INTRODUCTION

BACKGROUND

In urban and rural areas throughout the United States, truck traffic is increasing. Media reports document problems with truck traffic and vehicle crashes involving large trucks. Even casual observers recognize that there are more trucks on the road, and travel statistics indicate the growing magnitude of this situation. Since 1970, truck travel in the United States, as measured in vehicle-miles of travel (VMT), has increased by 216% (1), whereas the population has increased by only 33% (2) and overall vehicle travel (total VMT) has increased by 137% (3). Meanwhile, highway system capacity (measured in lane-miles of freeways and arterial roads) has increased by only 18% since 1980 (pre-1980 statistics are not available) (4).

Forecasts of future freight flows indicate that this growth trend will continue. The volume of domestic freight is projected to increase by 87% between 1998 and 2020, whereas the volume of international freight is projected to increase by 107% during the same period (5). The rapid increase in truck traffic is being influenced by dramatic changes in the global economy, consumer demand, and logistics practices over the past 20 to 30 years as reflected in the following trends:

- Ever-increasing urban populations demand more and more consumer goods, which are increasingly imported from foreign countries. Goods are delivered to distribution centers and then to retail outlets by truck.
- Retail outlets increasingly rely on computerized inventory tracking, enabling them to minimize onhand inventories, but necessitating more truck trips to deliver the needed consumer goods.
- Distribution of parts, finished goods, and other commodities is done by truck for virtually all shipments of less than 500–600 mi, owing to lower shipping costs and greater flexibility.
- Manufacturers have reduced costs by lowering inventories and relying instead on just-in-time delivery. Such a system not only increases the volume of truck movements but also gives trucking an increasingly critical role in the logistics chain.

These and other trends have led to the rapidly growing volume of trucks using the roadway systems in the United States.

Increasing truck traffic poses many challenges for the transportation organizations that construct, operate, and maintain the transportation system, including

- Safety hazards, especially where heavy trucks are mixed with light-duty vehicles;
- Rapid deterioration of infrastructure, as increasing numbers of heavy vehicles reduce the useful life of pavement;
- Degradation of the environment resulting from more emission of pollutants into the atmosphere, particularly of pollutants such as particulate matter associated with diesel truck engines;
- Inefficient intermodal and multimodal freight connections, especially where activities such as loading and unloading and queuing spill truck traffic onto public roadways. (Note: in this report, the term "intermodal" is used specifically in reference to the transfer of containers, and "multimodal" is used more generally in reference to any transfer of goods during the transport process, either between different modes or between vehicles of the same mode.);
- Impediments to economic development, especially in areas where public opposition has arisen to truckintensive developments (such as manufacturing, warehousing, truck terminals, intermodal yards, and related uses) that nearby residents perceive as a nuisance or blight;
- Public concerns about truck noise and emissions affecting residential areas; and
- Losses in productivity due to congestion, which can delay critical shipments, increase costs, and affect manufacturing schedules or shipping deadlines.

Transportation organizations are increasingly faced with the dilemma of (1) needing to accommodate trucking to foster economic development and sustain the quality of life associated with the consumer economy, while (2) dealing with a public that is increasingly vocal in its demands that truck traffic, truck noise, and truck-related development be eliminated or minimized wherever possible. In addition, since September 11, 2001 (9/11), security has become a high-priority concern. However, security issues are not reflected in the synthesis results because the survey responses were completed before 9/11.

The growing importance of these challenges has caused public agencies to begin addressing this poorly understood component of transportation system planning, namely the movement of goods. Many states have begun to develop plans for how to accommodate the movement of goods; many states have also begun to study and implement strategies intended to overcome the various challenges. In most cases, these plans and strategies have been developed without precedent to provide guidance in determining effective strategies.

SYNTHESIS OBJECTIVE

The objective of this synthesis is to document recent efforts by agencies throughout the United States to manage increasing truck traffic and present the current state of the practice in dealing with the challenges of increasing truck traffic. To accomplish this the synthesis identifies

- Truck-related challenges being reported by transportation agencies,
- Planning activities for goods movement being undertaken at the state and metropolitan level,
- Truck management strategies being considered by the agencies,
- Factors that have influenced the selection of particular strategies, and
- Benefits expected from the selected strategies.

The information presented in this synthesis is based on responses received from a nationwide survey, supplemented by a review of available literature. The survey was submitted to the department of transportation (DOT) in each of the 50 states and to the metropolitan planning organizations (MPOs) responsible for transportation planning in 23 of the largest metropolitan areas in the country. Responses were received from 28 of the 50 states and from 8 of the 23 MPOs contracted.

SYNTHESIS ORGANIZATION

This synthesis is organized to provide a progression of information. It begins by identifying the problem,

continues with a discussion of possible solutions, identifies the solutions currently being applied, and finally draws conclusions and makes suggestions for future applications and research.

Chapter two explains the types of challenges resulting from increasing truck traffic and reports on the perceived magnitude of those challenges.

Chapter three approaches problem solving from the standpoint of planning. It describes the types of planning activities that could be undertaken to address challenges caused by trucking and reports on the types of planning activities that are actually under way.

Chapter four identifies a broad range of potential management strategies that have been identified, studied, recommended, or implemented. It also details the types of challenges for which these strategies are being considered.

Chapter five focuses specifically on those strategies selected for implementation and presents the reasons for their selection and the expected benefits. It also presents the strategies that have been considered but rejected, as well as the factors influencing the decision to eliminate them from consideration.

Chapter six presents the conclusions of the report, including suggestions for the practical application of the information and recommendations for further research.

Three appendices are provided. The survey questionnaire is presented in Appendix A, a list of survey respondents is provided in Appendix B, and a summary of the survey responses is given in Appendix C.