



WORKSHOP 3B: SYSTEMS PLANNING AND PROGRAMMING METHODOLOGY — FREIGHT MOVEMENT

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Report

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Unless the role of the state in freight transportation is understood, there is little purpose for proceeding with methodological issues and needed areas of research. Freight transportation is viewed as a key element in the marketing and distribution process and has traditionally operated in the area of free enterprise. However, the role of the state is becoming more important for several reasons.

1. Many of the objectives of freight facilities

OBJECTIVES

To identify and evaluate current techniques being used to develop statewide multimodal transportation plans, priorities, and programs for goods movement.

To recommend improvements in planning methodology including data and management elements necessary to ensure a continuous and viable process.

To develop a recommended program of research in statewide multimodal transportation planning methodology.

ISSUES

What are the essential data requirements for the preparation of comprehensive multimodal transportation plans, priorities, and programs for goods movement?

What are the current techniques for collection of data on goods movement within states? Are sources adequate?

What techniques are available to forecast statewide travel by mode for goods movement?

What techniques are currently available to develop and evaluate transportation plan alternatives? Can alternative systems be developed at the state level?

Are composite regional transportation plans building blocks for statewide plans?

What special studies and analyses are required to develop plans for the various modes?

How do procedures and methodology for analysis, forecasting, evaluation, and plan preparation differ for various modes?

What techniques are currently being used to evaluate social, environmental, and economic impacts? Are they adequate?

What procedures and techniques are available to respond to new and emerging issues such as energy?

What techniques are used to reevaluate plans, priorities, and programs on a continuing basis?

What techniques are used to provide opportunities for input to the transportation planning process by citizens, elected officials, interest groups, and others?

What techniques are used to integrate and coordinate transportation planning with land use and other functional planning activities?

Are the data collection and analytical techniques developed for urban transportation planning appropriate for statewide planning purposes? Can statewide planning techniques be used for urban transportation planning?

What techniques are used to establish priorities both within modes and between modes?

What techniques are used to develop programs for high-capital and low-capital programs?

planning and development can be met only through the financial involvement of the state.

2. The state is involved in related areas of activities that influence the movement of freight and its modal distribution. Among these are support systems such as highways, waterways, ports, and airports. Also, the state is involved in regulatory and taxing activities and, through various direct and indirect subsidy programs, can substantially influence freight distribution patterns.

3. Broadening the state's role in freight transportation is likely in the future. Several examples could be cited, but perhaps the most noted is the involvement of the state in railroad transportation systems.

4. An important element in freight distribution and location relates to land use decisions, and the state can play a significant role in guiding the location and distribution of key freight generators throughout the region.

Therefore, it is appropriate that the states have knowledge and an analytical capability to properly plan for the future and to incorporate the element of freight distribution within a statewide regional transportation plan.

METHODOLOGY

Freight systems planning is a composite of many different but interrelated activities. Accordingly, there is a need to develop specific analysis tools for specific problems. These should be structured flexibly enough to be applied in other areas. Development of methodology for those problems for which the states have or expect to have a role should be given priority.

Initial models of freight flow should focus on operational simplicity rather than on theoretical elegance; further development should be directed toward conceptual thoroughness and basic knowledge and understanding of the freight phenomena. Freight flow models and related methodology should be designed for quick response to critical problems, and their degree of sophistication should be consistent with data availability, time limitations, and requirements of the real world.

Specific methodological areas that warrant further development are as follows:

1. Regional and state development models to determine the impact of freight on development and the demand for freight services that results from different density and configurations of land development.

2. Freight demand models to represent expected commodity flows on the network. Simple generation, distribution, and mode-choice models should be developed for freight forecast purposes. Simplicity is specified in recognition of the UTP pitfalls and the problems created by a complex set of heavily data-dependent computer models. In addition, behavioral analysis of firm location and shipper mode choice are essential for understanding the system and its workings.

3. Land use impact models to describe the effect of transportation policies on the economy, the environment, and energy resources.

4. Corridor analysis models to deal with specific facility decisions, such as curtailment and rail abandonment. These models are to be developed to be responsive to relevant corridor transportation problems that may arise in connection with freight distribution.

5. Transportation facility cost models to establish parametric values and means for determining the costs of various transportation modes.

DATA

A major lack in freight transportation methodology is the availability of data. Among the conclusions reached by the workshop are the following:

1. Data on freight are generally unavailable and should be obtained to furnish basic

density flows. Flow maps for freight are also generally lacking; they represent a starting point for all studies and are a necessary requirement for freight system analysis.

2. Careful determination of specific data needs and their uses should be made before data collection programs are launched. This is a fundamental point that cannot be overemphasized; the data needs must be carefully structured to be consistent with problems to be solved. Although basic density data are considered essential as discussed above, additional data acquisition should be carefully defined and justified to avoid the possibility of securing data that may not be relevant or may be of such magnitude that they cannot be easily incorporated into the decision process.

3. Many freight data are available and could be used if they were identified and classified.

4. Freight data available from private agencies should be secured through joint cooperation. Private agencies, especially the railroads, have a wealth of data that could be useful for statewide transportation planning. The ability to secure these data often depends on the good faith of both parties. Clearly, if the data are to be made available to the state, mechanisms must be developed whereby the transfer of data is in the interest of both parties.

5. Supplementary special purpose data should be collected as necessary to analyze particular problems and planning issues.

HIGH-PRIORITY RESEARCH PROBLEM AREAS

The discussions within the workshop identified 11 areas of research that related to the needs and issues previously described. Of these, 3 areas were identified as representing high-priority topics for which immediate research efforts should be undertaken.

1. Freight data requirements for statewide systems planning. This research would identify minimum freight data necessary for statewide planning purposes, identify data already available, design data collection programs where appropriate, and test the design within a statewide transportation planning program.

2. Carrier facility curtailments and abandonments. This research is of immediate relevance; it relates to the current crisis of the railroads. However, states are not in a position to evaluate rail abandonments and to understand the impact that these have on the state's economy, energy, and travel redistribution.

3. Simple freight demand models. A strong need in the area of methodology relates to development of demand models for forecasting freight flows and evaluating alternative policies and systems. As has been noted earlier, these models should not follow the traditional UTP process, but should be structured in a form that is readily usable and not heavily data-dependent.

Resource Paper

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Within their respective areas of concern, the 2 resource papers on systems planning and programming methodology serve 3 stated objectives: (a) to identify and evaluate the current techniques being used to develop statewide multimodal transportation plans, priorities, and programs; (b) to recommend improvements in planning methodology, including essential data and management elements; and (c) to develop a recommended program of research in needed methodology for statewide multimodal transportation planning.