

Data Requirements for National Transportation Strategic Planning: AASHTO's 2020 Experience

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An assessment is given of the adequacy of data and analytical processes to enable national transportation policy planning to be readily accomplished. AASHTO initiated a process called "AASHTO 2020" to develop an organizational position on future federal legislation. As part of the 2020 effort, needs were estimated for each mode and analytical judgments were made on the consequences of meeting various need (service) levels. After the technical work was completed, the AASHTO Standing Committee on Planning was asked to review the problems encountered in estimating needs and making tradeoffs among different funding and programmatic alternatives. A questionnaire was developed to determine, for each mode, the adequacy of the data, the information that should be collected on a continuous basis, and the types of questions that should be answered from the strategic planning process. This paper presents an analysis for each modal area, including comments on the current availability of data and analytical techniques as well as recommendations for each mode.

In a recent survey conducted as part of the AASHTO 2020 effort, the chairpersons of each of the AASHTO modal standing committees and the 2020 Highway Technical Advisory Committee (HTAC) were asked to respond to three questions related to transportation data needs:

1. Are the data adequate in the particular modal area?
2. What information should be collected on a continuous basis?
3. What types of questions should be answered from a strategic planning process?

In general, those responding supported the need for adequate data in all program areas to enable national transportation policy planning to be readily accomplished. It was felt that the following types of data should be available and current:

- Facility inventory,
- Usage data/service inventory,
- Financial data,
- Quality of service data, and
- Population and economic data.

There was agreement that policy models should be available to test the consequences of

- Various funding scenarios,

- Major changes in policy direction,
- Major changes in any of the above data categories, and
- Impact of external policies (air quality, energy, etc.).

HIGHWAYS

The HTAC found the Highway Performance Monitoring System (HPMS) model to be very helpful in inputting to the 2020 process. HPMS appears to be the most advanced policy planning model and has the full support of FHWA and the states. Even with the advanced development of HPMS, the HTAC found some limitations, which were noted in the HTAC subcommittee report. Generally, however, HPMS-type models and processes should be the goal of other modal areas.

The HTAC was hampered by the lack of an equivalent process for scaling bridge needs and testing alternative bridge strategies, but it is understood that FHWA is working on this issue.

Neither adequate data nor a modeling capability were available to determine the multimodal impact of alternative investments on reducing highway needs (such as the impact of TSM strategies or increased transit use strategies).

TRANSIT

The Modal Technical Advisory Committee (MTAC) found that there was no single, consistent source of data for transit operations and that UMTA did not have the capability to collect the data and evaluate strategic alternatives.

Operating Data

UMTA collects data on urbanized area transit operations, including some financial information on operations. The following problems were noted with this data source:

- The data are 2 years old before publication.
- There are built-in obstacles to data manipulation. (The Transit Committee has suggestions for improvements.)
- There is a lack of summary tables and totals.
- The data do not cover rural areas. (A separate Section 18 data process is underway.)

Capital Data

There is no consistent source of data on transit facilities and infrastructure; however, the following sources are available:

- APTA maintains a transit passenger vehicle fleet inventory.
- UMTA conducted a rail modernization study.
- AASHTO maintains a survey of state involvement in public transportation and is conducting a state transit capital funding survey.

Major gaps exist in these data sources:

- Terminal and maintenance facilities are not included with data on condition, needs, etc.
- Consistent definitions are needed.
- Greater compatibility of data is necessary for manipulation.
- There is a lack of quality control.
- Information on financing is not provided by operators or private sources.

The state of Illinois created a policy analysis model to develop a needs estimate and to evaluate several limited options.

The Transit Committee recommended that UMTA assume responsibility for developing and maintaining an adequate, consistent data base as well as the analytic capability to answer the following questions:

- How much money are the sources investing in facilities and infrastructure?
- What amount of funding is from federal, state, and local governments?
- What portion of the funding is based on debt financing?
- What makes up the inventory of transit facilities and infrastructure and what is the condition of the facilities? For bus properties, the data would include size, age, condition, and type of activity for each facility. Rail properties, with more system elements, present a more complicated situation in terms of the type of information and the level of detail to be reported.
- What structures and facilities are to be replaced, eliminated, rehabilitated, expanded, or built?

AVIATION

The Aviation Committee reported on its recent experience in completing the aviation component of an AASHTO study called "New Transportation Concepts for a New Century." The existing aviation data bases were found to be inadequate, and short-range limitations were noted for planning future system needs.

Although FAA has an extensive data base, the committee found the following problems:

- The national data base excludes airports not eligible for FAA funding.
- The data are often old and subjectively derived.
- The data on national airspace planning are not related to the airport physical inventory.
- Future needs are based on use projections and do not consider strategic alternatives, such as the impact of the Airline Deregulation Act of 1978.

- Aviation forecasts are on a top-down basis.
- FAA does not require states to maintain updated inventories.
- Data are not available on airport access needs. (The MTAC did such a survey for 2020.)

The Aviation Committee felt the development of an aviation strategic planning process should identify total system needs, define alternative national and state aviation systems, and apply and evaluate appropriate tax funding alternatives at the national and state levels. It was expressed that alternatives must be interfaced with the air traffic control system and airspace management and that long-term costs associated with limited capacity alternatives should be integral to the strategic planning process.

RAILROADS

Responses from the Standing Committee on Railroads indicated support for national rail transportation strategic planning and for accumulating the data base to allow this planning to proceed. In addition to the five basic data items listed for all modes, the committee felt it was important to collect the following data:

- Car supply, condition, and utilization;
- Motive power inventory, age, capacity, and state of repair;
- Financial condition of railroads including funds spent for maintenance and capital restoration;
- Goods flows by commodity type and origin-destination (O-D) pattern;
- Train accident and safety statistics; and
- Information on grade crossings and grade separations.

Many of these data are already being collected in different places, but no single group is assembling the data in a common data base. Examples cited include R-1 annual reports done by the Association of American Railroads (AAR) on inventory, utilization, efficiency, and financial trends; summary data from waybill samples; and unit cost data developed by the Interstate Commerce Commission (ICC). Clearly, no governmental agency is collecting the data and conducting strategic planning. The Rail Committee felt DOT should fill this void.

The states felt the overall health and utilization of the rail network should be reviewed periodically and the effect of alternative policies and programs should be tested for impact on the rail system's viability. The example most cited was the impact of various trucking regulations on rail systems. It was recommended that overall mission/goals for the rail industry be established as part of the national transportation policy after evaluating alternative missions using accurate data.

A standing committee on railroads stated "Securing existing data with the inclusion and appropriate protection for proprietary information in a comprehensive and timely fashion, in addition to the new data, would allow states to determine the reliability and longevity of various rail lines serving different sectors of their respective state. This would be useful in long-range transportation planning relating to modal balance and split, economic development opportunities, resource access, import/export impacts, and the opportunity to assess

and implement the use of public funds where warranted as beneficial to the states.”

The area of rail passenger service is also a vital concern for the states. In this area, Amtrak was the only major entity included. It was reported that Amtrak not only does not have a strategic plan but has been prohibited from preparing a 5-year plan. All the above comments on railroad data needs and analyses suggest that Amtrak and DOT must create the long-term capability to plan for various levels of rail passenger service.

WATER TRANSPORTATION

The comments of the Standing Committee on Water Transportation regarding data and strategic planning were similar to those of the Rail Committee. Large amounts of data are collected by various agencies and trade organizations, but there is no common data base and no strategic planning. The committee reported the following:

Addressing the transportation funding and service needs within budget constraints requires the recognition that all elements of our transportation infrastructure (rail, highways, water and air) are part of an integrated and interdependent system. Budgetary constraints will force federal, state and local governments to reassess their needs and begin to strategically plan for future investments.

To ensure a workable water transportation network for the nation is maintained, there must be a comprehensive surface transportation program which defines a water transportation network of national significance. A National Strategic Planning process should provide the data needed to assess the importance of a port facility or length of waterway to the nation's economy or for the nation's defense. A subjective assessment of the value of the commodities handled by a port or carried on a waterway segment can be used as a basis to determine investment needs and required improvements that should receive financial assistance from the Federal Government.

A large gap in data for National Strategic Planning for water transportation appears to be the lack of consistent data on use. With the trend towards intermodal movements, it is becoming difficult to obtain consistent data on flows, origins, and destinations. Intermodalism and the creation of large integrated domestic and international carriers will present potentially greater obstacles to consistent comprehensive data on transportation system utilization. This is the area that should receive significant attention for National Strategic Planning purposes. Other information, like facility inventories, are generally available from federal modal agencies and other sources. Rate information is available from carriers and federal regulatory agencies. However, since deregulation, rate information is not very meaningful because of the many discounts and service contracts available.

The Nation's water transportation system carries not only freight but also passengers. Ferry systems carry a good deal

of both freight and passengers and offer an option to land based transportation methods (bridges or tunnels for rail and highways or commuter rail or bus in urban areas). Very little nationwide data has been collected on ferry systems. The basic information concerning ferry services, i.e. number of vessels, total passengers ferried, total vehicles ferried, total number of routes, total cost of operation (expenses), current toll (fare structure), ratio of tolls to expense and percentage government support is not available on a national basis. This makes it difficult to assess the potential of a ferry system over another more "conventional" transportation mode.

OTHER NEEDS

SCOP members also commented that data and analytical processes are needed for three additional areas:

- Truck data,
- Multimodal planning, and
- Economic development.

Truck Data

In performing the highway analyses, HTAC found that data on heavy truck usage were not reliable or useful. Because of the importance of trucking to our national economy, the intermodal tradeoffs with rail, and the incidence of roadway wear and tear caused by heavy trucks, these data are critical to policy and program decisions. Truck data needs are analogous to rail data needs except for the facilities inventory.

Multimodal Planning

Several members cited the need to evaluate the impact of national policy strategies on goods movement shares between truck and rail. The same problem exists for passenger needs, both urban and intercity. The AASHTO Intermodal Committee is concerned with this issue, and an inventory of modal interlinks needs was done as part of AASHTO 2020. These inventories should be periodically updated as part of the national strategic planning process.

Economic Development

AASHTO recognizes the lack of data regarding the impact of transportation investment on economic development and has appointed a special committee on economic development.