Pennsylvania’s statewide long range transportation plan (PennPlan): performance based planning in the U.S.

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Abstract

A revival of statewide long-range transportation planning is emerging from recent legislation in the United States with focus and heavy emphasis on public involvement and performance based planning. However, differences among states exist in the procedures followed in long range planning, and as new methods are created and reported, better statewide planning approaches are emerging. An example of a new method, the Pennsylvania Statewide Long Range Transportation Plan (PennPlan), is provided in this paper. In sequence the rationale, brief background, and process to create this plan are illustrated. PennPlan’s unique public involvement program is also provided in outline form and its role in decision-making explained. One key element of PennPlan, accountability, is presented with examples of the environmental 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 also discussed together with PennPlan’s relationship to statewide planning rules and regulations emerging from recent legislation.

1 Introduction

The Intermodal Surface Transportation Efficiency Act of 1991 and its regulations required states to develop and maintain their own long range transportation planning processes [1]. In June 1998, these statewide
transportation planning requirements were revised in the Transportation Equity Act for the 21st Century providing a legislative continuation with previous environmental and transport legislation. As a result, many new rules and regulations, that are currently finalized, enable states to focus their planning on their most significant problems and to tailor their planning processes to meet the needs and desires of their residents. These new and revised statewide planning processes have evolved to reflect the unique problems and procedures in each state. This is particularly true in how the planning process identifies, analyzes, and addresses critical statewide issues. Contributing to this variation are a few key factors that include statutory and institutional responsibilities for the state’s transportation services, size and degree of urbanization in each state and its regions, economic growth rates among regions of a state, the amount and directionality of travelers visiting or passing through the regions, the nature of goods movement, management of land use and economic growth, character of multimodal and intermodal facilities and demand, resident and for-hire technical capabilities (e.g., staff within a department of transportation, consultants, and researchers in academic institutions and other research entities), the role of planning and programming in each department of transportation, decision making about programs and investments for infrastructure investments, and the effect of these investments on the State’s economic development.

Pennsylvania aims to become a national leader in innovation for statewide long range planning. 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 [2]. Although 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. This new vision is based on public input and wide ranging consensus between PennDOT and its planning partners resulting in PennPlan that was published in January 2000 [3]. This plan 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 framework for highways, transit facilities, passenger and freight rail, air and water ports, bicycle and pedestrian trails, and information and (tele)communication networks and facilities 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, the communities of users and providers of the transportation system, through an extensive public involvement process. The public involvement process is the key to PennPlan themes defining the content and function of the plan, as well as a communication strategy for it.

The first section of the remainder shows the process followed in creating PennPlan. Then, an outline of the public involvement method is given. Examples of PennPlan goals-objectives-performance measures-targets and a transportation corridor with its objectives follow. The paper ends with a summary and conclusions for next steps.
2 The Process

Within the planning-programming-implementation cycle for transportation project selection in Pennsylvania, PennPlan is positioned between general policy principles and the fiscally constrained long range planning (see Figure 1) that occurs at the regional and state levels. PennPlan is based on: a) promoting performance-based planning that is outcome focused; b) developing and conducting a public involvement process that is all-inclusive, comprehensive, and a direct reflection of the residents’ and visitors’ wishes and needs; c) revising and complementing existing policy goals using the public’s stated needs and desires; and d) developing and promoting assessment of needs along major connectors (corridors) among regions incorporating public involvement themes from a sample of the population and other stakeholders, while complementing and adding value to regional planning.

![Diagram of the planning-programming-implementation cycle]

Notes: (1) All projects must be included in the Twelve Year Program. The first four years are fiscally constrained (revised every two years); (2) The component in the first four years of the Twelve Year Program is fiscally constrained/committed (revised every two years); (3) Any state funded projects must be included in Pennsylvania’s Capital Budget (revised every year). (4) All regional projects are included in the statewide list of projects and approved by the United States Department of Transportation.

Figure 1 PennPlan in the sequence of policy-planning-programming-project development

As shown in Figure 1, PennPlan serves as an umbrella strategy for many other issue specific strategic plans and project-specific regional and statewide improvement programs. PennPlan’s importance lies in 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 a multimodal and intermodal transportation system at the State level. PennPlan complements and adds value to transportation planning as it currently is practiced in Pennsylvania linking policies to the list of specific projects (programming) and the project implementation providing a framework for transportation system development to achieve statewide goals. These goals identify transportation directions, but PennPlan also includes objectives, their performance indicators and standards, 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, accommodates adjustments as new information is created, and monitors progress yearly to make adjustments when appropriate. In addition, it provides a forum for making decisions about statewide transportation policy to account for the needs and expectations of transportation users and their communities.

To satisfy accountability, an innovative and comprehensive public involvement program was made the keystone of the plan. Accountability motivates implementation monitoring through an innovative communications strategy. In fact, the public involvement program did not end with publication of the plan. It continues as PennDOT and its partners fine-tune PennPlan and make corrections based on the public’s feedback and data analysis. Pennplan’s ongoing process, in which yearly performance evaluation is used to report progress, modify targets, and create a “score card” that is shared with the public, includes feedback and updates as shown in Figure 2. The figure includes three background analyses stages on existing conditions, perspectives, and trends in which an inventory of the entire transportation system and its social, economic, and demographic background has been created first. Subsequently the first phase of the public involvement process and an analysis of state and federal legislation were performed. This information was used to write a first draft plan that was discussed extensively with planning partners and the public to reach consensus. This led to the goals, objectives, performance measures and their targets as well as the corridors in PennPlan. Figure 2 also shows the “feedback” stages of PennPlan that includes the monitoring stage to measure target achievement and reporting to the public in phase 3 public involvement. This is a cycle of work to be repeated over the next 25 years following the same sequence of stages in data collection and consensus building.

Moreover, PennDOT has assigned responsibilities for monitoring each objective using performance measures in the plan. The first cycle of reporting is underway and verification of performance indicators and responsibility assignments for monitoring and meeting the standards are complete. In the following sections the background used to design PennPlan and some key PennPlan components are provided in more detail.

3 Background Information

PennPlan takes a multifaceted approach in predicting needs for the next 25 years.
First, existing conditions are defined by developing an extensive literature review and secondary data collection and data use as reported in [3]. Second, it counterpoints potential approaches to transportation system development gained during interviews with transportation visionaries across the country. Third, it synthesizes themes that were expressed by a group of "visionaries", a plan development committee representing a wide range of interest groups and planners (designed to build consensus), researchers on the PennState research team, and participants in the initial phase of PennPlan’s public involvement program. A fourth element is currently added to the approach to simulate Pennsylvania for the next 25 years and perform an assessment along major corridors.
Key trends in Pennsylvania include a modest population increase (growth of 20 percent between 1990 and 2025), a substantial increase in senior residents (the segment 65 and older is expected to increase by 80 percent and account for 23 percent of Pennsylvania’s population by 2025). In addition, population growth and the elderly population growth will be dramatically different among the 67 counties of the Commonwealth. Economic development is also spatially differentiated, and this is reflected in the striking difference in per capita income and high-income spatial distribution around the State. In freight, the state begins to see the impact 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, so that goods reach customers as the goods are needed. It is a trend that puts more goods into the freight stream, as they essentially are warehoused in trucks and boxcars, and it places even greater demand on the transportation system.

Currently, the total value of goods shipments in Pennsylvania is estimated to be $248 billion, of which approximately 81 percent is shipped by truck while the passenger total of daily vehicle miles of travel is estimated to be 281 million. In terms of supply, Pennsylvania has 70 freight railroads, the most of any state, and 5,600 miles of railroads, more than half of which are owned by a major carrier. These lines move 190 million tons of freight annually. In addition, there are 42 public transportation systems across the state, from urban, fixed-route bus systems to rural, shared-ride van operations. Pennsylvania has three major ports—Erie, Pittsburgh and Philadelphia. Pennsylvania’s highway network includes 40,500 miles of PennDOT-owned roadway, and the total extent over interstate, State and local roads is 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 and 9.7 million registered vehicles. This background and trends show increasing demand for passenger and freight travel and large differences in demand type among the regions.

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. The transportation system and demand management record have been mixed. For example, people have greeted incentives that promote carpooling with apathy. 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. For example, a promising approach may be to manage demand using new transportation technology (e.g., intelligent transportation systems- ITS), to more efficiently handle favored transportation behavior of people and businesses. However, Pennsylvania is not a leader in advanced technology implementation yet and environmental initiatives in land use and air pollution control are still in the design phases.

The principle shaping many aspects of PennPlan is the balance between conservation of natural resources and economic development. On one hand, farmland and open space that are valued state natural resources need to be preserved. On the other hand, development should be encouraged and supported in areas that have been previously developed or they are in locally designated
growth areas to sustain the economic and social vitality of Pennsylvania. These two principles, however, need to also account for infrastructure maintenance and improvement plans of the extensive transportation system in the State. In terms of the method of service delivery, Pennsylvania is characterized by a variety of partnerships among public agencies and private providers, fiscal responsibility, a spirit of competition and market approaches to service provision, and lately an attempt to use new technologies. These are elements that have been considered in developing a few components of PennPlan. However, the public involvement process defined its overarching themes.

4 Public involvement

In usual long-range transport planning, public input is gathered after major decisions and directions have been defined. Inadvertently, this may lead to a process that is influenced by interest groups and agencies not representing the views of the public as a whole. To increase resident input, a comprehensive public involvement process was created for PennPlan, following processes that are used in marketing before initiation of new products or services in three phases. In Phase 1, approximately 2,000 people, representing diverse groups (residents, elected officials, professional planners, people in business and agriculture, tourists and other visitors, transportation visionaries, and students in junior high school), were interviewed in person or by telephone for 30-to-45-minute about long range planning issues. The public involvement team also conducted modified versions of focus groups (sessions in which issues are explored and selection of issues as well as their ranking takes place) with PennDOT staff and interest groups, such as groups interested in environmental issues. In this way comments were collected before PennPlan was written. In Phase 2, a draft document of PennPlan was circulated, 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 introduced in the market. Public reaction to the draft resulted in modifications and a finished product. Phase 3 of the public involvement effort involved an extensive effort to inform the public about PennPlan and assess the impact of the effort. The role of these three phases is shown in Figure 2.

The more specific objectives of the public involvement process are to: a) provide an opportunity for a wide array of resident and commercial interests to voice their opinions and concerns; b) identify the best combination of values representing the needs and desires of residents and commercial interests for a state transportation system; c) geographically and socially represent the state; and d) create a plan that is understandable to all.

Participants rated 13 aspects of the transportation system, from pedestrian facilities to the effect of the transportation system on economic development. In summary, high priority was given by residents, planners, and people in business and agriculture to quality of roads, availability of different modes of transportation, public transportation systems, funding, and attention to the environment. However, these respondents gave lower grades to the current
status of these aspects. In contrast, the number of roads in Pennsylvania received a high grade, yet it was not high on the scale of importance, suggesting construction of additional roads should not be the major emphasis of PennPlan.

The public-input team also asked participants what principles should guide a 25-year transportation plan for Pennsylvania. Participants defined 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 idea in agreement with an earlier indication that more roads should not be a major emphasis of a 25-year plan. The team asked Phase 1 participants for the 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 was not a high priority.

The themes that emerged from the public involvement across the different groups, were: a) mobility—a high degree of mobility is enjoyed in Pennsylvania; this should not be diminished; b) options—transportation is too “unimodal,” with a focus on the car; c) voices—public involvement, the voices of the constituencies, must be a major focus of transportation planning; d) efficiency—transportation systems must generate the most benefits per resources expended; e) environment—transportation should have minimal negative effects on the environment; f) equity—transportation should not give disproportionate advantages or disadvantages to any group; g) economy—transportation must maintain and promote economic development; h) safety—transportation systems should be designed to maximize safety. To complete a vision of a transportation future, the public-input team also solicited the views of transportation visionaries and experts, setting their views within the context of Pennsylvania and social, economic, and transportation developments in progress nationally reported in [3 & 4].

5 Statewide Goals and Objectives

To be relevant as a framework for Pennsylvania’s strategies in the next 25 years, PennPlan includes 10 statewide goals, as well as measurable objectives that will assist in achieving the goals during the next 25 years. These goals drove the formulation of two sets of objectives. One set of 30 objectives 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 that emerged from the public involvement process and the 10 goals of PennPlan. The 30 statewide objectives tie directly to one or more of the 10 statewide goals [3], cutting across all modes of transportation and all facets of PennDOT’s operations and a few examples are: a) adhere to “maintenance first” policies in the allocation of financial and other resources; b) implement a statewide congestion management strategic plan; c) reduce the number of fatalities and severity of crashes on the
state’s highways; d) develop and implement a program to analyze environmental impacts in conjunction with the PennPlan corridor analysis program; e) consistently meet the requirements of environmental legislation, and achieve compliance with all relevant environmental laws and regulations; f) in cooperation with local and regional planning organizations, create a state airport system plan; g) develop a 50-year facilities management plan; h) coordinate the development of a statewide mass transit strategic plan; i) reduce the number of state-maintained road miles. A complete list of the objectives-performance measures-targets are published in [3]. Accompanying each objective are measures to monitor its attainment and target dates for its implementation. For example, the objective “promote telecommuting as an alternative to traditional travel” has as target the increase of telecommuting by 15% in 2010 and by 22% in 2020. Not all targets, however, are quantitative. For example, the clean air objective contains as target the avoidance of sanctions and the creation of special associations to combat air pollution.

In addition to establishing 30 statewide objectives to meet the 10 statewide goals for transportation system development, PennPlan also defines 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, a corridor that connects Pittsburgh and Philadelphia consists not just of the Pennsylvania Turnpike (a four lane divided toll road). It also includes state roadway routes, a regional passenger rail service, a national 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 its facilities, and it may be modified over time as new evidence emerges (e.g., from a planned statewide simulation study). The objectives of this corridor include “Explore the feasibility of high-speed rail service within the corridor” and “continue to modernize a local airport.” These corridor objectives are currently associated with specific actions and projects targeting improvement and measured with yet another set of measures.

### 6 Summary and Conclusion

In this paper the process, background, and goals-objectives-performance measures-targets of the Pennsylvania Statewide Long Range Transportation Plan are presented. The adoption of PennPlan signals Pennsylvania’s determination to remain an innovator in transportation planning. PennPlan 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 evolved from a comprehensive public involvement program that captured the needs of a cross-section of the transportation system's users. Public involvement is also integrated into 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. It will complement, not replace, decision-making at the local and regional levels.

The Commonwealth and its partners must now implement, monitor and update PennPlan. PennDOT is conducting annual performance reviews and is compiling a report card measuring progress toward the plan's statewide and corridor objectives. A few key aspects of long range planning are currently defined further in PennPlan. The first is monitoring and needs assessment for the 28 statewide corridors. One method to do this is using statewide simulation methods of the entire state (very similar to European National models). This is particularly needed because the corridors are not entirely within the boundaries of large metropolitan planning organizations (that in the US maintain regional simulation models). However, methods for statewide simulation that address many of the PennPlan objectives are not fully developed and research is under way to identify efficient methods that are most suitable for these aspects. The second is financial planning and priority setting. Most financial decisions are in the domain of regions for projects and the domain of functional divisions within PennDOT. For this a financial plan should bring together these diverse priorities, examine tradeoffs, and balance them. The third is an integrated communications strategy and public information campaign, which is currently designed.

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References