

State of the Practice: Transportation Planning

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NEIL J. PEDERSEN

I will be discussing long-range, statewide, multimodal transportation planning in Maryland. There are three key words in the title: long-range, statewide and multimodal. I work for the state highway administration, so I come from the perspective of planning director of a modal administration. The approach that I am going to describe, nonetheless, is truly a multimodal and collaborative approach between the various modes.

I want to go quickly over some background although some of it repeats what Bill Hellmann said this morning, but I think it is important to remind you of some of this background in context.

Maryland DOT is truly a multimodal department. We not only have planning responsibility but ownership and operating responsibility for a number of different modes, including our 5,200-mile state highway system, the Baltimore area bus and subway system, the Port of Baltimore, and Baltimore-Washington International Airport. We also heavily support the Washington area transit system in that we pay all the local match on the capital side, as well as 75 percent of the operating subsidy.

We fund our transportation program from a single consolidated transportation program and all of the funding comes from a single transportation trust fund. This permits the revenues to go to the area of highest need and priority and provides a fair amount of flexibility. It is important, however, not to take advantage of that flexibility to the point that we have it taken away from us. We have to be careful in that respect.

Flexibility helps us make smart business decisions, particularly those that must be made in a short time frame. Bill cited the Piedmont expansion decision this morning. Because we do have enterprise modes within the state department of transportation—in particular the airport and the port—it is important to operate them like private businesses and to make decisions like private businesses, particularly from a time-frame standpoint.

We do find ourselves in a competitive situation with Dulles Airport, which offers stiff competition to BWI in terms of expansion. On the water port side we also have competition, between the Port of Norfolk and Baltimore. So, that flexibility has proven to be important to us when it comes to competition.

On the highway side, we have had a long-range planning process in place for a number of years. Called the Highway Needs Inventory Process, it is now law. Our highway needs inventory is our long-range, statewide "Master Plan" of major highway improvements. We used to call it the 20-Year Highway Needs Inventory; it listed all the projects that we expected had to be built within the next 20 years.

We recognized, however, that given funding constraints and other realities, many projects would not be built within the next 20 years. So we now call it the long-range Highway Needs Inventory, recognizing that many of those projects may be more than 20 years in the future.

Some 700 projects are listed in the Highway Needs Inventory. The inventory also addresses significant policy and funding issues. For example, it includes fairly comprehensive technical analyses of funding levels required for pavements and bridges. In fact those analyses have been critical in establishing funding levels for pavements and bridges.

We have had the good fortune of having a legislature that recognized as early as 1982 the importance of putting money into preservation of the system, and they have given us legislation policy guidance that it is to be our number one priority. We have also had the good fortune to have secretaries of transportation who have recognized and taken that priority seriously.

The Highway Needs Inventory under the law has to be updated every 2 years. Those updates are based on a technical process in which we look at service needs, safety needs and structural needs. But it is also tied into the political process.

We work closely with the local jurisdictions in Maryland. We have the good fortune of having a strong county form of government with only 23 counties. So it is a little easier to work with local jurisdictions than in some states, such as Massachusetts, that have a large number of local jurisdictions. We try to have as much consistency as possible between local jurisdiction master plans and our state Highway Needs Inventory. We are also under law obligated to notify the counties of changes and we do that every 2 years as we update it.

The Highway Needs Inventory serves an important function from a planning standpoint, in that we use it for corridor preservation purposes. The vast majority of improvements

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are on the existing system, as opposed to new corridors. When we identify a highway improvement need, we get setbacks from developers on the basis of improvements identified in the Highway Needs Inventory. We also work closely with local jurisdictions to ensure that development does not take place within the needed rights-of-way.

The Highway Needs Inventory is closely linked to the programming process. Through the Highway Needs Inventory process, for example, we are now identifying priorities for our anticipated next big effort at a revenue increase, which we expect will probably be in 1991.

I referred earlier to our consolidated transportation program. It is a 6-year, multimodal, statewide, capital program. Every September and October, we consult with elected officials in all 23 counties on an individual county basis. That consultation is extremely important from our perspective. We get tremendously valuable input into our planning process and it becomes a truly grass-roots planning process as a result. I cannot emphasize enough the importance of that consultation.

We identify strategic issues during the consultation, although a lot of the discussion is project-related. The consultation sessions are also valuable in terms of laying the groundwork for upcoming revenue increases. For example, we expect our next big push to be in 1991, the year after our next election. We are starting to lay the groundwork right now. We started in last fall's tour of the counties by identifying some of those needs; during the next 1989 tour, we expect to be providing additional information, 2 years ahead of that big push in 1991.

The elected officials take that consultation seriously. They know that it is probably their best shot at giving us their input and what they have identified as needs. Also, many other public sector groups recognize the importance of that process as well and provide their input at meetings.

Our consolidated transportation program, the 6-year program, not only identifies projects that are funded for construction, but identifies those projects that are funded for any of the four phases of project development: planning, engineering, right-of-way or construction.

That process is particularly important on the highway side because for a project to even go into the consolidated program for the planning phase, it has to be identified as a priority by the elected officials from the county in which it is located. So, that base level of support is needed before the project planning process can even begin.

The project must also be in the Highway Needs Inventory, which is a technical document, but on which we have consulted with elected officials. That may sound like a political process and to a certain extent it is, but at the same time it is technically based in that it puts tremendous obligation on bureaucrats to develop information for elected officials, who provide policy guidance and then give us back the list of priorities. In fact, with few exceptions, the priorities on that list are close to the priorities identified through the technical process.

I am now going to move from that background into our commuter assistance study (a multimodal effort to identify long-term needs) and expand on many of the concepts that we have developed through the Highway Needs Inventory process, and tie into the Consolidated Transportation Program process. We have identified 24 corridors around the state where we are doing multimodal transportation planning

for surface/passenger transportation. I emphasize that the planning is only for surface and passenger transportation.

We tried to limit the scope so that it is manageable, but we do expect that if this process is successful, it may expand beyond surface/passenger transportation. In particular, it may include freight as well.

The 24 corridors are all around the state. They are focused on our two major metropolitan areas, Washington, D.C., and Baltimore; but it truly is a statewide study, extending into our rapidly growing exurban areas.

Historically, about 75 percent of our capital program has gone into highway improvements; the next largest share is transit, about 10 percent of the program, followed by the port and the airport. One other point I should make is that the transit capital program, up until a few years ago, largely provided the local match for major subway construction both in the Baltimore and the Washington areas.

We had a proposal several years ago to build a 27-mile-long light rail system along an old freight line that ran north/south through the Baltimore metropolitan area. When the proposal was made, legislators from the rest of the state said that it was all fine and good for the four legislative districts that the line ran through, but asked how they would benefit. Then they immediately jumped on the band wagon, saying that light rail was the solution to all of Maryland's transportation problems. They favored a statewide light rail system and came up with proposals that together added up to nearly 200 miles of light rail.

We recognized quickly that many of those proposals did not make sense, but we had not done a study to determine from a multimodal perspective what did make the most sense. We faced the dilemma that planning in most of the corridors had been primarily highway oriented, with relatively little multimodal planning. For the most part, we had not studied the tradeoffs between highways and other modes, although there were a few notable exceptions that did entail multimodal planning.

We also recognized that many corridors had either already been built out, or were slated in our current program to be built out to the maximum extent with highways; but the impact associated with trying to provide additional highway capacity would be too great. Yet we were not sure what made the most sense in terms of a long-term strategy. We had done a lot of work, particularly in the 1960s and early 1970s, identifying needs that are now being funded; but we hadn't looked beyond the year 2000 recently from a multimodal perspective. So, we initiated the commuter assistance study.

We are using a set of evaluation criteria that fall into general categories of engineering feasibility, travel demand, service provided, capital and operating costs, and impact assessment. I think we have between 20 and 25 different evaluation criteria for which we are developing information in all 24 corridors.

It is important to recognize that we have not yet defined a clear process for using that data to define exactly how to accomplish tradeoffs between the modes. We intentionally want to keep that process somewhat fuzzy because it should remain somewhat political if we are to get the support that we need for funding the additional capacity, whatever mode it may be.

We are looking at the full range of improvements including light rail, commuter rail, high-occupancy vehicle (HOV) lanes,

express bus service, and park-and-ride lots, as well as highway capacity improvements. We are looking at the full range of alternatives in almost all corridors in a truly multimodal study.

The study process has several keys. Administrators from each mode are involved, including the State Rail Administration, the Mass Transit Administrator, the State Highway Administrator, and planning directors from each mode. All work together with the secretary and his staff. It is a cooperative study, but one with friendly competition because fundamental decisions coming out of it will affect the amount of money going into each mode.

Another key to the study process is that local jurisdiction staffs and elected officials are heavily involved throughout the study process. We consider it key to the success of the process that the local staffs and, probably even more important, the elected officials get into the process early, so that when we finish they can't sit on the side lines and take pot shots at us. We will also have public involvement later.

The commuter assistance study will be the basis for a multimodal needs inventory along the same lines as the highway needs inventory. It will be the basis for determining what modal projects go into the project planning phase. It will be the basis for programming decisions and putting together a package of projects that will sell the next revenue increase.

Our experience in Maryland in obtaining the passage of the last two revenue increases showed the importance of the list of projects. But almost as important, the list of projects must make sense from a technical standpoint, be based on sound technical planning studies, and have sound technical support.

In fact, if you look at the list of projects funded in our 1982 revenue increase and our 1987 revenue increase, I think you can see that there were no "turkey" projects in those revenue increases. I would like to think that it is because we did a lot of hard work planning and gathering the information that went into selling them.

Finally, AASHTO has a task force that involves two representatives from the standing committee on planning, Kirk Brown from Illinois and Neil Pederson on the issue of corridor preservation. It is an area that we, as planners, should be concerned about; so, we are preserving our options in the future. In fact, one emphasis in our commuter assistance study has been to identify those corridors that need to be preserved, not just for highway improvements, but for transit improvements as well. We are thus preserving our options well into the future, even if we may not be funding them during the next 10 years.

CARL B. WILLIAMS

It is overwhelmingly apparent that transportation policy today must be linked with land use, air quality, economic competitiveness, and related subissues. Yet today's state-level transportation funding and planning process is the same used when the objective was to spend a large single source of revenue on major new highways linking cities.

The mobility problems facing California today cannot be solved by a single solution. Rather, a combination of capital and operating strategies must match the environmental and travel demands of each regional area with the supply of service

that is feasible in those circumstances. What works in urban Los Angeles may not work in rural Eureka. Planning for development of our transportation systems must consider issues of system integration and regional impact, as well as local needs and plans.

Today the challenge is to preserve interregional mobility and improve urban mobility. A web of new local revenue sources has evolved to drive locally initiated solutions. Yet the state (compelled in part by the federal government) is still running a funding and planning system that only crudely responds to problems of urban congestion, minimally addresses issues of rural access, and more often than not gives priority to projects that do not offer the best solution to transportation problems.

In addition, current expenditure prescriptions for federal, state, and local transportation funds constrain the programming and funding of transportation improvements as interdependent elements of a larger transportation network.

These provisions in federal and state law can interfere with funding the highest priority transportation projects because they impose categorical limitations on how funds can be used and what transportation mode they can be spent on, and they require rigid geographic distribution of funds. As a result, each element of the system competes with all others, constituencies become entrenched around their special interest, and the integration of systems that is so essential to the overall functioning of the transportation network, does not occur.

NEED FOR SUBREGION/CORRIDOR APPROACH

Currently, transportation decision making is the responsibility of numerous entities including the state, cities, counties, transit districts, transportation commissions, special transportation authorities, regional transportation planning agencies, air pollution control districts, and land use regulators. Each level of government has something the others need for the success of their own goals. Each agency has a unique focus but shares a common (if not always recognized) interest at the regional or subregional level.

Transportation solutions must originate and be implemented where the problems occur. We need to be working together at the regional and subregional levels to develop, agree upon, and carry out specific solutions. For the best interests of the state, the regions, and the cities and counties, we need corridor/subregional transportation planning to

- Better link land use, air quality, transportation planning and programming, and implementation across jurisdictional boundaries.
- Promote intermodalism and better target limited resources by ensuring that the most cost-effective transportation solutions are identified, given appropriate priority, and funded.
- Begin to integrate state highways, county roads, city streets, and transit facilities into a single coordinated and well-tuned system.
- Promote direct and vigorous participation of all corridor jurisdictions in the planning, programming, and implementation process.

SUBREGION/CORRIDOR APPROACH DEFINED

The subregion/corridor approach is an extension of current comprehensive transportation planning efforts designed to address transportation problems and prioritize and fund their solutions. The subregion/corridor approach addresses transportation problems in both rural and urban systems on a multimodal and multijurisdictional basis.

There are two generally agreed upon types of corridors: rural and urban subregional. Rural corridors are those that can be identified by specific termini (e.g., Sacramento to Redding). Urban subregional corridors are urban area systems that must be examined as a single closed multimodal system even though they may lend themselves to further subdivision or may be part of a larger area system (e.g., The Golden Triangle in Santa Clara County).

Simply put, the subregion/corridor approach brings all the responsible decision makers together to develop an integrated program of improvements (including all modes and strategies), pools funds to pay for the program, and then implements it. To accomplish this, three elements in the planning, programming, and implementation process either need to be included or need to be strengthened:

- A *binding commitment* on the part of each agency to seek common solutions in the corridor study effort, to develop a workable plan of financing, and to follow through in implementing their respective portions of the integrated program.
- An *integrated program* of multimodal improvements to increase capacity and to reduce congestion. This means combining demand management measures, transit improvements, and new capacity on state or local facilities into one subregional network package. Without an integrated and coordinated system of good arterial networks, transit systems, traffic operations centers, and demand management, additional freeway development will be of little benefit in addressing transportation problems.
- A *flexible pool of money* to fund the implementation of plans and to ensure that the funding is applied to the plan's integrated program and its agreed upon priorities. This means changing or removing existing use and decision constraints on transportation funds.

HOW THE PROCESS WORKS

The subregion/corridor approach is a method to address the subregion's problems as a whole. Elected officials and civic leaders must be committed to resolving transportation problems without preference for a specific mode, facility or agency. The operating premise must be that each player benefits as the group succeeds.

Caltrans, regional transportation planning agencies (RTPAs), and local transportation commissions will develop guidelines for conducting corridor studies. These guidelines will include a method for prioritizing among studies; identification of funding; modes to be studied; land use, population, and air quality considerations; and a system for setting priorities among projects within corridors.

The RTPA will be responsible for the overall process of identifying corridors, ensuring public involvement, scheduling studies in the annual overall work plan, and conducting or

commissioning the corridor studies. The state (Caltrans) will be responsible for this process wherever a corridor is not being studied by the RTPA. Upon completion of the studies and following a public hearing, the corridor study is amended into the Regional Transportation Plan (RTP), and included in the Regional and State Transportation Improvement Programs (RTIP and STIP). Corridor plans must be consistent with and incorporated into 11 state, regional, and local plans or a resolution of overriding considerations must be adopted.

The determination of how each program element would be funded would have to take into account existing commitments and other stipulations that could influence funding flexibility. State funds currently programmed for a state highway in STIP could be reprogrammed, for example, for an improvement to a local arterial if the corridor/subregional process determines it to be a more effective transportation solution.

Corridor/Subregional transportation planning will be a major shift in transportation planning and funding. It moves to a more regionalized and localized approach in which urban and rural transportation problems will be addressed on a multimodal and multijurisdictional basis. It focuses authority and responsibility at the regional and local levels and begins with comprehensive, detailed, and integrated corridor studies. Following study adoption, priorities are set for the best transportation solutions from the full range of highway construction, public transportation, traffic management, and other available approaches.

Because the corridor/subregion concept depends on a higher level of cooperation between the state and a variety of local transportation interests, its development and enactment also requires unprecedented coordination. The corridor/subregion process has been shaped by many regional and local entities under state leadership.

Corridor/subregion transportation planning has been presented as a policy option by Caltrans at numerous local and state forums over the past several months. Responses have ranged from negative to enthusiastic. Most concerns expressed have related to protecting existing authority or jurisdiction and are most often addressed to the manner of implementing the concept, not to the concept itself.

STATUS OF ITS IMPLEMENTATION

On June 30, 1989 the California Legislature passed a new transportation program to deliver \$18.5 billion of new revenue over the next 10 years. The new transportation program allows California to use existing revenues to support the state's basic program of maintenance and rehabilitation while using the new revenue to drive new ideas. Those new ideas are

- **Flexible Congestion Relief Program:** Removes the artificial proscriptions on what the new dollars may buy, allowing the decision maker to fund the highest-priority projects based on the quality of the project and its ability to relieve traffic congestion;
- **Congestion Management Plans:** Forces all transportation decision makers in urbanized areas to work together to plan and operate an integrated surface transportation system in order to maximize the dollars they receive;
- **Program Management:** Lengthens the time frame of the STIP to 7 years, eliminates bureaucratic red tape and caps

project development overhead percentages to cut delay and contain costs, ensuring that the new dollars will be converted into transportation improvements; and,

- **Privitization Demonstration:** Provides the private sector an opportunity to invest in the transportation infrastructure through a "Build-Operate-Transfer" arrangement with the state.

One factor that will influence the success of California's new transportation program is creating of the National Transportation Program. The national program will affect California's ability under the new state program to allow maximum flexibility in the use of transportation dollars and to address transportation issues as an integrated system rather than as a group of competing modes, categories, projects and jurisdictions.

SUSAN MORTEL

I would like to talk to you today about the Michigan Department of Transportation's investment planning process and some of the successful strategies that we have used to implement that investment plan, and a little bit about where we are headed.

The Michigan Department of Transportation is facing challenges related to funding just like any other department of transportation. We are trying to make our existing dollars go farther and target our investments to accomplish the greatest return. One of our most important tools is our investment planning process, so I would like to give you an investment plan update.

Our investment planning process is a logical extension of many traditional planning tools such as needs studies and revenue forecasting. In this instance, however, it incorporates investment planning in a long-range step-wise process that we refer to as resource allocation, using the old tools and building on them to form our new tool, our investment plan.

Resource allocation is a process that many states have, but they may not call it resource allocation. We begin with a needs study, which is an inventory of all of the capital needs of the transportation system and then go on to a state transportation plan (STP), which is a policy document (Figure 1). The STP is approved by our state transportation commission and it determines which of the needs are most important and which we are going to target first. In fiscal analysis we estimate how much money we are going to have in the future to apply to those needs. The investment plan begins the implementation phase, dividing revenue into broad program categories over a 10-year period according to the priorities set in the state transportation plan.

We then develop a long-range program, which puts projects into those broad categories, and an annual program, which is simply an annual breakout from the long-range program and sometimes referred to as a construction program.

By investment planning I do not mean investments in stocks and bonds. One of our aeronautics commissioners, when told recently that he was going to be presented with an aeronautics investment plan, thought that aeronautics funds would be invested for the short time between tax collection and application to capital investments. But we are talking about capital investments. We are approaching this as a transportation plan-

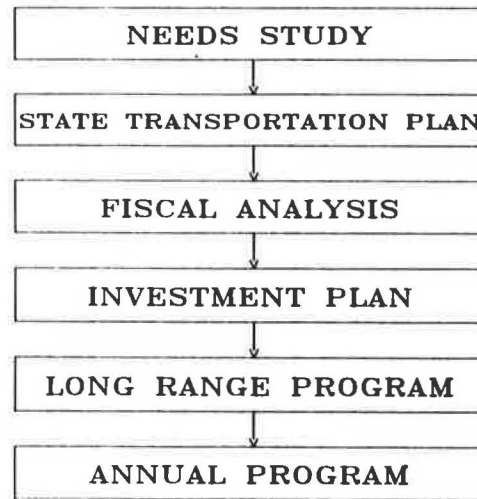


FIGURE 1 Resource allocation process.

ning tool and not specifically as a budget tool. We allocate our available revenue to an investment plan with broad program categories and then work as an organization to produce department programs and investments consistent with that plan. No projects are actually mentioned in our investment plan.

That investment plan is the means of carrying out strategies linked to transportation policy and of providing structure to the department's spending. It requires that we look forward and make some important decisions about priorities and prepare to be held accountable for how funds are going to be spent in the future.

Explicitly stated goals and objectives are thus needed for each mode. Most states have goals, although they are not necessarily explicitly stated. We have to know what the system will look like at some point in the future and have an idea of how much change in the system can be expected for a given investment level.

Our investment plan has had an important stabilizing effect on our program and has helped to keep the program in line with expected revenue. We now have three investment plans in various stages of development and sophistication. We started with highways several years ago and are now nearing completion of the aeronautics plan. We have the most experience with the highway mode, so I will focus on that for a few minutes.

First, let me comment on the role of a needs study in our investment planning process. The needs study is one of our most important ingredients for success because it gives a base line for determining how much of the various categories you will want to buy. The updates of these needs, based on yearly condition information, provide the data needed to measure progress toward goals.

The question "what is a need?" is central to investment planning because the essential must be separated from the non-essential. Evaluating what a need is gave us the basic structure of our investment plan, which we refer to as preserve, improve and expand. That structure forms the underpinnings of our entire investment planning process (Figure 2).

Preserve refers to maintaining existing services and facilities. This definition applies to all modes. For highways, pre-

serve includes all traditional "3R" actions, increasing facility capacity services already in existence. Expand means new roads, new services, new programs, new facilities.

I mentioned earlier that it is necessary to develop clearly stated priorities. Within the preserve, improve, expand structure, we have determined that preservation is our first and most important goal. Our initial investment plan allocated all but about \$400 million over a 10-year period to preservation. Through the needs study, we calculated the cost to preserve the system at a specific level and then set some strategies within the preserve category to carry out our goals.

The preserve part of the investment plan has a discrete set of priorities with specific dollar amounts attached to each of those subcategories (Figure 3). But even within the preserve category, it is essential to have some strategies for accomplishing your goal. Otherwise, you know the destination, but have no map.

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- 1. PRESERVE**
To maintain the existing system.
- 2. IMPROVE**
To add capacity to the existing state trunkline.
- 3. EXPAND**
To add state highway service.
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FIGURE 2 Structure of the investment plan.

For example, within the preserve category we specified a subcategory of "repair road surface and base." The dollar amount allocated for the next 10 years is based on our needs study and subsequent updates. But we needed another way to further target preservation money because "repair road surface and base" is a very broad category with a large sum of money assigned.

We refer to a subset of our 9,500-mile trunkline system as the priority commercial network (PCN). It includes about half of the 9,500-mile state trunkline system and includes the entire Interstate System (Figure 4). Our priority commercial network contains all routes essential to our state's economy, including high-volume truck and long-distance travel routes, and the entire Interstate System. It serves all our major population centers.

Through census information and a computer modeling process, we determined where the value of agriculture, forestry, wholesale, manufacturing and tourism were located in the state and which roads were most necessary to serve those economic sectors. We calculated that between 80 and 95 percent of the value of goods and services related to each of those sectors of the economy travel on the PCN, yet this is only half of the state trunkline system.

Developing the PCN was an important part of the overall state preservation strategy (Figure 5). Starting with the modeling process, we set some standards for the PCN and assessed the needs and the condition of the system. By a process of allocating dollars to program categories, we set some mileage targets. Now we have only to select projects consistent with the strategy and make sure that implementation follows.

I would like to tell you more about another part of the investment plan, focusing for a moment on aeronautics. We have underway the development of our first aeronautics

	Millions		Millions
INTERSTATE		NON-INTERSTATE	
Interstate Completion	\$ 158		
PRESERVE		PRESERVE	
Repair Surface/Base	\$ 746	Repair Surface/Base PCN	\$ 430
Bridge Rehabilitation	122	Non-PCN (Good Roads)	279
Bridge Painting	73	Shoulder	30
Safety	24	Bridge Rehabilitation	103
Traffic operations	37	Bridge Painting	62
Roadside Environment	<u>66</u>	Safety	41
		Traffic Operations	168
SUBTOTAL	\$1,068	Roadside Environment	<u>36</u>
		SUBTOTAL	\$1,149
IMPROVE			
Widen	159		
Interchange	<u>24</u>		
SUBTOTAL	\$ 183	IMPROVE/EXPAND	\$ 700
INTERSTATE SUBTOTAL	\$1,409	NON-INTERSTATE SUBTOTAL	\$1,849

FIGURE 3 Highway Investment Plan, 1989–1998; total: \$3,258 million.

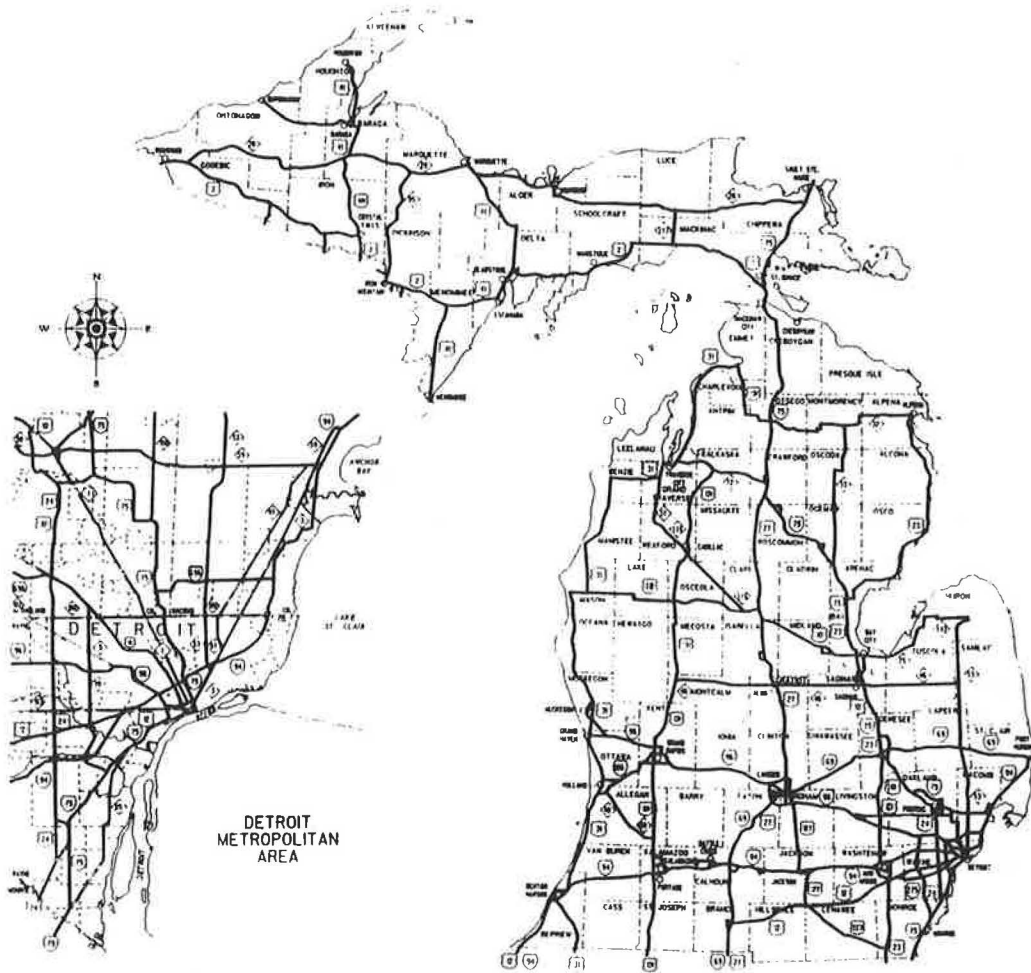


FIGURE 4 Michigan priority commercial network.

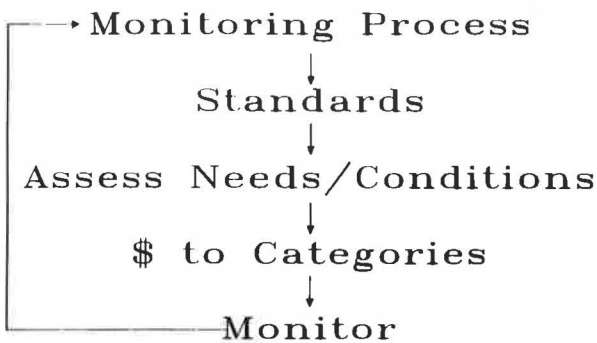


FIGURE 5 PCN strategy.

investment plan. Although our priority system is fairly well developed, in this case we are hampered by a lack of comprehensive condition information for public airports in Michigan. The assessment of total needs is underway, but for the time being we are applying our priority structure to the expected revenue and making some judgments about the goals and the types of work that are most important. We expect about \$390 million to be available in the next 10 years for aeronautics. As in many states, the program depends heavily on federal aid.

There is a shortfall between the revenue and our current needs assessment of about \$546 million (Figure 6). The shortfall probably looks familiar to most people here. So, we have been applying our priorities to this structure, starting with safety (lighting, approach clearing, safety signals on primary runways); and then going on to primary airside (runways and taxiways); and on to secondary airside (less important secondary runways and taxiways); and then to the primary landside issues (terminal buildings, access roads, tie-downs); and finally, the secondary landside (fencing, storage, service roads).

In addition to the facilities aspect and capital investment, we have focused on two service issues. One is the fact that some smaller cities in Michigan are losing business because it is perceived as cheaper to drive to Detroit than to fly to Detroit for an airline connection.

We developed a promotion called "Fly From Nearby," to get people to take another look at the cost of flying out of their local airport instead of driving to Detroit. We are working with local government and the promotion has just started, so, it is a bit early to tell what the outcome will be. So far, we think that the marketing effort is working.

The second service issue is referred to as "Access Michigan." Deregulation hit half of Michigan's airports very hard. They experienced a 50 percent drop in passengers and some never recovered. The result was some severe impacts on eco-

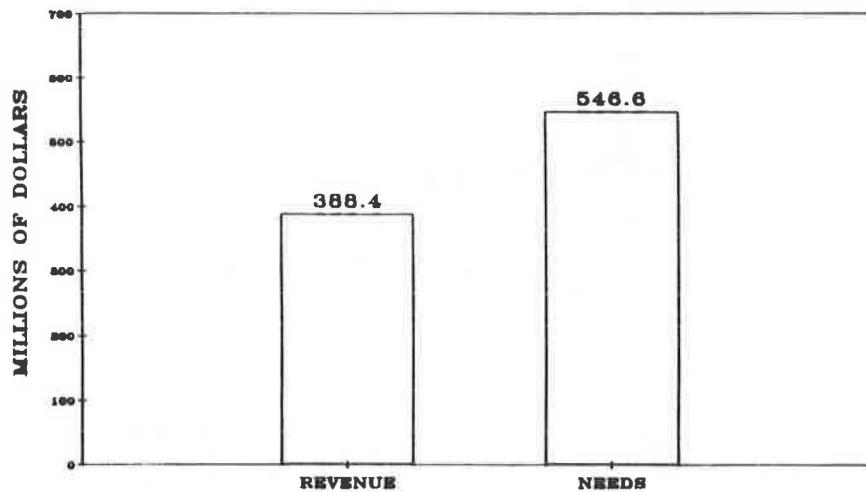


FIGURE 6 Aeronautics Investment Plan revenue/needs comparison, 1989–1998.

conomic growth. The purpose of our Access Michigan program is to induce some airlines to provide upgraded air service by guaranteeing profitability for a limited time on selected routes.

We have been working with local units of government to determine which cities will participate in Access Michigan. Local government is responsible for 50 percent of the cost of a market analysis and feasibility study. It is also responsible for part of the financial guarantee to the airline.

Access Michigan has some very specific goals, the first of which is to improve accessibility; the second, to support private initiatives that create or retain jobs in specific urban areas; and then to encourage the development of facilities that will bring travelers and businesses to Michigan.

One important aspect of Access Michigan is the belief that these air routes can be profitable and all we need do is work closely with the airline companies and with local government to structure the program so that the minimum guarantee is not needed for long.

The program is set up around some specific and strict eligibility factors and we are looking closely at evaluation criteria to select cities. We will also measure impact and effectiveness and estimate that the three cities targeted for service will have routes that are self-supporting by the end of the 3-year period.

The first city chosen for Access Michigan is Traverse City. In this instance we worked with Northwest Airlines to add jet service to the Traverse City Airport to support a growing convention business at the resorts.

The last aspect of investment planning that I want to talk to you about is monitoring. The term monitoring may sound “after the fact” or “passive”. It is not—we approach it in a proactive way. It not only measures progress, but makes sure that progress happens. A successful investment plan must be actually used as the guide for allocating money and for choosing projects. This requires a direct line between the investment plan and the development of long-range and annual programs in which projects are actually selected (Figure 7). With this link, you can monitor the progress of the investment plan over several years. Without this link, you have a plan that is put on the shelf and dusted off a few times if it is necessary to make a good impression.



FIGURE 7 Direct line.

By monitoring I mean the process of evaluating whether your plan is working and whether you are on or off target and whether the organization is, indeed, adhering to its chosen course of action. To do this, you have to be involved in project selection, which may be a new area for some planning organizations.

In Michigan DOT, planning is involved in the process of project selection. I serve on a group called the Project Section Committee and my main function is to help the rest of the group think in terms of broad program categories and goals, making sure that project selection fits within the framework of the investment plan.

In planning, we have learned that organizational dynamics over the last several years, and our path, has been at times anything but direct. But we can compare the results of our first several years under an investment strategy for highways and see progress (Figures 8 and 9).

One of the first measures, of course, is the number of miles improved. Our targets for the number of miles to be improved are 4-year goals. On our Interstate System we targeted 432 miles and met our goal. We had targeted over 1,800 miles for non-Interstate progress, and we exceeded our goal.

In addition to the simple miles improved, we are also seeing a shift in the overall condition of the system. On a scale of 1 to 5, where 1 is the best condition, the overall average system condition in 1985 was about 2.8. Now, after 4 years, we have significant improvements in the average condition of the Interstate System and PCN, with only a minor decrease in the

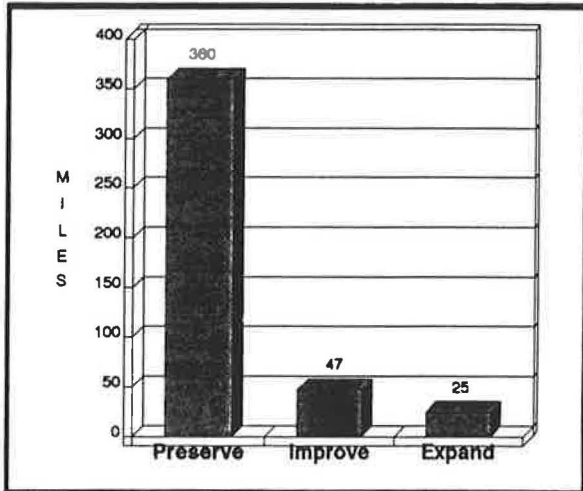


FIGURE 8 Interstate progress: 432 mi, \$732 million; 129 percent of 4-year preservation goal achieved.

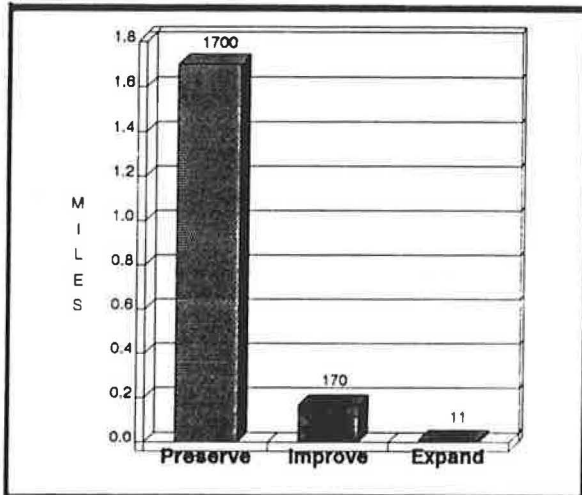


FIGURE 9 Non-Interstate progress: 1,881 mi, \$708 million; 109 percent of 4-year preservation goal achieved.

average condition of the PCN. We are currently analyzing the implications of this news.

Our field engineers, by the way, have expressed considerable concern over the PCN strategy because some resisted the idea that part of the trunkline system was more important than some other part. We have not experienced any complaints, however, from the motoring public with this targeting of resources. As a matter of fact, we have had fewer complaints from truckers about the condition of our Interstate System.

The data in Figures 9–13 show that we have moved a large group of pavements from the poor and very poor categories in our Interstate System all the way to the number one category by targeting funds. We have seen remarkable progress.

Another factor that tells us that the PCN strategy is working is that the cities and counties have approached us and are interested in developing a secondary commercial network that applies to county and city roads.

Other aspects of monitoring are also important. Monitoring enables you to establish a relationship between investment and a deterioration rate, which will be very useful for incorporation into a pavement management system in the future. It also enables you to verify that the department is meeting its commitments. It allows you to document how gas tax revenue is being spent so that when gas tax time comes around, you have the data to verify that it is being well spent, targeted, and accomplishing its goals.

So, monitoring is an important management tool, providing feedback at checkpoints that serve as the basis for revisions and adjustments to the categories. Our investment plan is not rigid and inflexible. We have a process for evaluating and changing and for reevaluating implementation progress regularly.

Organizational self-discipline is needed in order to make the investment plan work because there is constant pressure to add here, to move this into that category and to shuffle things around. Suddenly, you find that your program has grown by millions of dollars.

From here we go on to finish our comprehensive transportation program investment plan and work on increasing the level of sophistication. Our challenge is to integrate and consolidate our investment plans. We will not be able to solve

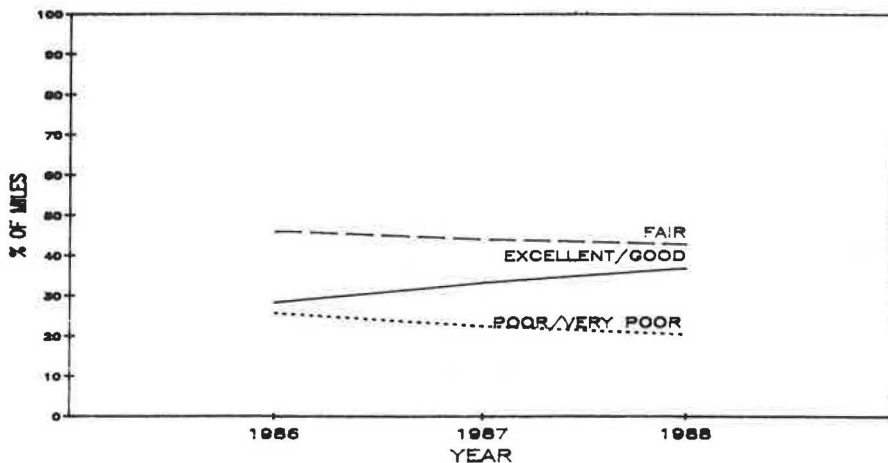


FIGURE 10 Priority commercial network trends statewide.

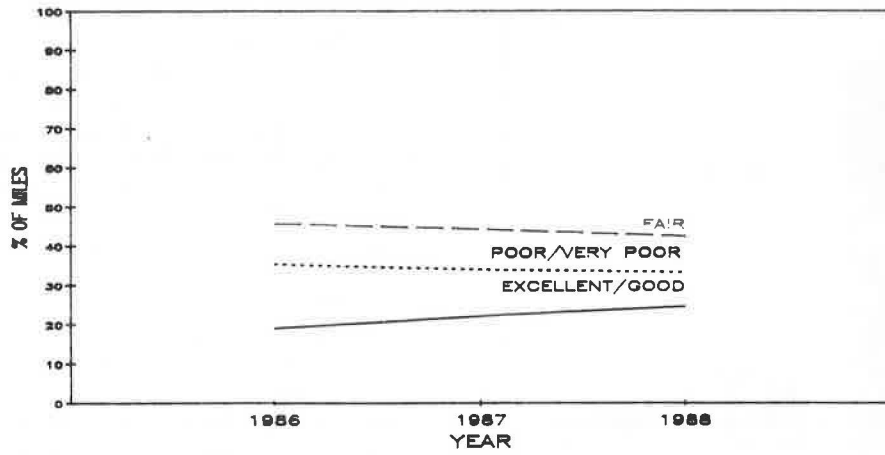


FIGURE 11 Nonpriority commercial network trends statewide.

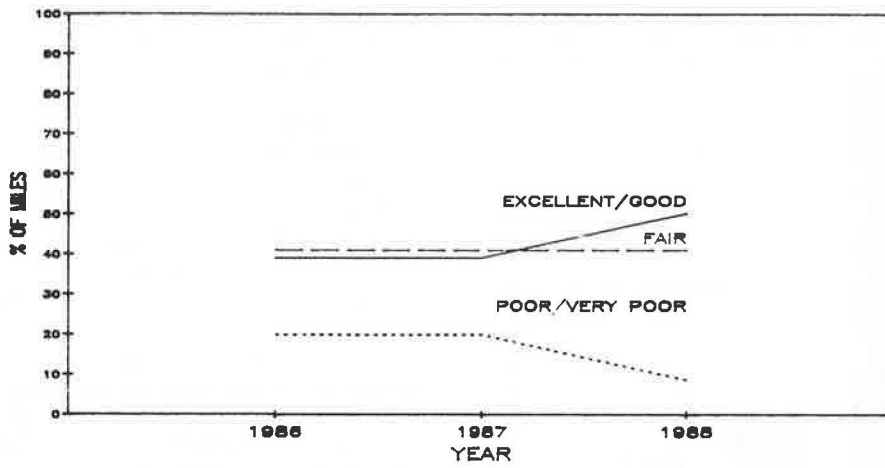


FIGURE 12 Interstate trends statewide.

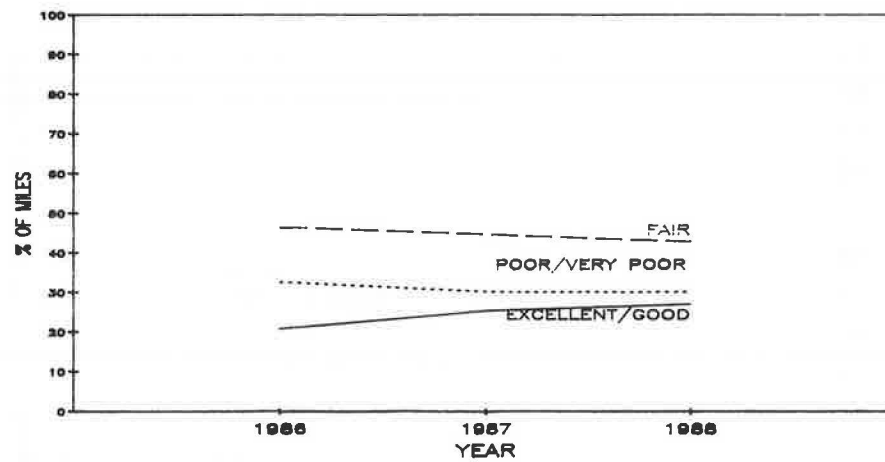


FIGURE 13 Non-Interstate trends statewide.

the transportation problems of tomorrow with any one mode. There is no way that we can widen the Interstate enough to take care of all the travel in particular corridors. We are going to start integrating the investment plan and take a good, long, hard look at how we can use public transportation to remove some of the burden from our Interstate system.

I like the “smart money” concept mentioned earlier because I think we are going to have to be a lot smarter as planners. Not enough money is available to do everything that is needed; so targeting resources makes good sense for the future. I think that we have taken the first important steps.

HENRY PEYREBRUNE

I have been asked to serve on this panel from my role as Chairman of the AASHTO Modal Technical Advisory Committee (MTAC) and in my role in New York State Department of Transportation, which has a vital interest in preserving and enhancing public transportation in the state. I would like to review my impressions of the 2020 efforts and then try to relate these to statewide multimodal planning with some illustrations drawn from New York experiences.

I have participated in the development of and reviewed various reports coming out of the 2020 process and several conclusions jump out at me:

1. All efforts have been basically modally oriented. Why? We do not have the tools, process or organizational structure to plan on a multimodal basis.

2. The data base to make multimodal tradeoffs is almost totally lacking. Highways has a good data base, and HPMS was very helpful in conducting analyses of alternative funding scenarios. Many of you have heard of our problems in developing a transit data base. Illinois was successful in this effort, but the data were lacking here. Something as critical as a bridge data file for HPMS analyses did not exist and has yet to come on line. For other modes, the situation is even worse.

3. Data that were available suggest the following conclusions important to the scope of this conference:

- A. Not enough money will be available to do all the things that people want done in 2020.
- B. The needs estimates for 2020 are dramatically understated because they are in constant 1986 dollars and do not recognize the real effect of annual cost increases attributable to inflation. In New York we have been using an annual inflation rate of 6 percent for capital programs. Over a 10-year period, a 1986 constant dollar figure is low by 78 percent.
- C. The cost of maintaining our infrastructure highways and transit, when factored by inflation, significantly exceeds current revenues on any revenue scheme being discussed currently.
- D. If maintaining the infrastructure has the first call on limited resources, little money will be left for adding new capacity. This is especially true for the Northeastern states.

4. AASHTO’s transit analysis shows that we are entering another period of disinvestment in our basic transit system,

repeating the mistakes of the 1950s and 1960s. If transit systems are to maintain their current absolute ridership, funding for transit must significantly increase. If transit is to maintain the same percentage of the total trip market (some 3 percent) or 20 percent of top 20 area work trips, transit ridership would double and the funding requirements further increase.

5. More highway funding is not necessarily the solution. Tests run under the 2020 process showed that between 11,000 and 25,000 lane miles of capacity improvements are needed at locations where such additions are considered to be infeasible. Highway service performance measures show a general decline even under the high-funding scenarios.

6. Based on present trends, 102,000 miles of new urban highways will be needed by 2020. If only 20 percent of these cannot be built (because of right-of-way and financial constraints) and the demand were shifted to transit, ridership would double.

7. The key solution bounced around is to increase “mobility,” which is usually interpreted to mean maximize person carrying capacity vs. vehicle capacity, or put another way, get more fannies into empty seats. Yet 2020 did not (could not) measure this potential although it is seen as the solution—more on this later.

SOLUTIONS FOR BETTER STATEWIDE PLANNING

In reviewing the 2020 process, I would like to discuss several implications for multimodal statewide planning with some New York illustrations.

Goal-Driven Scenario Planning and Programming

The 2020 process did not use the traditional “oh my God” needs estimates, but rather used a series of goal-based scenarios that say if you want to meet this goal, it will cost you X dollars. If you want a higher goal it will cost you extra X dollars. Running the analysis backwards, if you do not invest in the system, you can expect this condition and level of service. This analysis was very powerful in 2020 and leads to one of the major conclusions: you can pay me now (in program dollars) or pay me later (in increased travel costs).

We have used this type of process extensively in New York for both statewide resource planning—to establish revenue estimates for scaling future funding needs—and for developing our 5-year capital program.

The process involves several key items:

- 1. An up-to-date continuous inventory of conditions that can be readily translated into goals, e.g., no more than 10 percent of pavement surfaces rated poor.
- 2. A model (analogous to HPMS) that takes into consideration
 - Continued deterioration,
 - Impact of programmed fixes on deterioration,
 - Impact of different program mixes, and
 - Impact of inflation.

We used this approach successfully on a statewide basis to (a) scale the need for future funding; (b) convince the gov-

error, legislature and public on the need; and (c) develop support and pass a 4-year \$3 billion Bond Issue that essentially doubles highway program.

We also used the process for the past 2 years to develop and update our 5-year capital program. It allowed us to focus resources on our bridge infrastructure problem, for example, and as a result our latest goal-oriented program shows a significant improvement predicted in overall bridge condition.

Goal-Oriented Capital Programming

This method manages a capital program by establishing goals, setting clear objectives and measuring program performance in attaining these goals on objectives. It is the extension of goal-oriented management to developing and managing a capital program.

The first step in the process is to set realistic measurable goals for the 5-year capital program using condition surveys and computer models tempered with old-fashioned judgment.

The second step is to measure the performance of alternative 5-year capital programs against goals using quantifiable performance measures such as percentage of lane miles in poor condition, number of bridges requiring structural repair, and highway locations where accidents can be reduced by cost-effective capital projects.

The intent is to use highway and bridge inventories and computer models to assess the current and future implications of alternative program strategies. These mechanisms allow us to measure progress toward goals and to explain the implications of program changes to our public stockholders—the legislature and people of New York.

The advantage of having this kind of process in place became apparent in dealing with last fall's \$3 billion Action Bond Program. An initial Capital Program was developed in conjunction with the department's regional directors. (Later Metropolitan Planning Organizations (MPOs) were involved in the approval process.) Then the capital program was presented in the New York State Legislature. Adapting the capital program to selected changes desired by the legislature was helped immensely by the goal-oriented management process and the program evaluation mechanisms that were available. This was accomplished in such a manner that a very effective and realistic capital program resulted. The department won. The legislature won. And, more important, the public will benefit from a program of important capital projects that reflect deliberate negotiations—but with program results evaluated and interpreted using the goal-oriented management process.

This process has been instrumental in keeping the legislature focused on the needs of the department. It has also been useful in helping remove some of the subjectivity from the selection process. There are fewer tradeoffs and the consequences of having a project that may not meet the goals are clearly understood.

Return to 1960 Planning Techniques

The process is technically sound, well developed and sophisticated—it estimates, forecasts and models travel behavior. The process is also politically sound—MPOs are well accepted

and serve to integrate technical decisions into a complex political environment. The expressway is no longer the ultimate answer because in many areas we have reached the practical limits of new construction. These limits include lack of funds, political constraints, and limited rights-of-way.

The key word now is "mobility." Emphasizing mobility is the key to solving all our problems, but nobody has a real definition of what that means, no ability to measure or project if the argument has any substance and no way to know if the traveling public will respond. The strange thing is that I believe that mobility programs are the answer even though I do not know why—probably because it is the only answer possible when you look at all the other alternatives studied by the 2020 process.

We know the manifestations of mobility. It involves unused seat capacity in single-occupant cars, it involves measuring capacity in terms of people moved rather than vehicles moved, it involves filling empty transit seats in off-peak hours. It involves coordinating the various special-service transit systems to reduce duplication and save scarce resources. It involves coordinating schedules and fare policies of various transit providers on a regional or statewide basis. It involves coordinating toll policies with parking policies and transit pricing strategies.

Role of Growth

Most people believe that the largest growth is occurring in the South and West. There is some truth to this but both New York State and the New York City region are also experiencing some extraordinary growth. The growth in vehicle-miles traveled has been at about 3 percent a year statewide and will probably continue at this rate.

The absolute growth is startling. NYMTIC data show that more than a million new commuters have been added since 1977. Because absolute numbers of people travel, not percentages, this presents a significant challenge in New York.

The New York metropolitan region has experienced a 50 percent growth in travel. Transit ridership there is already 84 percent in peak hours to Manhattan CBD, where an HOV lane already carries more than 30,000 persons per hour. Existing rights-of-way there are constrained and significant infrastructure programs lacking.

The dominant journey to work has become the trip between suburbs (60 percent of the total for the region). This trend further exacerbates congestion problems owing to gaps in the highway and transit systems linking suburban job sites and suburban housing.

New York City truck operating costs are double the national average, according to AASHTO. Increased congestion is expected to even further reduce the efficiency of truck-borne goods movement. Current resources to fund needed transportation improvements from federal, state and local governments will be insufficient to keep the region economically competitive.

The negative effect of increased traffic on the economy is beginning to be felt even in the suburbs. Long Island's share of new jobs is projected to fall from 19.8 percent in 1987 to 10.7 percent in 2005 because of land access constraints, according to RPA.

In short, forecasts of growth in regional population and employment, along with other underlying causes of increased transportation demand, cannot be easily reconciled with the limits of the already overtaxed regional network. Thinking in terms of mobility of people and goods is the only possible solution. Enough new highway capacity to handle the problem is simply not an option.

SUMMARY

Mobility is the key. In New York we think the key is to institutionalize mobility thinking into all processes in agency and metro areas. One means to accomplish this is to develop more planning techniques. In addition we need to better integrate the various modal groups within DOT, within urban areas, within the MPO structure.

Better measurements and goals must be established for our program managers. Instead of measuring capacity as number of land miles of Level of Service X, for example, measure capacity projects in terms of number of hours or minutes of congestion relieved per dollars spent: for example, a capacity project in the north country to relieve 15–30 minutes of congestion may be worth X dollars, whereas on the Long Island Expressway, which operates at Level of Service E for X hours, the max project may still have 1, 2, or 3 peak hours at Level of Service E or F, but the remaining hours with less congestion are worth Y dollars.

On the highway side, we are trying to look at each congested corridor slated for improvement and review the corridor for potential or improved person travel. Examples include the Long Island 4th lane, a highway which was originally a commuter run to New York City but is now more intra-island. Another example is the Cross-Westchester expressway, where we have decided instead of a \$40 million rehabilitation to do a 20-mile-long HOV for basically suburb-to-suburb travel.

On the transit side, we held our own 2020 conference and came up with some conclusions similar to the 2020 results. The discussion centered around the role of transit operations in dealing with mobility issues. Some felt that they should become full-service agencies dealing with carpools, vanpools, and HOV, and that anything with more than one person per vehicle was transit. Other operators felt that transit agencies should continue to do what they do best, move large quantities of people rapidly to work and back and that getting too extended would sink the whole thing.

Clearly there is an institutional void in our metro areas. On the state side, it is even more difficult to institutionalize mobility thinking. Agencies usually concentrate their plans and energies on the facilities they own and manage because that is where the political liability rests. For example, if a state bridge falls, there is no question who is politically liable. Because state agencies generally do not run transit systems, there is a tendency to step back from mobility-type problems. State agencies have to take the leadership role and recognize that concerns of mobility affect their own facilities as well as those of other institutions. We need to break down these institutional barriers if we want to make any progress.