## CHAPTER SIX

## CONCLUSIONS

The key findings of this report can be summarized as follows:

- State departments of transportation (DOTs) and metropolitan planning organizations (MPOs) are facing a broad array of challenges that can be attributed to increasing levels of truck traffic, including traffic congestion, transportation system deficiencies, safety, infrastructure deterioration, intermodal connections, environmental impacts, quality of life, economic development, and losses in productivity.
- The challenges that are most prevalent for state DOTs include congested urban highways, insufficient truck parking, and pavement deterioration. The challenges that are most prevalent for MPOs include congestion, environmental issues (air quality and noise), and economic issues (transport costs and productivity).
- State DOTs and MPOs are currently undertaking a wide range of planning activities for dealing with truck traffic, including large-area freight planning (state, region, or corridor), local-area freight planning (intermodal facilities or truck-related land use), and goods movement forecasting.
- Relatively few of the planning efforts have been completed, however, indicating that planning for goods movement is still in its early stages.
- State DOTs and MPOs have considered a broad range of potential strategies for managing increasing truck traffic, including improved highway design, special roadway facilities for trucks, operational improvements, intelligent transportation systems, improved signing, changes in allowed vehicle size or configuration, enhanced enforcement and compliance, and investments in alternative infrastructure.
- All states and metropolitan areas that participated in this synthesis are studying and implementing some type of management strategies for dealing with truck traffic. The challenges being faced significantly affect the strategies that are considered and implemented.
- The types of projects being implemented most frequently include improved pavement, climbing lanes, lane restrictions, and weigh-in-motion.
- Specific projects being implemented are tailored to the type and scope of the challenge being faced. Expected benefits of these projects primarily include improvements in safety, reductions in congestion, and increases in productivity. The primary factors influencing the selection of these projects usually include the potential benefits and public acceptance.

• Strategies that have been considered but rejected in some states include changing vehicle size or configuration limits, special roadway facilities for trucks, restrictions on lane or time-of-day usage, enhanced enforcement, and improvements in alternative infrastructure. These situations indicate that not all strategies are appropriate in all situations, and consideration must be given to public opinion, project cost, likely benefits, and ease of implementation.

From the review and findings of this report the following can be concluded:

- Challenges associated with increasing truck traffic pose a significant and growing threat to transportation safety and efficiency throughout the United States.
- More and better planning, and more continuous planning, will be needed as these challenges become more frequent and severe.
- A wide range of potential strategies is available for addressing these challenges, but strategies must be selected to specifically address the challenges being faced.
- Potential benefit and cost will be key factors to consider when evaluating alternative strategies, and public opinion must always be considered.
- There is not yet sufficient literature of documented experience on the effectiveness of various strategies in achieving their objectives. Agencies will need to continue testing and evaluating those strategies that best apply to their situation, and document the results so that other agencies may learn from their experience.

For agencies addressing the challenges of increasing truck traffic, the following applications of material in the synthesis are suggested:

- Use the list of challenges in chapter two to identify potential issues that an agency may need to address as truck traffic grows.
- Use the information in chapter three to identify planning activities that are needed to address expected truck challenges.
- Use the list of potential strategies in chapter four to identify improvement or management options that relate to the challenges an agency is facing.
- Use the discussion in chapter five to determine what types of strategies have been applied, which strategies

may be controversial, and the factors that may affect decisions.

- Use the list of source materials in the bibliography to identify documents and studies that may provide useful information for projects an agency is considering.
- Use the material in Appendix C, Summary of Survey Responses, to identify projects of interest and the states in which they have been undertaken.

The most critical need for further research is to help increase the number and scope of the published sources that quantitatively document the effectiveness of the various truck-related roadway improvements or management strategies in improving safety, reducing congestion, and increasing productivity. To conduct an effective evaluation of project costs and benefits the transportation professional needs documented, quantitative evidence of the potential benefits of a strategy. For example, how will traffic operations be affected if trucks are restricted to certain lanes? How will the accident rate change if separate lanes are constructed for trucks? To what extent can wider traffic lanes improve traffic flow? Can light rail be used for freight transportation? What types of strategies have been proven to effectively address the unique needs of border or major gateway areas? Some sources of data are available for certain strategies (see the bibliography for examples); however, because there has been relatively little experience with truck strategies to date, there is a great need for studies of before-and-after or with-and-without.

Future research should address the following to supply quantitative documentation:

- Evaluate and quantify the benefits—especially safety improvements, congestion reduction, and productivity gains—of strategies implemented to manage increasing truck traffic.
- Identify and quantify if possible the potential undesirable effects of these strategies. Such effects would include diversion of trucks to undesirable routes, pavement deterioration and increased roadway maintenance, and detrimental effects on the economy and the flow of goods.
- Document the capital and operating costs of implementing the strategies.
- Identify the conditions under which other transportation modes (including freight rail, high-speed rail, light rail, air cargo, and waterborne transportation) can be substituted for trucks carrying freight; identify methods for quantifying the impact on truck traffic.