



An Overview of Pennsylvania's Statewide Long-Range Transportation Plan (PennPlan)

Final Report

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by

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This report presents a summary of the Pennsylvania Long-Range Transportation Plan (PennPlan), including the rationale, background, process, and key steps that led to the creation of this plan. PennPlan's unique public involvement program is also provided in outline form, and its role in decision making is explained. One key element of PennPlan, accountability, is presented with examples of goals, objectives, performance measures, and target values for these measures to be achieved in the next 25 years. Monitoring and implementation aspects of the plan are discussed together with PennPlan's relationship to statewide planning rules and regulations emerging from recent legislation.

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INTRODUCTION

The Pennsylvania Department of Transportation (PennDOT) adopted a transportation policy plan in 1995 that identified seven broad goals and several objectives to assist in achieving these goals (1). Although this represented a good start, the need to measure success in achieving goals and to address other transportation issues during the first 25 years of the 21st century motivated a reassessment of the policy plan and the creation of a long-range vision, which is based on public input and wide-ranging consensus between PennDOT and its planning partners throughout the Commonwealth of Pennsylvania. The product of this effort is a Pennsylvania Statewide Long-range Transportation Plan (PennPlan), published in January 2000 (2).

PennPlan represents Pennsylvania's attempt to anticipate and shape a response to the state's need for transportation facilities and services in the next quarter-century. It is a blueprint for highways, transit facilities, passenger and freight rail, air and water ports, and bicycle and pedestrian trails and how these modal infrastructure system components interact and interconnect to form an integrated system. While PennPlan is a product of research, data collection and analysis, and extensive discussion among experts, it is also a result of listening to the public and the communities of users and providers of the transportation system through an extensive public involvement process. In PennPlan, the public involvement process is a key activity not only for the content and function of the plan but also for the communication role in planning and associated strategy to achieve an open dialogue with the public.

For transportation planning at the regional level, much of the discussion takes place among PennDOT and its regional and local planning partners, metropolitan planning organizations, local development districts, and county planning commissions within the context of regional and county planning and programming. Regional and county transportation plans address issues such as economic development, air quality, congestion mitigation, and land use with a specific focus on issues, needs, and desires within the boundaries of their region. The planning process leads to identification of needed transportation facilities and services, which are compiled into capital programs that identify specific projects, the resources, and time frames for their implementation.

PennPlan's importance lies in its linking transportation planning at the regional and local levels to broad goals and specific action items covering the entire state, thus, integrating regional action into an integrated multimodal and intermodal transportation system. PennPlan complements and adds value to transportation planning as it is currently performed in Pennsylvania.

In the remainder of the report, there are three sections. The first section provides an overview of the process followed in creating PennPlan and the process that will be followed in the next 25 years. Then, a summary of the existing conditions, perspectives, and visions of the future are presented, as well as a summary of the background for the public involvement method used. Following this, the Pennplan goals-objectives-performance measures-targets and a corridor example with its objectives are presented. The report ends with a summary and conclusions section that also describes the relationship between PennPlan and recent federal rules and regulations on statewide transportation planning.

THE PROCESS

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and its regulations require states to develop and maintain their own transportation planning processes. In June 1998, these statewide transportation planning requirements were revised in the Transportation Equity Act for the 21st Century (TEA-21). As a result, many new regulations are on the drafting board, allowing states to focus their planning on the most significant problems faced by each state and to tailor their planning processes to meet the needs and wants of their residents. These new and revised statewide planning processes have evolved to reflect the unique problems and procedures followed in each state. This is particularly true regarding the way in which the planning process identifies, analyzes, and addresses statewide critical issues. Contributing to this variation, one finds a variety of factors, such as:

- a) the statutory and institutional responsibilities for the state's transportation services;
- b) the size and degree of urbanization in each state and its regions;
- c) economic development growth rate and differential growth rates within regions of a state;

- d) the amount and directionality of passengers visiting or passing through;
- e) the nature of goods movement;
- f) management of land use and economic growth;
- g) character of multimodal and intermodal facilities and demand;
- h) resident and for-hire technical capabilities;
- i) the role of planning and programming in each department of transportation;
- j) decision making concerning programs and investments for infrastructure investment; and
- k) the effect of these investments on the state's economic development.

The Commonwealth of Pennsylvania has set forth to become a national champion in innovation for statewide long-range planning. For this, PennPlan's guiding principles have been to:

- a) promote performance-based planning;
- b) develop and conduct a public involvement process that is all-inclusive and comprehensive;
- c) revise and complement existing policy goals using the public's stated needs and desires; and
- d) introduce and promote corridor-based needs assessment that is also a direct reflection of the public involvement themes while complementing and adding value to regional planning.

Within the planning-programming-construction cycle for project selection in Pennsylvania, PennPlan is positioned between general policy principles and the fiscally constrained long-range planning (see Figure 1). It completes and provides additional detail to meet the requirements of TEA 21 and the amendments to the Clean Air Act and related environmental and energy regulations. In addition, as shown in Figure 1, PennPlan is the umbrella strategy for many other issue-specific strategic plans and project-specific improvement programs (e.g., regional and statewide transportation improvement programs).

PennPlan also sets the stage and provides a framework for transportation system development that, when implemented, will help achieve one or more of PennPlan's 10 goals. The goals identify transportation directions, but PennPlan also includes objectives and their performance indicators and standards that must be met to achieve these goals, as well as the mechanisms to measure progress toward the objectives and the means to achieve success. In addition, PennPlan incorporates continual measurement of progress toward a planned future and accommodates adjustments along the way as new

Overall Policy Guidance and Requirements

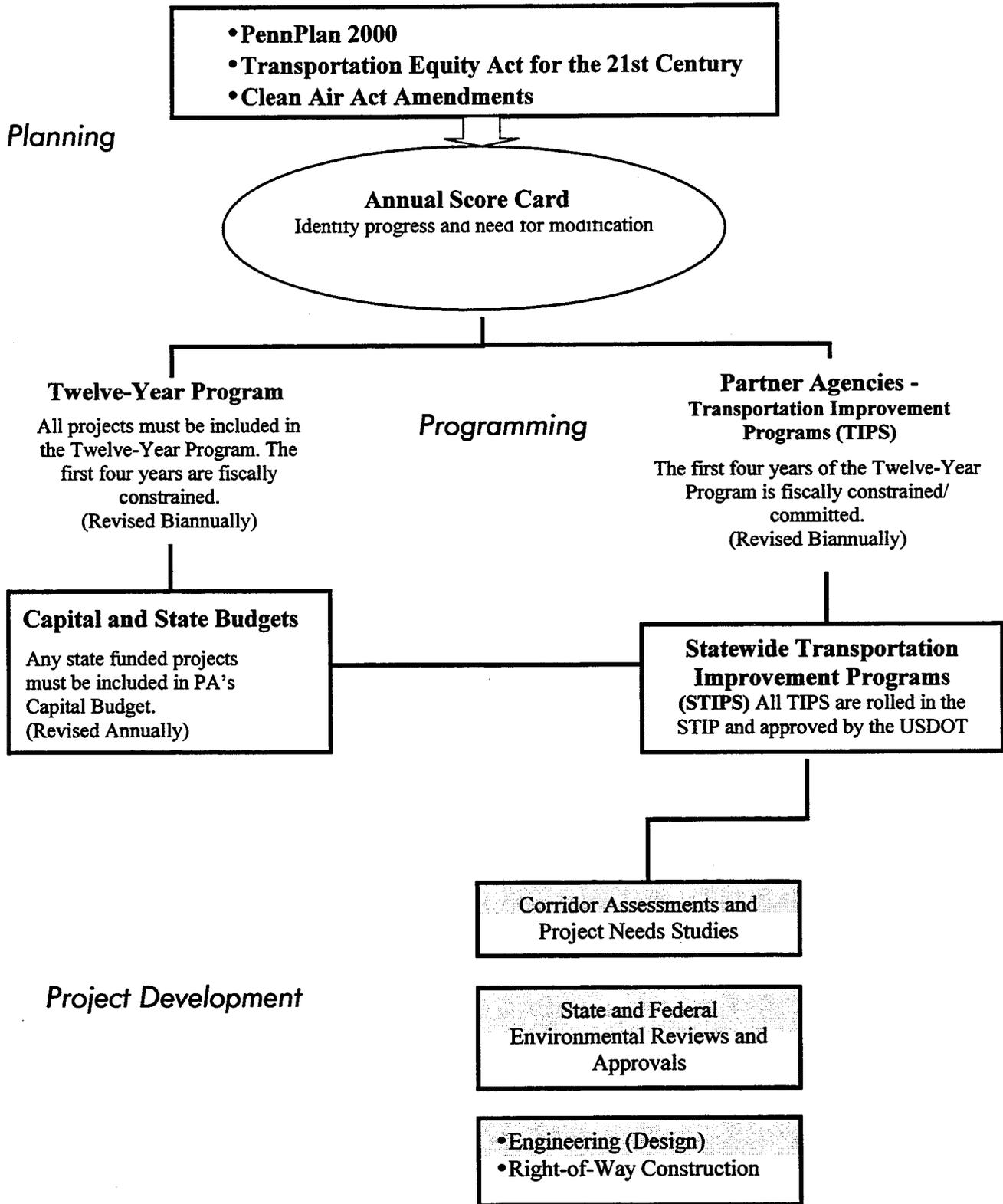


Figure 1. PennPlan in the Context of Policy-Planning-Programming-Project Development.

information is created. It is PennDOT's intention to monitor progress yearly and to make adjustments when appropriate.

Most important, however, PennPlan provides a forum for making decisions about statewide transportation policy to account for the needs and expectations of transportation users and their communities. Accountability is the reason that an innovative and comprehensive public input program was made the keystone of the plan. It is also the reason that it is important during implementation to have a monitoring program of how well the plan meets its goals through an innovative communications strategy. In fact, the public input program did not end with publication of the plan; it continues as PennDOT and its partners fine-tune PennPlan and make mid-course corrections based on the public's feedback.

Early in PennPlan's creation, PennDOT appointed a statewide committee called the Plan Development Team (PDT) to guide the plan's creation. The role of this committee can be defined as:

- a) set the stage and identify the key principles underlying the first draft;
- b) based on public involvement input, redesign the policy plan's goals and objectives and provide a first reaction to a draft plan;
- c) during subsequent revisions, provide input on the plan's contents, public involvement, and presentation format; and
- d) monitor and help implement components in the final plan components, as well as educate the public about PennPlan.

Throughout the process of plan formation, PDT has been involved in all the components of PennPlan, and through meetings in which key portions of the plan were designed, PDT deliberated on issues and approved a sequence of first draft versions, as well as the final plan. In parallel, the entire spectrum of administrative bureaus within PennDOT reviewed, analyzed, and provided comments on specific PennPlan components.

At the heart of PennPlan is a staged public involvement and related communication strategy. The key objectives of the public involvement process are to:

- a) provide an opportunity to all residents of Pennsylvania to voice their opinions and concerns;

- b) identify the best combination of values representing their needs and desires for a state transportation system summarized in planning themes; and
- c) create a plan that is understandable to all.

PennPlan, however, is not a static activity that ends after the final plan has been published. Instead, it is an ongoing process in which yearly performance evaluation is used to report on progress, modify targets when judged to be infeasible, and create a “score card” that is shared with the public. These feedbacks and updates are shown in Figure 2. PennDOT has assigned responsibilities for monitoring each performance measure in the plan, and the first cycle of reporting is currently under way. Verification of performance indicators and responsibility assignments for monitoring and meeting the standards are also complete. In the following sections, the background used to design PennPlan and some key PennPlan components are provided in more detail.

BACKGROUND INFORMATION

Predicting 25 years into the future of transportation is complicated, and even simply projecting trends ahead 25 years may not work well. Futurologists and system dynamics experts tell us that trends progress until redirected or ended by radical, often unexpected, developments. For example, transportation technology is typical.

Given the deficiency of trend-line projections, how shall one predict Pennsylvania’s transportation future? This section of PennPlan takes a three-pronged approach. It sets the current transportation scene in Pennsylvania to serve as a backdrop for “speculation” about the future, summarizing the results of an extensive literature review in (3,4) as well as secondary data collection and data sources consulted and reported in (2). It counterpoints potential approaches to transportation system development gained during interviews with transportation visionaries across the country (see also 5). And it synthesizes themes that were expressed by the visionaries, the PennPlan team, and participants in the initial phase of PennPlan’s public involvement program (6).

Pennsylvania’s population has been projected to grow 20 percent between 1990 and 2025, which is 9 percent less than the national average. In addition, the Commonwealth’s population of residents who are 65 and older is expected to increase by 80 percent.

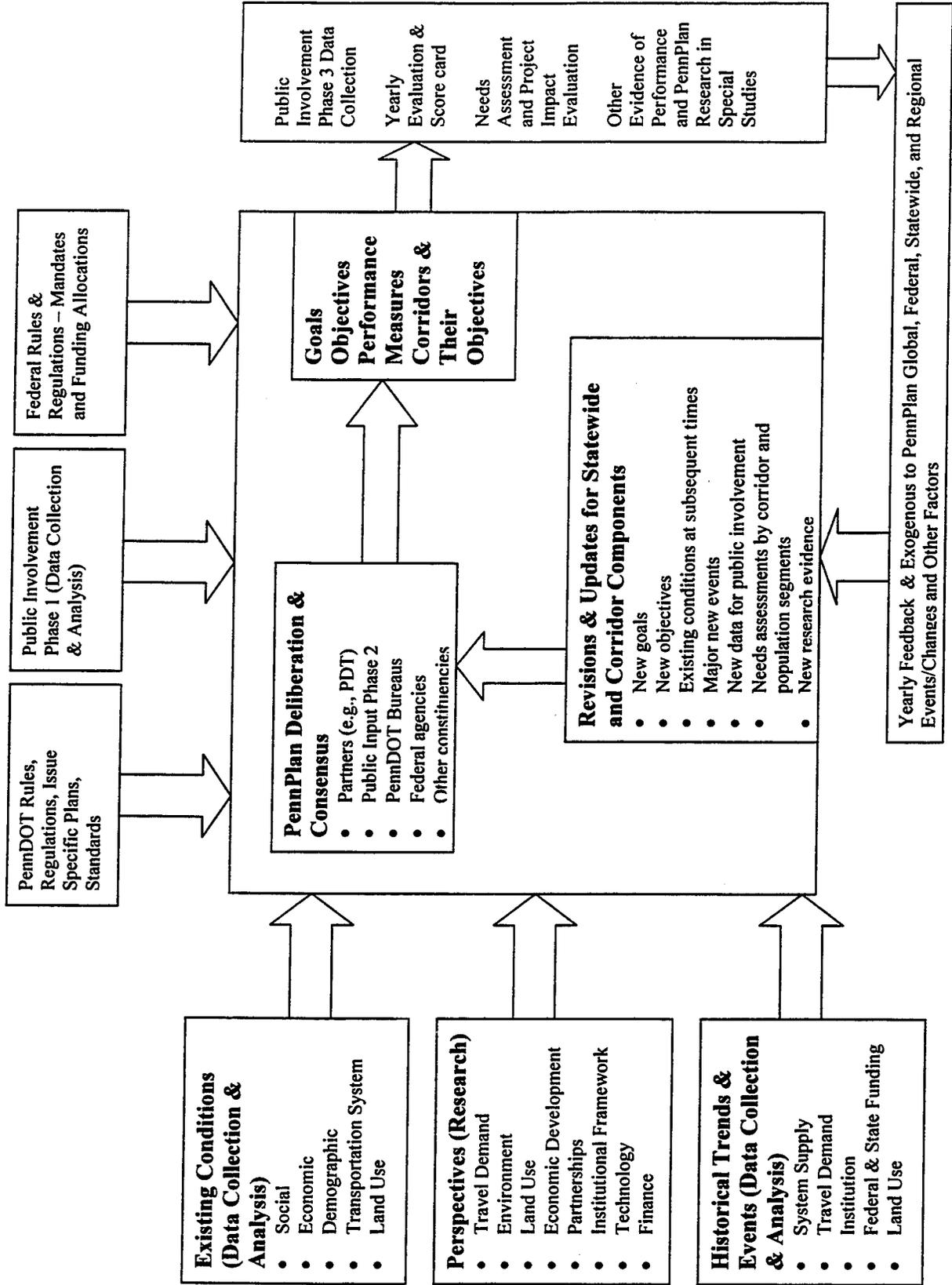


Figure 2. Pennplan's Continuing, Cooperative, and Comprehensive Process

Hence, implications for a transportation system that seeks to afford mobility to all residents could be extensive. By 2025, the elderly will account for 23 percent of Pennsylvania's population; in contrast, the number of residents 18 and younger has been projected to grow by 8 percent, less than the national average of 21 percent. PennPlan also estimates that contribution to the overall population growth and the elderly population growth will be dramatically different among the 67 counties of the Commonwealth. In addition, economic development is spatially differentiated, which is reflected in the striking difference in per capita income and high income concentration around the state. Given the spatial distribution of the population and the current transportation system, delivery of more goods and services in a particular area, and travel to more work places, schools, shops, and recreation centers, means more vehicles, congestion, and increasing demands on Pennsylvania's transportation system.

In terms of facilities, Pennsylvania has 70 railroads, the most of any state, and 5,600 miles of railroads, more than half of which are owned by a major carrier, which move 190 million tons of freight annually. Furthermore, there are five Amtrak services along four lines, providing Pennsylvanians access from Washington, D.C., to Boston at Philadelphia; from Cleveland to Philadelphia at many stops in the Commonwealth; directly to Philadelphia from Harrisburg; from Chicago to Boston at Erie; and to Washington, D.C., from Pittsburgh. There also is connecting passenger-rail service to the Philadelphia and Pittsburgh suburbs, as well as 42 public transportation systems across the state, from urban, fixed-route bus systems to rural, shared-ride van operations. Pennsylvania also has three major ports—Erie, Pittsburgh, and Philadelphia—that, together with their intermodal connections to highways, railroads and airports, fosters trade among Pennsylvania, the rest of the country, and the world. There is also an extensive highway infrastructure system and services with a highway network that includes 40,500 miles of PennDOT-owned roadway and a total extent over interstate, state and local roads of 119,000 miles. PennDOT's Driver and Vehicle Services units handle more than 30 million customer transactions per year for 8.3 million licensed drivers, 9.7 million registered vehicles, and 8,000 new- and used-car dealers while providing faster turnaround on transactions with more community centers, inspection

stations, and on-line messengers and dealers. In addition, the total value of shipments in Pennsylvania is estimated to be \$248,758 million of which 80.6% is shipped by truck.

When planning for the next 25 years, transportation decisions cannot be made in a vacuum. Decisions on where to build a highway, expand a port, and extend a rail line significantly affect people's lives, their communities, and the environment, as well as the economy. In fact, such decisions are, and should be, made after potential projects are examined from many perspectives. PennPlan viewed transportation system development from the perspectives of demand, the environment, land use, economic development, partnerships and the transportation system's institutional framework, technology and finance.

Historical statistics serve as the base for this perspective; however, planners also acknowledge current demand patterns are characterized by non-linear trends that should be taken into account when tracking the needs of people and business for transportation services. For example, vehicle miles traveled (VMT) has increased 21 percent from 1990 to 1998. Moreover, current demographic trends suggest that:

- The number of non-work trips will increase.
- As people continue to move from older cities and towns to suburban housing, where their commute is longer and their dependence on autos is amplified, work travel will also increase.
- The percentage of dual-income families will continue its rise, further boosting reliance on the auto for work travel.

As a result, levels of congestion are likely to increase, particularly in the southeast and southwest corners of the state. Some turns in this trend are offered, however, in the leisure area, where a few efforts to curb this increase are represented by the hiking and bicycling associations that are successfully calling for more facilities. BicyclePA, a program that ultimately will connect many bike routes across the state, is a result of such efforts.

Air travel is increasing as well, spurred by the airlines' desire to fill previously empty seats by using incentive rates and frequent-flyer programs. Some of Pennsylvania's

international airports, particularly Pittsburgh's, have launched large expansion projects in the past 10 years, adding gates and customer-service capacity to meet demand.

While the automobile will remain the dominant mode for transportation of people, a few recent trends are affecting the ways in which goods are moved. One is the emergence of just-in-time inventory management. With retailers and assemblers attempting to reduce their warehouse and inventory costs, manufacturers and wholesalers are improving their distribution systems to see that goods reach customers as the goods are needed (for a recent review see 8). It is a trend that puts more goods into the freight stream, since they essentially are warehoused in trucks and boxcars, and it places even greater demand on the transportation system. Moreover, the consumer electronics industry, as well as other mail-order and e-commerce suppliers, have increased demand for small-package, air-freight service. At the ports, the move to containerized cargo and improvements in container-handling technology have led to development of inter-modal facilities, where freight moves efficiently from ships to rail cars and trucks. Since ports across the country that have not adopted this approach are struggling, the need for inter-modal service provides another example of demand dictating the direction of transportation planning and associated expenditures.

While the needs and desires of the public and the marketplace can shape transportation system development, PennPlan also considered whether the converse is an option. Can the transportation system manage public and business demand for its facilities and services? The record has been mixed. For example, people have responded with apathy to incentives that promote carpooling. It is clear that any attempt to manage demand that does not start with public input and correctly designed public needs assessment will not work. A better approach may be to manage demand by using new transportation technology, known as intelligent transportation systems (ITS), to more efficiently handle favored transportation behavior of people and business.

Nearly a third of the energy consumed in the United States goes for transportation, which affects levels of air, noise, and water pollution. In the distant past, transportation decisions were made with little consideration of their environmental impact; however, as

a result of public involvement and legislation such as the National Environmental Policy, Clean Air Act, and Clean Water Act, transportation decisions must account for the environmental perspective. To combat noise pollution, plans call for buffer zones, embankments, and noise walls. To address air pollution, projects account for their impact on air quality, while regulators and manufacturers focus on emissions inspection and control. To address water pollution, programs educate municipalities about sedimentation in streams from roadway runoff, highway designs reduce and cleanse runoff, and construction avoids or restores wetlands. Other aspects of the environmental perspective include preservation of historic resources and farmland and protection for parks and other public resources.

Transportation offers access to places where people want to live, work, and play; access, in turn, changes how land is used. The transportation system must view its projects from the perspective of how they will affect land use. For example, will a project spur unwanted development, hurt established businesses, affect a municipality's tax base, and overburden water and sewer facilities? Or will it encourage construction of needed housing, promote economic development, and create jobs?

Land use decisions in Pennsylvania occur primarily at the levels of government closest to the people—cities, boroughs, towns, and townships—and are accomplished through subdivision and zoning ordinances, comprehensive plans, and other mechanisms established by the Pennsylvania Municipalities Planning Code. Nevertheless, an indication of the state's interest in land use is Governor Ridge's Executive Order 1999-1, which directs state agencies to recognize the impact on land use of their decisions.

Among its principles one finds:

- Farmland and open space are valued Commonwealth natural resources, and reasonable measures for their preservation should be promoted.
- Development should be encouraged and supported in areas that have been previously developed or in locally designated growth areas.
- Sustaining the economic and social vitality of Pennsylvania's communities must be a priority of state government.

- Infrastructure maintenance and improvement plans should be consistent with sound land use practices.

Even before the executive order, PennDOT was addressing the impact of transportation on land use. Often, PennDOT works with local government to implement measures against unplanned growth.

As in other industrial states, an economy based on heavy manufacturing and production of industrial materials is being replaced by a broad-based economy in which technology and information exchange wring the inefficiency from every business operation in response to global competition. For example, some former steel mills have re-opened as incubators for emerging technologies. On the other hand, Pennsylvania's farmlands, still among the most productive in the world, are disappearing under new houses and shopping centers. As business and political leaders attempt to align Pennsylvania's economy with a changing, global business environment, their efforts will influence transportation system development. Furthermore, transportation decisions that ignore the perspective of Pennsylvania's economic development could hurt the state's economy.

Those concerned with economic development realize that three priorities must be emphasized for Pennsylvania to participate in the global economy:

- Companies must be afforded a business environment in which they can thrive, and government must consider their concerns about taxation, regulation, and mandated expenses.
- Start-up businesses, especially those in the technology sector, must be nurtured, even allowed government incentives, where appropriate.
- Work force development and education must receive great(er) attention.

The effect that the transportation system can have on the ability of business to move its goods and provide its services, and on the ability of employees to get to work, is woven into all three priorities.

PennDOT relies on partnerships to deliver transportation facilities and services. Among the partners are municipal and county government, public transportation and port authorities, the Turnpike Commission, and private enterprise, which collectively

comprise one of the most extensive and comprehensive transportation systems in the world. With partners helping to provide the products and services that PennDOT's customers expect, their perspective certainly will influence transportation decisions; in fact, transportation planning itself is the product of partnerships, with PennDOT working with metropolitan planning organizations, local development districts, and local government. PennDOT needs their perspective since a long-range transportation vision must be implemented at the regional, county, and local levels.

New technologies will drive transportation system development, just as they drive business growth; some may even lead to less business and commuter travel, freeing transportation resources for other needs. For example, many more people are able to work from their homes via the Internet than just five years ago. Teleconferencing makes it easy to envision a month's worth of business meetings, involving many executives thousands of miles apart, without the need for participants to travel. Attention at the federal and state levels to intelligent transportation systems (ITS) suggests that devices and systems will address many transportation issues, particularly the number of fatalities and injuries. Transportation decisions must include the technology perspective and remain flexible enough to accommodate the latest developments.

There will never be enough funds to satisfy all the desires, demands, and expectations directed toward Pennsylvania's transportation system. Financial constraints can be viewed two ways: as handcuffs to transportation system development or as challenges to be met with long-term financial packages and partnerships. Pennsylvania has the responsibility to be prudent and open in its spending decisions and to be aware of the burden placed on taxpayers when taxes and fees are increased, and that is the overall financial perspective that must be considered when transportation decisions are made.

A way of increasing efficiency is to take advantage of the savings inherent in a competitive marketplace, whether in construction projects, auto inspections, public transportation, or other facilities and services. In many instances, the private sector may be able to deliver at less cost. Internal competition may also result in more efficient allocation of the many revenue sources, funding categories, and spending contracts that

currently drive transportation spending. Such competition, a fact of life in the private sector, may help each mode of transportation find ways to deliver better facilities and service at a lower cost. While the array of dedicated funding sources may limit the flexibility of PennDOT and its partners in financing transportation projects, flexibility can be achieved with creativity and cooperation.

Although PennDOT must consider new approaches, it also must embrace certain core ideals, chief among them the “maintenance first” philosophy that has earned Pennsylvania praise from system users and transportation experts. Therefore, PennDOT must balance what is wanted with what is needed, keeping the system operating soundly while viewing opportunities for system expansion from the perspectives presented in this report.

An advantage of having a 25-year plan, particularly one that details statewide goals and objectives, as well as performance measures and targets, is its ability to serve as a blueprint for creativity and cooperation within the current financial structure. Long-range plans usually are created first, with citizens asked to respond to them later at public meetings, if they are asked for input at all. As a result, often, only people with vested interests participate; thus to increase citizen input, a comprehensive public involvement process was created for PennPlan, much like processes used in the private sector before initiation of new products or services.

In Phase 1, approximately 2,000 people representing diverse groups were interviewed in person or by telephone during 30- to 45-minute conversations in order to collect comments on long-range planning issues *before* writing PennPlan. In Phase 2, the PennPlan team circulated a draft of PennPlan together with a simple question: “Did we get it right?” Phase 2 was similar to test marketing a new product or service before it is put on the market. Public reaction to the draft resulted in modifications and a finished product for this first attempt to define a plan. Phase 3 of the public involvement effort involves an extensive effort to inform the public about PennPlan. The role of these three phases is shown in Figure 2. Subsequent phases are currently planned and coordinated

with a communication strategy on the draft board and the yearly evaluation of success underway.

Input in Phase 1 came from residents, professional planners (i.e., people involved in business and agriculture), tourists and other visitors (i.e., truck drivers and sales people), transportation visionaries, and students in junior high school. The public involvement team also conducted a modified version of a focus group (a session in which issues are explored and a deliberation takes place) session with PennDOT staff and interest groups, such as groups interested in environmental concerns. High priorities among residents, planners, and people in business and agriculture were quality of roads, availability of different methods of travel, mass transportation systems, funding, and attention to environmental concerns; however, these people gave low grades to these issues presently. Their concerns were addressed in PennPlan. In contrast, the number of roads in Pennsylvania received a high grade, yet it was not high on the scale of importance, an expression that suggested construction of additional roads should not be the major emphasis of PennPlan. Participants rated 13 issues in all, from pedestrian facilities to the effect of the transportation system on economic development.

The public-input team also asked participants what principles they thought should guide a 25-year transportation plan for Pennsylvania. They saw improved safety, stimulation of business growth, better links among different modes of transportation, and reduction of air pollution as guiding principles; they did not see reduction of the driving time to work or stores as critical, an expression in line with the earlier one that more roads should not be a major emphasis of a 25-year plan. The team asked Phase 1 participants what specific elements they want in Pennsylvania's transportation system of the future; desirable elements included "smart" highways to control traffic and reduce congestion, high-speed rail between cities, the ability to transfer easily between travel modes, and less polluting alternatives to the internal combustion engine. In contrast, getting more people to telecommute through the Internet was not a priority. Data collection and analysis can be found in (6, 7).

Automobiles and trucks dominate the travel scene, offering choice, mobility, privacy, and status. The ratio of vehicles to population nationally is 8 to 10, yet the demand for mobility is growing rapidly, particularly among groups that have been mobility deficient, such as minorities, immigrants, and the elderly. Since increased demand for mobility afforded by the automobile generally is not being met by an increase in transportation system capacity, congestion is increasing. On the other hand, there are encouraging trends toward the use of bicycles, pedestrian facilities, telecommuting, and electric vehicles, although they are localized and minor. Furthermore, highway travel is much safer as a result of improved vehicle technology and road design.

Inter-city rail transportation appears poised for change; faster equipment was installed on the *Metroliner* that runs through Philadelphia from Washington, D.C., to Boston and is planned for the Keystone Corridor between Harrisburg and Philadelphia. Inter-city bus service plays a minor role in Pennsylvania's public transportation system, but the charter bus business is booming.

The airline industry remains in transition. Deregulation has helped to keep some ticket prices down while allowing others to escalate as airlines compete for lucrative routes and attempt to reduce service on less profitable ones. Backlashes against high ticket prices may come from those who pay them—short-notice business travelers and people in small cities on routes that do not benefit from competition.

Movement of goods by highway, rail, and air is also changing. More freight is moving multi-modally because shipboard containers are transferred to trains and trucks. In an attempt to reduce warehouse and inventory costs, retailers and manufacturers are demanding "just-in-time" deliveries, a trend that puts more merchandise into the freight stream, particularly in trucks. The boom in mail-order and e-commerce enterprises is increasing demand for small-package, aircraft-truck delivery service.

Accompanying these changes in how people and goods move is a shift in the ways in which Pennsylvania manages transportation. The Commonwealth has embarked on a program of partnering with local and regional agencies and the private sector to provide facilities and services. Under PennDOT's Agility Program, for example, a municipality

may plow snow on a section of state-owned road, while the state may line-stripe a road for the local agency.

Following are the ideas expressed by transportation experts during hour-long phone interviews about potential approaches to transportation system development. The visionaries were academics, directors of public policy institutes, and transportation officials across the United States, who can be divided into two groups on coping with increased demand for mobility: those who would alter travel behavior and those who put faith in technology to accommodate demand. Among the former were those who said that more facilities, such as new highways, only create more demand. They suggested that incentives would encourage people to take advantage of telecommuting options, move closer to work, use public transportation, car pools, and bicycles, and to walk.

Those who put faith in technology also noted that telecommuting via the Internet could significantly reduce job travel; however, they also noted that few public attempts to change demand have worked. In Europe, where high taxes elevate gas prices, single-occupant use of vehicles continues to rise. Demand must be accommodated, they said, and pollution-control technology must address the negative effects of more vehicles.

Those who would alter travel behavior countered that further breakthroughs in energy efficiency and pollution control may encourage more travel and land development, not less, particularly in areas once considered too far from work centers to develop. While they would encourage telecommuting, they noted that it, too, could allow people to live farther from work and to simply alter their travel patterns: less travel for work, more travel for errands and recreation.

Concerning the overall purpose of transportation, most visionaries included the movement of goods and people and the creation of economic opportunity and social exchange. Some, however, noted that transportation should be used to create and manage development patterns and land use.

Construction of transportation facilities will not always meet demand, particularly demand for personal mobility via the automobile; yet from results of the public

involvement program, people seem to feel that there are enough roads in Pennsylvania and that more travel options should be offered. Therefore, construction of new roads will be minimal by 2025, while high-speed rail connections between major cities probably will be expanded.

Transportation resources may be rationed; that is, it may be more financially efficient for the transportation system to fully use a facility already in place than to build a new one, a tactic used in the business world. For example, rather than build a new telephone exchange to accommodate peak-hour demand, a phone company may shift excess demand to off-peak hours, commonly in the evening and on weekends, by using incentive rates. On the highways, use of tolls may be extended, with higher tolls on premium, limited-access, high-speed roads and lower tolls for off-peak travel. PennDOT's "maintenance first" policy also represents a move toward full use of resources already in place.

The public involvement effort indicated that travelers prefer to purchase trips rather than a mode of travel. If a trip includes transfers from one mode to another, then the transfers should be seamless. Through sophisticated electronics, travel charges will reflect the true cost of using a mode of travel, and people may receive a monthly statement for their use of a transportation facility, such as a highway.

One mode of travel will not be disproportionately subsidized over another. Trucking companies will pay the full cost for their use of roads, yet taxes collected from transportation system users will not be allocated to the travel mode in which the user operated. Instead, all transportation-generated money will go into a general transportation account, providing transportation policy makers with the option to address transportation decisions strategically. The economic benefits of transportation will be directed so that no individual or group is unfairly advantaged or disadvantaged by transportation decisions.

Public involvement will continue to shape transportation policy, as will environmental concerns. For example, transportation decisions may encourage use of land for specific purposes or discourage suburban sprawl. For those wishing to travel with the least impact on the environment, choices will include autos that emit fewer pollutants and consume

energy more efficiently, electronic commerce, mass transit, and a comprehensive network of pedestrian and bicycle facilities.

Safety improvements will result from safe-vehicle technology, education, and enforcement. For example, the public will have even lower tolerance for those who drink and drive, and their punishment will be more severe and immediate. Technology will even prevent an impaired driver from initiating a trip.

The transportation system of the future will also be more reliable. Improvements in infrastructure, on-line information about bottlenecks and alternative routes, and an array of transportation options will enable travelers to predict the times and costs of trips.

A succinct summary of the themes emerging from the public involvement, confirmed and combined across the different groups, are:

- **Mobility**—a high degree of mobility is enjoyed in Pennsylvania; this should not be diminished.
- **Options**—transportation is too “unimodal,” with a focus on the car. Options should be provided, promoted, and linked seamlessly.
- **Voices**—public involvement, the voices of the constituencies, must be a major focus of transportation planning.
- **Efficiency**—transportation systems must generate the most benefits per resources expended.
- **Environment**—transportation should have minimal negative effects on the environment; that is, it should be “sustainable.”
- **Equity**—transportation should not give disproportionate advantages or disadvantages to any group.
- **Economy**—transportation must maintain and promote economic development.
- **Safety**—transportation systems should be designed to maximize safety.

STATEWIDE GOALS AND OBJECTIVES

To be relevant as a blueprint for the strategies that Pennsylvania can employ in pursuit of an improved transportation system, PennPlan includes 10 statewide goals, as well as measurable objectives that will assist in achieving those goals during the next 25 years. The goals drove the formulation of two sets of objectives. One set of 30 is statewide in scope, with objectives such as: “Reduce the number of fatalities and severity of crashes on the state’s highways.” The other set is corridor-specific. It is no coincidence that a direct mapping exists among the 8 themes in the public involvement (in summary *MOVES*) and the 10 goals of PennPlan. Subsequently, the PennPlan team drafted 30 statewide objectives that will assist in achieving the 10 statewide goals; each objective ties directly to one or more of the goals, as illustrated in a matrix in the plan (2). The objectives cut across all modes of transportation and all facets of PennDOT’s operations. Accompanying each objective are measures to gauge its attainment and target dates for its implementation. The list of objectives and a sample of performance measures and target dates appear in appendices A and B. An example of the relationship between goals and objectives is given in Figure 3.

The following example shows how the statewide goals, the themes from the public involvement program, and the statewide objectives are linked.

Statewide Goal 5

Maintain, upgrade, and improve the transportation system.

Themes from Public Involvement Program That Goal 5 Addresses

Mobility-Options-Efficiency-Economy-Safety

Objectives That Will Assist in Achieving Statewide Goal 5

Objectives 1, 2, 3, 4, 5, 8, 9, 10, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 25, 26, 28, 29, and 30.

	GOALS									
	1. Promote safety of the transportation system.	2. Improve the environment.	3. Retain jobs and expand economic opportunities.	4. Make transportation decisions that support land use planning objectives.	5. Maintain, upgrade, and improve the transportation system.	6. Inform and involve the public and improve the customer service.	7. Advance regional and corridor-based planning.	8. Develop transportation alternatives and manage demand.	9. Promote smooth and easy connections between transportation alternatives.	10. Ensure accessibility and mobility for everyone.
										
OBJECTIVES										
1. Adhere to "maintenance first" policies in the allocation of financial and other resources.	X		X	X	X				X	
2. Implement a statewide congestion management strategic plan.	X	X	X		X		X			
3. Implement the objectives identified in the updated Intelligent Transportation Systems (ITS) Strategic Plan	X	X	X		X	X	X	X		
4. Reduce the number of fatalities and severity of crashes on the state's highways.	X				X					
5. Develop and implement a program to analyze environmental impact in conjunction with the PennPlan corridor analysis program.		X		X	X		X	X		
6. Consistently meet the requirements of the Clean Air Act, and achieve compliance with all relevant environmental laws and regulations.		X		X			X			
7. Incorporate strategies identified under the Pennsylvania Greenways Partnership Commission Action Plan and the 21 st Century Commission Report into the project development and design processes.		X		X			X			
8. In cooperation with private rail interests, clear all strategic rail freight corridors for doublestack capacity.	X	X	X		X		X			
9. Expand PennDOT's Agility Program.	X	X	X	X	X	X	X	X	X	X
10. In cooperation with local and regional planning organizations, create a state airport system plan.	X		X	X	X	X	X	X	X	X
11. Promote the enactment of airport hazard zoning ordinances.	X			X		X				

Figure 3. A Sample of PennPlan Goals and Objectives

Performance Measures and Targets

Accompanying each objective are ways to measure its attainment and target dates for its implementation. For example, objective 12, “maintain depth of shipping channels to accommodate all freight ships in the Commonwealth’s three ports,” is accompanied by two performance measures, “continuing port accessibility” and “timely completion of channel maintenance projects.” The target for implementation of the objective states that “annual channel impediments diminished to none by 2007.”

Objective 13, “improve pavement ride quality,” uses the International Roughness Index (IRI) as a performance measure. The target for implementation of the objective calls for the percent of miles rated poor according to the IRI to be reduced to less than 2 percent for interstates and less than 5 percent for National Highway System roads. More details can be found in (2). Objectives 12 and 13 both will assist in achieving statewide goals 1 and 3: “promote safety of the transportation system” and “retain jobs and expand economic opportunities.” Objective 13 also will assist in achieving statewide goal 5: “maintain, upgrade and improve the transportation system.”

STATEWIDE CORRIDORS

In addition to establishing 30 statewide objectives to assist in achieving the 10 statewide goals for transportation system development, the PennPlan team also proposed objectives specific to 28 corridors of statewide significance. A corridor is defined as a *collection of interconnected and interacting transportation facilities that move people and goods between regions of the Commonwealth and between the Commonwealth and other states*. For example, the corridor that connects Pittsburgh and Philadelphia consists not just of the Pennsylvania Turnpike but also includes U.S. 30, U.S. 22/322, Amtrak’s *Pennsylvanian*, Norfolk Southern’s freight rail line, three international airports, and other facilities, all working to move people and goods east and west. The geographic boundary of a corridor is defined in terms of the counties surrounding the collection of facilities and is artificial, not cast in stone.

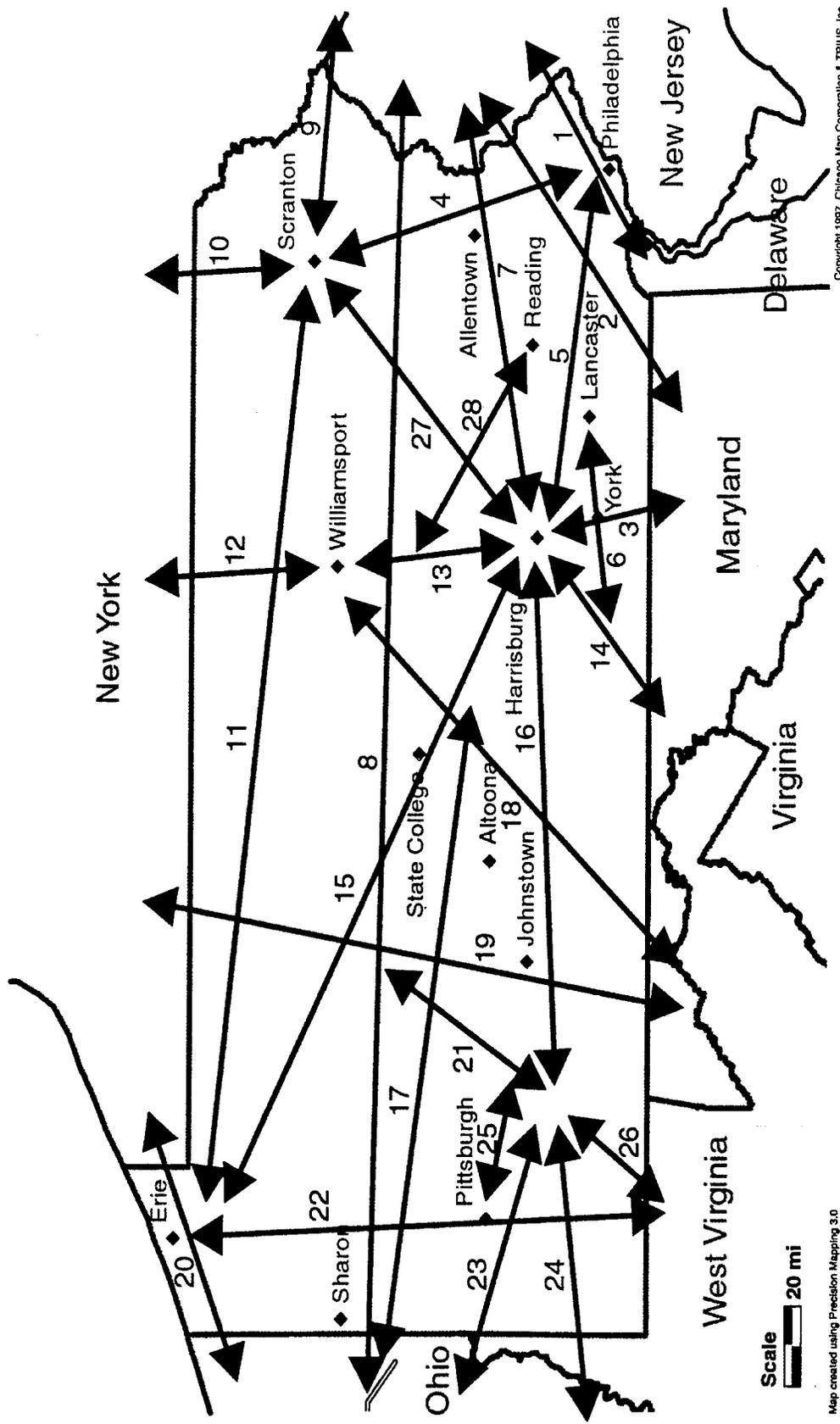
Metropolitan planning organizations, local development districts, and other planning partners all conduct corridor planning; however, since corridors traverse regions and planning areas, one of the purposes of PennPlan is to provide for continuity among the various plans and among plans of Pennsylvania and surrounding states. The long-range plans of the many planning partners formed the foundation for the corridor analyses and objectives. Subsequently, the corridors were first defined in draft form and distributed to the PennDOT partners for corrections, additions, and consensus building.

It should be noted, however, that the objectives of each corridor are not rosters of projects; rather, they are guides to transportation system development that does proceed, and they offer solutions in cases where regional or interstate plans may conflict. Figure 4 shows the alignment of the 28 corridors of statewide significance. Corridor names, characteristics, objectives to guide development, and maps that depict facilities can be found in (2). An example is provided here as Corridor 16 (Figure 5), named the Pioneer Corridor and described as:

“This east-west corridor connects Harrisburg to western Pennsylvania. This corridor pioneered transportation in North America and is responsible for some of the world’s most significant transportation engineering feats, including the Pennsylvania Canal’s Allegheny Portage Railroad; the Pennsylvania Railroad’s Horseshoe Curve; America’s first superhighway, the Pennsylvania Turnpike; and the Inclined Plane in Johnstown. Aside from Pittsburgh and Harrisburg, there are several significant population areas within this corridor, including Lewistown, Altoona, Johnstown and Greensburg.”

The corridor’s objectives are:

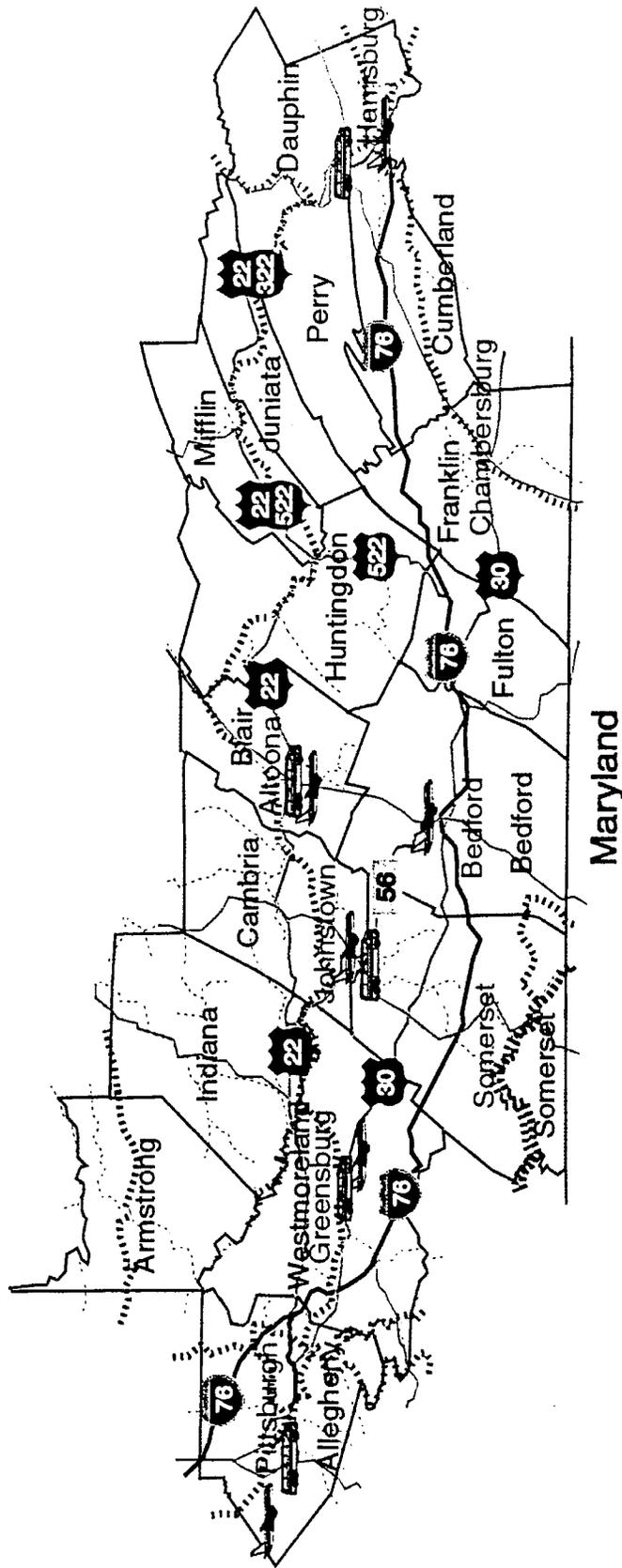
- Continue to implement safety and congestion improvements to U.S. 22.
- Create intermodal opportunities within the corridor.
- Improve access to the city of Pittsburgh, Pittsburgh International Airport, and the port of Pittsburgh.
- Explore the feasibility of high-speed passenger rail service within the corridor.
- Provide access to the corridor’s recreational and tourism assets.
- Continue to modernize the Johnstown/Cambria County Airport.



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Map created using Precision Mapping 3.0

Figure 4. Pennsylvania's Corridors



- Major Corridor Facilities :**
- Interstate Highway
 - US Highway
 - PA Highway
 - Allegheny Highlands Trail
- Other Facilities :**
- Railroad
 -  Airport
 -  Mass Transit
 - Railroad

Figure 5. The Pioneer Corridor

SUMMARY AND CONCLUSIONS

This report presents the process, background, and goals-objectives-performance measures-targets in Pennsylvania Long-Range Transportation Plan, whose adoption signals Pennsylvania's determination to remain an innovator in transportation planning. PennPlan links broad goals for transportation system development to discrete measurable objectives that will lead to achievement of those goals. It acknowledges that conflicts will arise in setting priorities and allocating resources, but it provides for conflict resolution by presenting what citizens want most from their transportation system. In fact, PennPlan derives its forum significantly from a comprehensive public involvement program that captured the needs of a cross-section of the transportation system's users, deliberated key plan components, and is integrated in the monitoring process. Underpinning the public themes, goals and objectives is an acknowledgment of existing conditions, major issues, demographic information, trends, and potential technological and societal changes. Statewide and corridor perspectives ensure that regional as well as Commonwealth matters receive attention. PennPlan was written as an overall guide to transportation system development and will complement, not replace, decision making at the local and regional levels with active roles by local and regional partners.

PennPlan, however, was not defined in isolation from federal rules and regulations (9,10), but is a continuing, cooperative, comprehensive, intermodal, and integrated statewide plan. It contains goals and objectives for safe, efficient, economic movement and contains clear direction to foster economic growth. PennPlan is also based on data collection and analysis, as shown in Figure 2. In addition, PennDOT is performing a needs assessment study for the 28 corridors covering the entire state and continues with data collection in the monitoring and implementation stages of PennPlan (e.g., the feedback in Figure 2). All seven factors in TEA 21 (economy, safety and security, accessibility and mobility, energy and environment, integration and connectivity, efficiency, and preservation [maintenance]) have been addressed, as shown in Appendix A. Further, ITS has been addressed in a series of strategic and implementation plans that are currently reaching their final stages and also exceeds the mandate of 20 years. Coordination with adjacent states was addressed in the early stages of plan development

perspectives and needs assessment; during the public involvement process, visitors from the surrounding states were interviewed and their needs incorporated into Pennplan.

A key requirement is compliance with the Civil Rights Act of 1964 by statewide planning procedures. To this end, areas of lower income households and minority residents were covered in the same fashion as the remaining population of Pennsylvania. During the public involvement stage, the main stratification process was in terms of rural, suburban, and urban classification. The breakdown for the 1,000 residents interviewed were 300 rural, 400 suburban, and 300 urban, which shows that the counties containing Philadelphia and Pittsburgh are overrepresented, and rural counties such as Sullivan and Lackawanna are under-represented. As an example, Figure 6 provides the grades given to pedestrian systems by each county in Pennsylvania. This addresses partially the compliance requirements in (10) with respect to income. Additional analysis is currently under way to verify that all rules and regulations have been satisfied in PennPlan and, when appropriate, create additional feedback mechanisms.

The Commonwealth and its partners must now implement, monitor, and update PennPlan. PennDOT will conduct annual performance reviews and issue report cards that measure progress toward the plan's statewide and corridor objectives, as well as make mid-course corrections when public input and other factors dictate them.

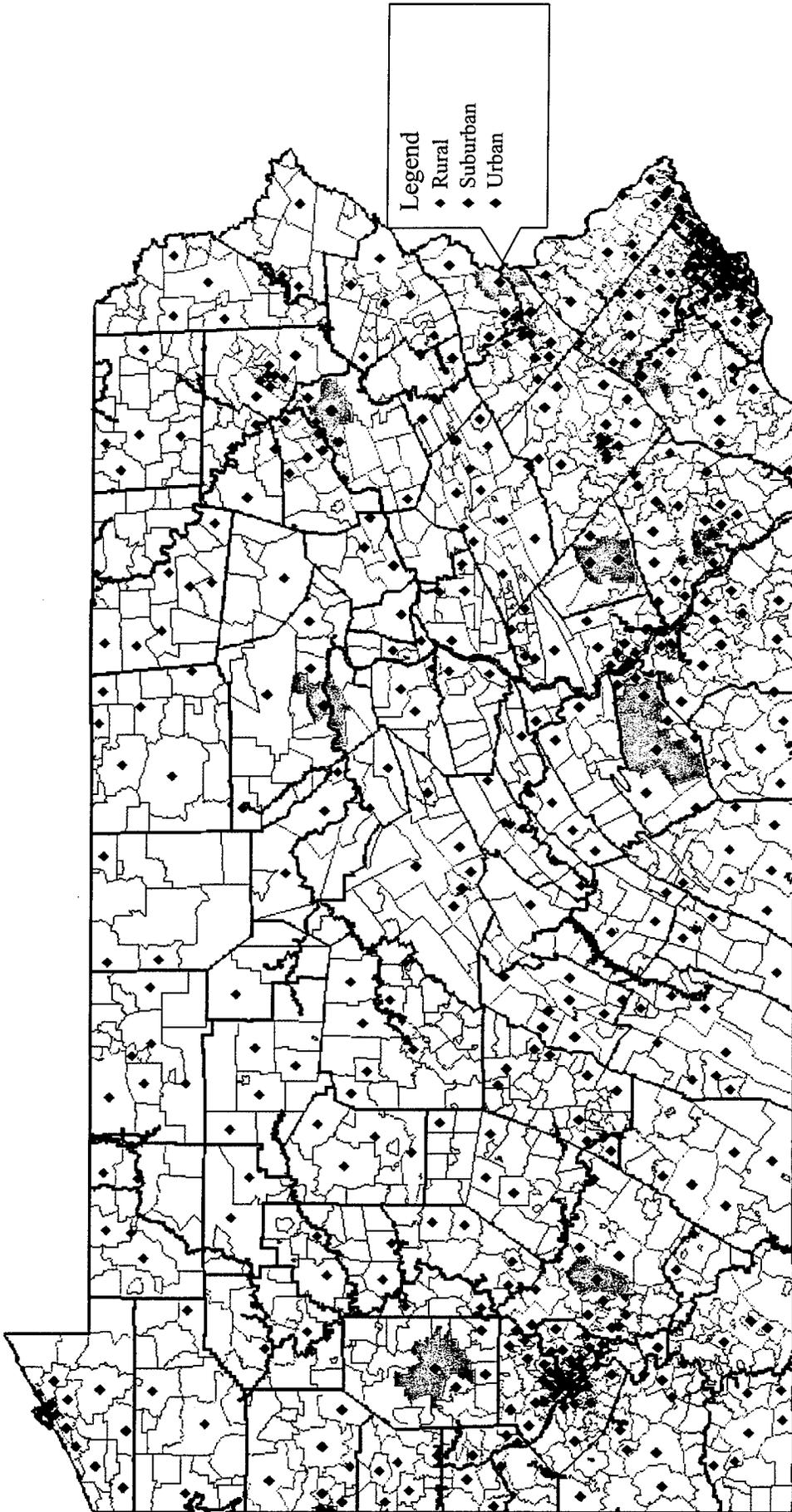


Figure 6. Spatial Distribution of Public Involvement Resident Respondents (orange areas contain 50,001 to 90,000, purple contain 30,001 to 50,000, light blue/green 10,001 to 30,000, and the rest 0 to 10,000 residents).

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Appendix A: PennPlan Objectives

1. Adhere to “maintenance first” policies in the allocation of financial and other resources.
2. Implement a statewide congestion management strategic plan.
3. Implement the objectives identified in the updated Intelligent Transportation Systems (ITS) Strategic Plan. (Intelligent transportation systems are technological innovations that assist the movement of people and goods.)
4. Reduce the number of fatalities and severity of crashes on the state’s highways.
5. Develop and implement a program to analyze environmental impact in conjunction with the PennPlan corridor analysis program.
6. Consistently meet the requirements of the Clean Air Act, and achieve compliance with all relevant environmental laws and regulations.
7. Incorporate strategies identified under the Pennsylvania Greenways Partnership Commission (GPC) Action Plan and the 21st Century Commission Report into the project development and design processes.
8. In cooperation with private rail interests, clear all strategic rail freight corridors for doublestack capacity. (A doublestack is the result of placing two shipping containers on one rail car.)
9. Expand PennDOT’s Agility Program. (In the Agility Program, PennDOT trades highway maintenance services with local governments.)
10. In cooperation with local and regional planning organizations, create a state airport system plan.
11. Promote the enactment of airport hazard zoning ordinances.
12. Maintain depth of shipping channels to accommodate all freight ships in the Commonwealth’s three ports.
13. Improve pavement ride quality; reduce the number of posted and closed bridges.
14. Implement physical and service upgrades to the Keystone Corridor (passenger rail service between Harrisburg and Philadelphia).
15. Develop a 50-year facilities management plan.
16. Coordinate the development of a statewide mass transit strategic plan.
17. Increase urban and rural transit systems’ ridership.
18. Reduce dependence on single-occupancy vehicles.
19. Eliminate at-grade crossings of freight lines by state-owned roads within strategic rail corridors.
20. Develop a statewide passenger rail needs assessment.
21. Support the creation and expansion of intermodal rail freight facilities that connect to the National Highway System.
22. Promote telecommuting as an alternative to traditional work travel.
23. Connect all public-use airports to state traffic routes or high-access transit systems.
24. Fully utilize the Pennsylvania Infrastructure Bank’s loan program as an innovative financing tool for transportation projects through 2025.
25. Maintain Pennsylvania’s historical share of the annual federal transportation budget.
26. Reduce the number of state-maintained road miles.
27. Decentralize Driver and Vehicle Services, thereby improving customer access through private sector partnerships and internal improvements.
28. In cooperation with private rail interests, invest in doubletrack and signal upgrades within strategic rail freight corridors.
29. Implement the objectives contained in the Statewide Bicycle and Pedestrian Master Plan.
30. Standardize design and implementation procedures for regional sign systems for tourists and wayfinders.

Appendix B: Sample PennPlan Objectives-Performance Measures-Targets

Objective	Performance Measure(s)	Target
1. Adhere to "maintenance first" policies in the allocation of financial and other resources.	PennDOT's resources expended on maintenance programs and projects.	80 percent.
2. Implement a statewide congestion management strategic plan.	<p>Completion of plan and biennial updates.</p> <p>Establishment of statewide operations center and regional traffic management centers, with field communications equipment brought on line.</p> <p>Identification of badly congested corridors and development of improvement strategies.</p> <p>Implementation of statewide incident management system encompassing all interstates and implementation of incident management pilot initiatives.</p>	<p>June 30, 2001.</p> <p>Contract for design and construction of operations center in place by December 31, 2000. Operations center and Philadelphia and Pittsburgh traffic management centers integrated by December 31, 2005. Field Equipment deployed by December 31, 2002.</p> <p>Congested corridors identified by June 30, 2001, and 3 corridors improved per year.</p> <p>50 percent of interstates covered by the incident management system by December 31, 2003, 100 percent by December 31, 2005. Pilot initiatives implemented in two regions per year.</p> <p>50 % of short-term objectives implemented by Dec. 31, 2001, 100% of short-term objectives implemented by Dec. 31, 2003, 100 percent of mid-term objectives implemented by Dec. 31, 2004, 100 percent of long-term objectives implemented by Dec. 31, 2010.</p>
3. Implement the objectives identified in the updated Intelligent Transportation System (ITS) Strategic Plan.	Number of objectives implemented.	

