financial assistance.

I have also been asked recently a lot of questions on equity and whether that should even be an issue when dealing with environmental justice. If you look back in the legislative history of the Civil Rights Act, one of the things that was mentioned was equity, equal benefits. Testimony before the House Judiciary Subcommittee and data gathered by the Civil Rights Commission is available that demonstrates that in many regions of the country, citizens are denied the equal benefits from federal financial assistance programs because of their color, which is part of the reason why they enacted the Civil Rights Act

Executive Order 1289A covers federal actions to address environmental justice in minority populations and low-income populations. It was signed in February 1994 by the president. It required creation of an interagency working group on environmental justice. It required that all the agencies develop agency strategies on environmental justice. It required greater public participation. It required identification of disproportionately high and adverse human health or environmental effects of federal agency programs, policies and activities on minority populations and low-income populations.

The DOT did develop a strategy on environmental justice. Some of the elements of it were greater public outreach on implementing environmental justice strategy; developing a final DOT order on environmental justice, which they have done; and providing more training on environmental justice.

Looking at the actual DOT order, some of the things that it specifies includes: it applies to all appropriate DOT regulations, policies, guidance and program activities having environmental justice implications, and it is supposed to integrate environmental justice considerations into existing agency operations rather than creating separate requirements.

In implementing these existing requirements, the following information should be obtained where relevant, appropriate, and practical (Figure 2). These are some of the things that you might want to think about if you really are doing them in your planning process.

The Final DOT Order on Environmental Justice requires that “statutes governing DOT operations will be administered so as to identify and avoid discrimination and avoid disproportionately high and adverse effects on minority populations and low income populations by:

1. Identifying and evaluating environmental, public health and interrelated social and economic effects of DOT programs, policies and activities;
2. Proposing measures to avoid, minimize and/or mitigate disproportionately high and adverse environmental and public health effects and interrelated social and economic effects and providing off-setting benefits and opportunities to enhance communities, neighborhoods and individuals affected by DOT programs, policies and activities where permitted by law and consistent with the executive order;
3. Considering alternatives to proposed programs, policies and activities where such alternatives would result in avoiding and/or minimizing disproportionately high and adverse human health or environmental impacts consistent with the Executive Order; and

4. Eliciting public involvement opportunities in considering the results thereof, including soliciting input from affected minority and low income populations in considering alternatives."

When the proposed DOT order was out for comment (they had four or five options that they considered), comments were received on when a disproportionately high and adverse effect on a minority population was identified, whether you could actually proceed forward with that action or not. With regard to that question, the final DOT order states:

> Operating administers and other responsible DOT officials will also ensure that any of the respective programs, policies or activities that will have a disproportionately high and adverse effect on populations protected by Title VI ('protected populations') will only be carried out if (1), a substantial need for the program policy or (2), alternatives that would have less adverse effect on the protected populations and still satisfy No. 1 (above) either (a) would have other adverse social economic, environmental or human health impacts that are more severe or (b) would involve increased costs of extraordinary magnitude."

So that is kind of the test that the DOT has put forth for guidance.

Next, I am going to touch on what has been happening in Atlanta. Several months ago, there was a notice of intent to sue by the Environmental Defense Fund and several other defendants, environmental activist groups. First, it was on the grandfathering of projects in the Atlanta metropolitan area. They also added a second element to that notice of intent to sue, which was on environmental justice.

They have since settled the grandfathering projects issue, but they are still moving forward with the environmental justice issue. They have not sued yet. It is still a notice of intent to sue. I have read the complaint and I just outlined here a few of the things that they have brought up in their notice of intent to sue. This is against ARC, the MPO for the 13-county nonattainment area in Atlanta, Ga., DOT, FHWA, and also the USDOT.

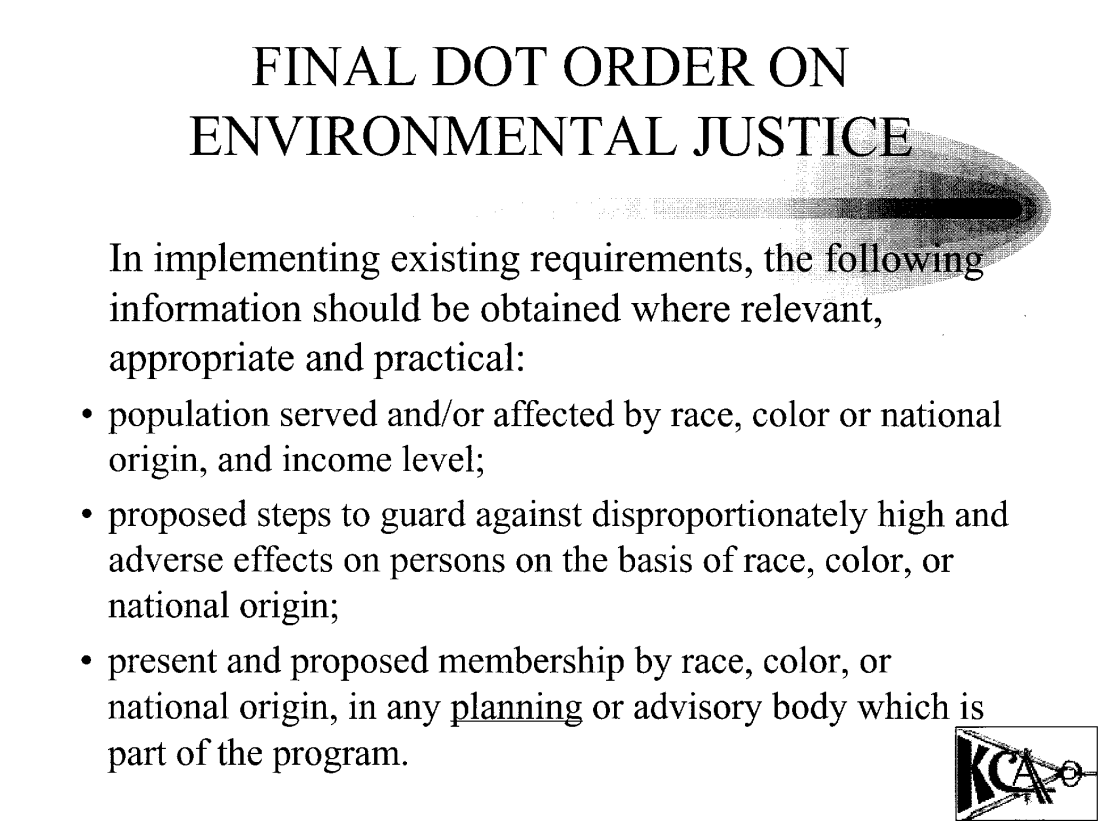

Figure 2

What they are seeking is a need to identify data and information to assess conditions associated with current transportation system with regard to specific burdens and benefits for communities defined in terms of income and transit dependency.

They also are looking at the burdens imposed, disparate health risks resulting from greater exposure to air pollution, and other environmental externalities related to highway development, and use mobility effects including community isolation and limitations on access to employment, housing, regional public facilities, and other social economic effects such as comparative costs and time of travel.

The other interesting thing going on in Atlanta is we don't have a conforming TIP right now. So it is very interesting that they have brought these health issues up in relation to the air quality issue in Atlanta, as well as an environmental justice issue.

They are also seeking:

- Criteria for measuring benefits;
- Data/information on impact of proposed infrastructure investment strategies;
- Measures designed to remedy the disparate impacts of past planning decisions; and
- Implementation of Title VI program criteria as an important factor in the certification review of MPOs.

A couple of weeks ago, before I came out here, ARC asked to talk to me briefly.

They had had a big meeting with the U.S. DOT and some Georgia DOT officials on this notice of intent to sue and what direction they should move forward with. I think some of the questions they are asking themselves now that they have had to address this notice of intent to sue are some thoughts that you might want to think about:

- Does the public participation process reach low-income and minority communities?
- What data is collected relating to environmental justice?
- How is environmental justice data incorporated into decision making?
- What are the travel activity patterns of different income and racial groups?
- Do low-income and minority populations shoulder a proportionate share of the burden of transportation facilities?
- Do low-income and minority populations receive a proportionate share of transportation benefits?
- Where are transportation investments being spent with respect to populations of different races and income levels?

I believe these are some of the big questions that are facing them now. They don't know where the line in the sand needs to be drawn, whether they need to go to court to find out where that line in the sand needs to be drawn or if they are going to succumb to some of the requests of the defendants. I think they realize they are going to be a precedenting case study no matter what happens there. So, over the next year or so, it is going to be very interesting.

The other case that actually happened several years ago was dealing with the Los Angeles Metropolitan Transportation Authority (MTA). A group of folks filed a complaint in 1994 seeking injunctive relief against the Los Angeles MTA. They said that this authority had violated the Fourteenth Amendment and Title VI of the Civil Rights Act. They felt that not enough money was being spent in the inner-city bus system.

The MTA wanted to raise fares and to take away monthly passes. An environmental activist group got together and actually rallied the minority and low-income people who rode the buses on a daily basis. These folks helped the environmental activists groups stand on corners and count the number of overcrowded buses, the conditions of the buses, the number of people standing on the buses, and they pretty much helped them build their case for them statistically.

They alleged intentional discrimination against racial and ethnic minority groups and perpetuation of a pattern of racially discriminatory delivery of transportation services. They also felt that as a recipient of federal funds, the MTA violated U.S. DOT regulations by maintaining transportation policies that disproportionately impacted racial and ethnic minorities without justifying business necessity and without regard to less discriminatory alternatives.

As a result of what they presented in court, they were able to get a temporary restraining order. The court basically said they couldn't raise the bus fare and they could not eliminate the pass, which allowed for unlimited bus travel for $42 a month that a lot of the low-income and minority populations needed to get around.

In 1995 they were able to certify this case as a class-action lawsuit because it affected roughly 350,000 individuals. Then, in 1996, they entered into a consent decree

and a special master was assigned to look over this consent decree instead of going to court. There were a lot of specifics in the consent decree. One of them was to buy additional buses and upgrade existing buses.

There was some issue as to whether that dissent decree was being violated or not in March 1999. MTA requested a motion for review of the special master's order, and most recently the defendant filed a brief in opposition to MTA's request. That just happened all within this last month. So that is where the matter stands right now. Whether they pursue it in court or not or try to work through the dissent decree with the special master is still up in the air.

I wanted to identify these two cases because they are more on a planning level versus a project-specific level and they have raised some issues that you all might want to talk about in your breakout sessions.

GORDON SHUNK, *Texas Transportation Institute*

Current Technical Issues in Statewide Transportation Planning

We had a fine conference on statewide travel forecasting last December in Irvine, with a great deal of interest and participation. Important technical issues and recommendations for research resulted from discussions at the conference. Today I'll discuss those issues, the research needed to address them, and resources that will help in that effort. Proceedings from that conference will soon be available as a TRIS Circular and will contain several interesting papers and discussions describing statewide planning experience.

A subcommittee on travel forecasting, formed in the wake of that conference, held their first meeting here yesterday. That subcommittee will be recommending research to SCOP and SCOR.

The discussions at the Irvine conference ranged far and wide, addressing many issues. Deliberations basically resulted in three very broad categories: technical process, data, and communications. The technical process includes travel forecasting models and related procedures, as well as inputs to, and applications of, those procedures. The data issues are transferable data, freight data, and other data needs. Finally, communication deals with facilitating sharing of information and experience. Let me give you more detail on those issues.

Technical Process

An overriding issue is what technical procedures are appropriate for various applications and how and when each should be used. The technical complexity of an application dictates the sophistication of the procedure to be used, and different approaches may be adopted depending on the questions being asked. Having guidelines available for selecting the most appropriate application for each use is a concern. Such guidelines can be based on the experiences of other practitioners. Sharing those experiences is one of the principal needs for technical transportation planning.

The technical procedures must be sensitive to policy questions; particularly to the

cost of improvements and the resulting expense to travelers and others. We need to address the market segments for statewide travel: tourists, high-cost electronics freight and mineral extraction, as well as conventional motor vehicle travel. How much detail will be needed for different applications—conventional traffic analysis zones, census tracts or counties, or geocoded locations? National networks should guide network development if the intended analysis crosses state or national borders but can also be useful for work entirely within a state.

Other concerns that must be addressed include:

- How much consideration is needed with urban forecasts;
- Continuity and connectivity of transportation networks to neighboring states; and
- Coordinating the transportation analysis with other statewide planning activity, such as land use, recreation planning, or other statewide activities and functions.

Appropriately conducted case studies could demonstrate problems encountered in different situations and the ability of various applications and techniques to deal with them. These case studies present an opportunity for sponsored research, or at least a synthesis of practice and could produce a primer of available options.

Issue One: Share Model Parameters

Some states have already developed models or other forecasting procedures. The input data for those procedures are a good indication of what other states could use. These existing models and parameters could be examined and considered by states developing new models. One recommendation is to develop a mechanism, such as a website, for analysts to share information resulting from their efforts.

Issue Two: Use Cross Border Models

Some states terminate their forecasting process at their borders, much as urban modelers use external stations, and use growth factors to forecast traffic beyond those points. More attention is needed regarding interstate and international traffic, especially at locations with heavy truck and recreational traffic, requiring data from traffic generators outside the state. If the adjacent jurisdiction is not forecasting traffic, the subject state may have to analyze and forecast traffic from the neighboring entity. In such an example, national databases would have great value in providing information to analyze and forecast traffic in the neighboring state.

Issue Three: Coordinate with Urban Forecasts

Much of the traffic on state highways is bound for urban areas. The larger urban areas have RTPO, MPOs, that are forecasting growth and traffic into, out of, and through their areas as well as totally internal traffic. Those agencies are forecasting the population and employment that generate traffic both outside and within their areas, traffic important for

the statewide traffic forecast. Agreements among states and MPOs are needed regarding the location, functional classification and capacity of the state and MPO networks. It is especially important that networks be connected at the external cordon in the MPO network.

Another consideration is whether state and MPO procedures need to he identical or merely consistent. This is a special concern when there are several MPOs in the state and procedures differ among them. Then the state must decide which MPOs will provide the guidelines for consistency, and how to coordinate agencies using different procedures.

Issue Four: Consider Land-Use Issues

Even rudimentary forecasting procedures use socioeconomic activity as independent variables. That information may be land use or population and employment. How should that information be developed? Are land use or activity models necessary or even appropriate for statewide forecasting? Are there nonmodeling procedures available for such forecasting? The analysts should seriously consider incorporating measures of localized and statewide economic activity in their forecasts. Economic development and land development should also be considered, particularly for growing states.

Issue Five: Improve Trip Generation Data

Standard trip generation forecasting procedures use a measure of economic activity to estimate trips. What happens to trip forecasts when economic activity drops, possibly due to recession, migration of employers, or other factors? How can those conditions be considered in the trip forecasting process? Can more subtle effects like worker productivity or changes in types of industry be considered for estimating travel? Is a forecast of economic activity necessary for statewide forecasting? How does the overall economic health of the state affect travel; what are the effects of economic cycles? How should those important influences be brought to bear on travel forecasts?

Another concern is improving trip generation information in rural areas. Some rural area patterns are particularly important, such as agricultural areas or locations of heavy extractive activity: oil, coal, or other mining. These trips are often overshadowed by higher-volume passenger travel and are, thus, included in the forecast. This also indicates the need for better estimates of freight productions and attractions, both urban and statewide. Generating trip ends outside the state in order to properly estimate flow-through traffic may also be a problem.

Issue Six: Recognize Multimodal Issues

Although strongly dominated by motor vehicle traffic, alternate modes of both passenger and freight travel need to be considered in statewide forecasts. Transport by rail of heavy bulk commodities and by air traffic of electronic goods is costly, even at today’s ever-increasing quantities. These modes can’t be ignored. The incorporation of multimodal considerations is another challenge that can take some cues from urban procedures. Alternatives include direct-demand estimates by individual modes rather than

competitive mode split modeling. Because of the higher cost of statewide trips due to distance traveled when compared to urban trips, cost is a more important consideration than for urban-mode split models. It is also important to remember that the decision to ship major quantities by rail is made based on relatively fine cost margins. Another emerging concern for multimodal transportation is the effect of rapidly developing electronic communication; how much travel may be unnecessary due to electronic communication, such as audio and video conferencing?

Issue Seven: Improve Freight Models

Freight travel forecasting is problematic because few modelers are familiar with freight logistics and objective functions. Some of the passenger travel techniques may be directly applicable to freight, but important adjustments are necessary. A potential resource for freight forecasting procedures are the shippers who do their own travel analyses and forecasts themselves. Much of freight forecasting deals with commodities, so forecasts have to be converted from commodities to vehicles. What is really needed are new tools specifically designed to forecast freight travel. Tools that could be used to consider travel to and from airports and seaports and be integrated with urban models and models that forecast statewide travel by either modes.

Issue Eight: Optimize Use of Data

GIS capabilities are becoming increasingly available, economical, and useful as specific applications are developed. To date, most applications have been used for inventories, street and land-use characteristics, etc. GIS has capabilities emerging for transportation network analysis and land-use activity applications. These offer considerable opportunities for analyzing spatial issues associated with transportation planning, as well as air-quality analysis. GIS can also provide consistency of data referencing and facilitate spatial interaction among data.

Occasional problems occur when GIS technicians and travel forecasting personnel do not interact and, therefore, GIS information is not directly usable for travel models. This lack of interaction has retarded the progress of using GIS to build transportation networks and, as a result, GIS may not provide good support for transportation network analysis. Progress in this area requires encouraging planners, vendors and GIS users to coordinate and cooperate, both among and within agencies, to achieve interoperation with model programs.

Data Issues

The second major issue area is data. Getting more and better data is as important as improving forecasting procedures because it is part of those procedures. There are three areas of concern regarding data: finding existing statewide transportation databases, making better use of that existing data, and improving freight data. I'll give you more detail on these.

Issue One: Use National Databases

Transportation planners should make more and better use of national databases. The census and other such databases available through the BTS are excellent resources at very reasonable rates or often free. Still others are maintained by states, MPOs, and nongovernmental organizations, particularly private associations or companies. Use of those existing data offer an opportunity to reduce or eliminate the need to collect new data. National surveys are especially useful for statewide planning because they are usually consistent statewide and from state to state, thereby permitting easy examination, comparison, and forecasting of travel across state lines.

Two things have impeded the use of the national databases: awareness and usability. Posting notices in publications or circulating announcements, like those from the BTS, may increase the awareness of planners regarding these databases. Additionally, documentation of the data is needed, telling the potential user where the databases are, what's in them, their characteristics, and how to access them. The original source of the information, the survey by which the data were obtained, and the condition of the data, including its good and bad characteristics, should be provided. Any omissions or inconsistencies in the continuity and comprehensiveness of the data should be explained, along with inconsistencies in coding or application.

Accessibility to these data can be improved by making the data available in alternative common formats on the Internet and CD-ROMs. Improving usability will require preparing user manuals and courses that clearly describe how to obtain and use the data. Sample applications and case studies would be very helpful to this effort. For example, applications could include multistate studies, estimating and validating travel models and supplementing travel surveys, especially to enrich characteristics or situations of special interest. The data could be economically enhanced with supplemental surveys and by sharing the cost of data collection among groups of states and the federal government, thereby facilitating wider use.

Issue Two: Fix Gaps in Data

A major concern with databases as well as newly designed surveys are gaps between and, occasionally, within them. Such gaps can occur by omitting information from a survey or by inconsistently defining population groups between surveys. Probably of greatest concern to statewide data are gaps between state and national data for interstate travel, and between state and MPO or local agency data for statewide travel. In the latter case, local agencies may omit elements that are important for statewide planning from surveys, such as rail and air traffic.

Issue Three: Recognize New Modes

Multimodal transportation is becoming important for statewide planning. The application most often cited is high-speed passenger trains; however, variations are occurring in freight movement as well. Freight shippers can test the demand for some of their innovations at relatively low cost and commitment by trial and error on existing roadbeds. Testing the demand for passenger travel on high-speed trains by trial and error

is essentially impossible.

Demand for either freight or passengers can be estimated using preference analyses. Preference surveys ask the passenger or shipper to choose between their current mode (rail versus car or truck) and a hypothetical mode based solely on descriptions of the characteristics of the hypothetical mode. This technique is becoming more widely used and is gaining credibility.

Issue Four, Obtain More and Better Freight Data

There is a great need for more and better information on freight movement, its trends and patterns of transport. Unfortunately a significant problem exists in gaining access to private sector proprietary data that private shipping companies and other producers are reluctant to share. Their concerns are that making the data available is too troublesome and costly and will bring no obvious benefit to them. In fact, because of this effort, their profit may be reduced. They also want to keep the information from their competitors. The location and characteristics of available freight data need to be identified. One of the weakest aspects of the freight movement inventory is freight traffic entirely within states. This data varies considerably between states and is not always compatible with the commodity flow survey (CFS). Examples from states having good data show what can be accomplished.

The research should also identify factors that influence changes in freight movement patterns and the effects of those changes. Some freight data is available from the BTS and state and federal regulatory agencies. Some states and organizations have collected this data, but precious little accurate descriptive information is readily available for use in statewide forecasting. Past attempts to obtain more data from private companies have met with limited success.

Challenges and Opportunities Action should be taken to overcome the deficiency in freight data, perhaps by increased sampling data from current procedures or by supplementary surveys. Also, a method should be established to track changes in freight movement characteristics over time in order to anticipate changes in demand and effects. This research will help us better understand how such factors can be included in current travel forecasting.

Issue Five: National Survey

A major nationwide survey of freight vehicles, carriers, and commodities, especially those crossing state lines, is needed. This should be conducted by the federal government, much as the census journey-to-work data was organized and coordinated to supplement and respond to needs of the CFS and other national databases. Data from this survey would be helpful to the states but would also enhance the value of the CFS. The survey should identify, for a large sample of freight by all modes, the origin, destination and mode of travel as well as descriptive information of the amount and kind of freight carried.

Issue Six: Achieve Consistency Among States

It is important for emerging data collection efforts to achieve commonality or consistency, especially across state borders. This will promote the use of borrowed data for validating models, supplementing surveys, and filling gaps. In all national surveys and with surveys conducted by and for the states, data collection efforts should be designed for consistency with existing databases, both public and private. Analyses and forecasts should also be designed to coordinate among the states, particularly between adjacent states but also in corridors of several states as well as nationally. Achieving consistency will not be accomplished easily or quickly, but with understanding and cooperation, the result would be both technically and financially valuable. Efforts should be made to improve commonality current survey efforts and databases.

Resources and Tools

There is a need for gaining and sharing experiences on all of the preceding issues. The technical experience begins with person travel and freight forecasting techniques, experience that is very important for even the least complicated procedures. Most states have limited, if any, experience forecasting statewide travel and, of the few states that do, some are willing to share that experience. The issue is how to accomplish that sharing. The December conference went a long way toward identifying the experience out there and who has it, but it fell short of establishing mechanisms for actually sharing that information.

Issue One: Establish a Resource Directory

One step in the remedial direction has been establishing the Travel Forecasting Subcommittee of the Statewide Committee. Members of the subcommittee have met here to begin the dialog that will hopefully promote more sharing of travel forecasting experience. The subcommittee will also be preparing problem statements for consideration by SCOP and SCOR.

One possible approach is to establish a roster of personnel experienced with statewide travel forecasting who are willing to be contacted for guidance and assistance. A directory could include resource information on agencies and personnel experienced and successful with technical aspects of statewide travel forecasting. The directory would include a brief description of the status and procedures for statewide travel analysis used by the resources listed. This directory could be coordinated with the clearinghouse recommended for data sharing and could also be included in the Internet website described below.

Issue Two: Develop a Data Clearinghouse

To facilitate wider and better use of national data, a clearinghouse is needed as a central resource to locate, describe, and maintain an up-to-date listing of available data, data collection efforts, and data sources. The clearinghouse could maintain a directory of key contacts and sources that can explain or interpret characteristics of data in the

clearinghouse and databases referenced there. The clearinghouse could also maintain archives of key repeated data for use in trend analysis.

Issue Three: Use the Commodity Flow Survey (CES) More

This excellent database needs to be publicized more, made more readily available, augmented, and expanded. The expansion should include commodities such as waste, imports, dead heading, mail, some crops and minerals, and other extractions.

Issue Four: Develop an Internet Website

An Internet site should be established as a communication tool among personnel in statewide transportation planning. The site could provide information about databases and planning, analysis, and forecasting procedures described here. The site could also promote evaluation and criticism of procedures and study or research findings, as well as access to the latest technical documents describing activities in the planning and forecasting community.

As a supplement to the site, an e-mail list should be developed for sharing communication among persons involved in statewide transportation planning and travel forecasting.

Training

A major concern of the profession is the need for more and better training for students, recent graduates and experienced personnel at all levels. Much progress could be made in many of the areas cited here by advancing the capabilities of state, local agency and private sector personnel. This concern is heightened by the difficulty of agencies to retain trained and experienced personnel. This is as great an obstacle to improving transportation planning as any deficiency cited here. Retention of trained personnel is a concern of all public agencies because of opportunities offered by the private sector. Training is therefore especially necessary to replace the personnel lost and may also serve as an enhancement to stay in a position if coupled with other professional incentives.

Travel Forecasting Advances

I would be severely remiss if I did not include here the need to advance the state of the art of travel forecasting. By that I mean the major improvements to travel forecasting being developed in the Travel Model Improvement Program (TMIP). TRANSIMS is a new model being developed there specifically designed to meet today's needs for policy sensitivity, congestion analyses and air quality assessments. The TRANSIMS models are nearing completion. The program is preparing to deploy the new models early in 2000.

Those models start with population synthesis that determines characteristics of travelers and vehicles they travel in. An activity model determines where travelers will go to satisfy their individual needs and how they will get there. A microsimulation then loads the travelers' trips on the transportation network. TRANSIMS then estimates the delay travelers experience due to congestion and produces vehicle operating

characteristics that affect the amount of emissions their vehicles produce. There is considerable feedback in the TRANSIMS operation to achieve a state of equilibrium, after which the atmospheric models estimate the amount, nature and location of air pollutants. This travel analysis capability should interest statewide planners as well as those in urban areas because it provides an opportunity to better understand and forecast the effects of physical and policy actions on all branches of the transportation system.

SUMMARY OF DISCUSSION

Regarding the use of ITS data for planning, there has been some discussion of this issue and there are a lot of challenges to be met. Samples are being taken by loop detectors that in some cases record speed and volume; in a few cases, other characteristics as well. But there is no current systematic storage of this data. Operations people haven't yet had the dialogue with the planning community to determine what to do as distinct from simply scrapping what is on disk. There is a significant problem of sampling what is an enormous data stream, and a quality control strategy is needed to preserve data that could be used for planning. There hasn't been a planning input when the data collection technologies and hardware and software decisions are being made by the operational community.

SUMMARY OF WORKSHOPS

William Stringfellow: Relationship of Substate, Regional, Rural, Tribal Nation, and Multistate Planning to Statewide Planning

Issue: Partnerships

The discussion dealt with intergovernmental groups and regional agencies. At this conference you have heard the words coordination, working together, consensus, collaboration, public involvement, local government involvement, memoranda of agreement. How do you implement these concepts?

Challenges and Opportunities

1. Reconcile regional plans with state plans and multistate plans.
2. What is the role of the state in dealing with urban and rural issues and conflicts? How do you do it? How do you work together? How do you cooperate?
3. One that I put a star by was a concern about balkanization that can be caused by funding allocations.
4. Deal with conflicting goals of various jurisdictions and the relationship to system operations.
5. There are different skill sets that are needed for regional coordination partnership and coalitions. It is no longer as much modeling and traffic counts and technical things as it is working on partnerships, working on conflict resolution, those types of things. To what degree can multiple jurisdictions share technical resources and share various skills, instead of everyone having

their own. There was talk about circuit riders, that type of thing.

6. Deal with nontraditional transportation partners in the planning process, federal lands agencies, health services agencies, Bureau of Indian Affairs and developing planning procedures.

Issue: The Role of the Federal Government

The role of the federal government is developing planning procedures through rule making. They are currently being developed, and a notice of rule making is going to be out that deal with some of the federal lands planning procedures. So, everyone should be aware of that and probably comment on it.

Challenges and Opportunities

Based on that, I guess there were several recommendations. I will touch on six very quickly.

1. Increase focus on relationships to tribal governance, the sovereignty issues. How do we deal with the governing status of the Indian nations? Who should be the partner? Should it be the state or should it be the federal government that is the partner with another sovereign entity? Is that the way it should work? There is a need to research treaties and legal boundaries; to identify tribal, state, and federal responsibilities; and to identify mechanisms and purposes for federal government partnerships with tribal governments and how the states get involved. That was one of the issues.
2. There is a need for a synthesis and analysis on how to plan, design and finance multistate corridors, to ensure consistency and standards, and reconciliation of benefits sharing. What are the legal and institutional barriers to multistate cooperation on these tribal corridors?
3. There is a need for a synthesis of what has been done and the current state of the art with regard to border crossings and ports. There was the comment that sometimes ports almost act as border crossings anyway, that they are on the edge and that is where the goods come and go. How to encourage and facilitate trade and movement. So, an analysis of what has been done, what has worked, what hasn't worked, and which mechanisms are the most effective.
4. There is a need to look into the continually evolving institutional relationships and how to deal with the growth of transportation issues. One example is the Atlanta experiment. What is going to happen there; how is it going to work? What relationship does it have, and how will it be coordinated with state planning?
5. Deal with identifying and analyzing the mechanisms for sharing expenses, data, approaches, mechanisms, processes. Today we talked about things like setting up information sharing, developing bulletin boards, other mechanisms. What are the best ways to share information on the good things that are being done? The best practices that are being done in other places, and what is being looked at?

6. We need some research on new ways to fund research. Maybe there really should be something done about looking into alternative methods, procedures, and institutional arrangements for funding some of this research in this era of shrinking resources for research, particularly at the federal level.

Dane Ismart: Integration of Management and Operations into Statewide Transportation Planning

The most important aspect regarding the integration of planning and operations that we discussed was getting the senior staff involved, getting a commitment from senior staff.

Several examples were given in which the integration became possible when there was a commitment by the senior staff to overcome the institutional barriers or to change the mindset that has existed and coming in with this new approach, or at least this new edition of operations and management as part of that planning process.

There was some discussion of the fact that what creates these problems, these institutional barriers, is the fact that planning has a long-range view: 5 years, 10 years, 15, 20 years.

When you are dealing with operations and management, you may be talking about tomorrow. You may be talking about a week from now; you may be talking about three months from now.

There is a different time range when we are dealing with operations management and what we have traditionally viewed as the perspective of planning.

The integration of that short-range improvement and types of improvements into the planning process may be a very necessary key if we are going to get that integration there.

One issue that came up was the opportunities for public-private partnerships. Certainly, outsourcing was a very important part of it. There may be new opportunities. One individual in our group had the vision that the future state DOTs would consist of 50 people simply passing out contracts. That brought around some discussions about maybe the future state DOT officials will have a different perspective. Maybe the most important part of a planner's job in the future will be planning these types of projects.

Our group did discuss institutional barriers. People who are in management and operations, in many cases, have been very isolated from the planning process. Overcoming that barrier and seeing what planning's role is, is something that may present a real problem, especially when we start talking about statewide planning, and we start talking about 20-year, 30-year, 40-year forecasts.

It may be that operations and management has to be more of a generic sense.

We did talk also about the fact that the barriers are not only within a state highway administration but also could be a DOT and interagency problem as well. Many times, when we are talking about operations and management of our facilities, it is not just a DOT and not simply a state highway administration, but other agencies may be involved.

We came up with two succinct aspects of research that would really hit the heart of the matter of how would we get statewide planning and the operation and management program and activities integrated.

Number one, we recommend that there should be research dealing with the institutional barriers that exist now. What are some good examples of organizations, state DOTs, that have broken through those barriers, some good case examples of how that might be overcome. In fact, that is probably the number 1 problem that we need to resolve, is how do we overcome those institutional barriers?

The second research item that we talked about is, as a planner, if I can't model it, if I can't determine what the impacts are, if I have trouble identifying what it is, when it comes time for TIP or STIP or program development, it is going to lose out. If we can't measure it, then it really puts operations and management in a disconnect with our overall statewide planning process.

So one of the second basic research items is to develop a set of evaluation tools. Let's find some good ways, some common ways, some good practice, some methodologies, where we can determine what that operation and management will get for us.

Norine Walker: Incorporating Environmental Justice and Related Issues into Statewide Transportation Planning

Thanks to Lori's presentation, the stage was set with a host of issues uncovered in the sample group. Issues were grouped into particular areas:

- Data collection/usage/availability/census/relationship building.
- Action required—plan required project versus overall plan and updating. . . welfare to work, incorporated into TIP and STIP.
- Institutionality department to take seriously.
- Public involvement—regarding environmental justice; awareness is a confusing term. From DOTs to technical staff to politicians.
- Equity—financial—human resources in department, setting priorities, liability beyond fiscal constraints, and health issues.
- GIS training—tool application, mobility, and performance standards.

Cited examples throughout the country:

- PA 202—community groups; disproportionate impact.
- Seattle—where systems planning in place—light rail, selected and later claimed that they needed economic development.
- Washington State—SR 5 wealthy community opposed; fix is widen bridge.
- New York City—elevated structure being replaced and required looking at tunnel as alternative. Community felt hemmed in, isolated. So now, 10 years later, looking at tunnel.
- Florida—previously DOT fulfilled mobility issue, now becoming economic development issue. Funding based on target markets.
- Atlanta—recent court rulings—24 percent growth rate; 6 transportation plans since 1990 plan.
- Los Angeles—plaintiff's general interest.

Research needed includes:

- How to acquire NCHRP data and tools to analyze environmental justice issues. Issue may need early assessment (synthesis) and longer-term study.
- Synthesis of public involvement techniques that effectively reach EJ populations.
- Tools to use: 2000 census data for EJ analysis.
- EJ implications of incorporating into system.

Wende O'Neill: Current Technical Issues in Statewide Transportation Planning

We started out talking about methodologies and whether or not state DOTs really need big fancy models. The current response to that was they have the urban models and they do some growth factor-type models in the rural areas, and they knit them together. So there seems to be some uncertainty as to whether or not models are needed and, if so, what kind.

One of the biggest issues that some of the states said they were facing was looking beyond the borders and how their plans coincide with what is happening in other areas. That is a particularly important issue that, as opposed to just a statewide plan, it has to have a more regional, interstate type of planning approach.

Basically, there was no perceived need for statewide modeling, except for policy issues, where planning is needed to support policy issues.

One of the other topics that was debated was whether data was or was not a problem. There seemed to be a mixed feeling on that. Some people felt that data is a major issue. There seems to be no good historical data, and there needs to be a systematic way to monitor traffic, especially between states, so that there is historical information. So, when a consultant is hired to do a job, there is more information as opposed to them having to go out and collect data all the time.

Then we got back to what the appropriate modeling tools were. Essentially, there was some agreement that most of the statewide models that are just sort of adapted from the urban models and they aren't really appropriate for statewide modeling purposes. One suggestion is to really take a close look at who is doing what statewide in terms of modeling, what states are actually developing models as opposed to plans that are not based on models.

Another issue concerned freight and whether or not you need specialized modeling for freight. The conclusion there was that it really depended on who you were. Some of the states that are mostly pass-through states for freight would have a different approach from states that are along the borders. There wasn't any clear notion as to how to treat freight within the modeling process.

We did talk about mode shifts and how you would measure that, for instance, from truck to rail. If you are just measuring truck traffic, how do you know if that is getting lower, if that cargo is going to rail, or it is just going to some other state, that they found a state with better access. So, it is not really sufficient just to measure one mode, because you can't really draw conclusions about what is happening to that mode.

The conclusion was that the economic information needs to be provided to the governor on freight, and that basically there weren't any conclusions on how to incorporate freight into a modeling perspective.

The discussion turned to what is going on in the commerce departments, and are they the ones that can really forecast economic growth and change in the state, and that the DOTs are only one of many players in that. So in terms of forecasting freight changes, the people at the table sort of felt that that wasn't the DOT's job. It was just coming to the table when there was something going on in that arena.

We got into a discussion that the DOTs are really reactive, that they don't really forecast; they wait for problems to occur and then they address those. This was also in terms of, do they really need models. Some of the people felt yes, that is right, that is what we are and that is how we do it. Others thought, well, maybe we should be more proactive. No conclusions were drawn, unfortunately.

Three observations did emerge from the discussion:

1. We want to recommend that TRB establish a task force of experts around the country to identify why we have a skill gap, and what we should be doing about it. We started talking about this in the context of GIS, that there aren't really reliable GIS professionals out there. There is just a shortage, especially people who know GIS and enough about transportation to be able to build models within GIS. Then we talked about, well, there are people out there who don't know what to do with the data. So they don't have the statistical skills and they don't have knowledge about surveys and how to use information from surveys. Then we started talking about people don't even understand the four-step modeling approach. So that recommendation is really based on a lack of skills in not only GIS but in planning and modeling and in data analysis.
2. The group felt that training is the next most critical issue, and that there really needs to be more of a concerted effort by the agencies to focus on how to deal with the training gap and the credibility gap. Develop a mechanism for stronger ties between the university centers and the state DOTs and to basically try to address this issue of the skill gap.
3. The third recommendation is the state and local governments should consider bringing in expert assistance during proposal development, review, and selection as well as during the hiring process. There doesn't seem to be a mechanism in place in many states to do that. I know that I have been asked to help states in the hiring process for GIS. They ask me what questions should we ask; how do we know if this guy really knows anything about GIS? So we extended that from the hiring to the actual proposal that contains a certain technical portion, have sort of a pool of experts to not only write the RFP, but also review it and select a contractor.