

# NCHRP

## SYNTHESIS 314

NATIONAL  
COOPERATIVE  
HIGHWAY  
RESEARCH  
PROGRAM

### Strategies for Managing Increasing Truck Traffic

*A Synthesis of Highway Practice*

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## NCHRP SYNTHESIS 314

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# Strategies for Managing Increasing Truck Traffic

### *A Synthesis of Highway Practice*

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Systematic, well-designed research provides the most effective approach to the solution of many problems facing highway administrators and engineers. Often, highway problems are of local interest and can best be studied by highway departments individually or in cooperation with their state universities and others. However, the accelerating growth of highway transportation develops increasingly complex problems of wide interest to highway authorities. These problems are best studied through a coordinated program of cooperative research.

In recognition of these needs, the highway administrators of the American Association of State Highway and Transportation Officials initiated in 1962 an objective national highway research program employing modern scientific techniques. This program is supported on a continuing basis by funds from participating member states of the Association and it receives the full cooperation and support of the Federal Highway Administration, United States Department of Transportation.

The Transportation Research Board of the National Research Council was requested by the Association to administer the research program because of the Board's recognized objectivity and understanding of modern research practices. The Board is uniquely suited for this purpose as it maintains an extensive committee structure from which authorities on any highway transportation subject may be drawn; it possesses avenues of communication and cooperation with federal, state, and local governmental agencies, universities, and industry; its relationship to the National Research Council is an insurance of objectivity; it maintains a full-time research correlation staff of specialists in highway transportation matters to bring the findings of research directly to those who are in a position to use them.

The program is developed on the basis of research needs identified by chief administrators of the highway and transportation departments and by committees of AASHTO. Each year, specific areas of research needs to be included in the program are proposed to the National Research Council and the Board by the American Association of State Highway and Transportation Officials. Research projects to fulfill these needs are defined by the Board, and qualified research agencies are selected from those that have submitted proposals. Administration and surveillance of research contracts are the responsibilities of the National Research Council and the Transportation Research Board.

The needs for highway research are many, and the National Cooperative Highway Research Program can make significant contributions to the solution of highway transportation problems of mutual concern to many responsible groups. The program, however, is intended to complement rather than to substitute for or duplicate other highway research programs.

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The members of the technical committee selected to monitor this project and to review this report were chosen for recognized scholarly competence and with due consideration for the balance of disciplines appropriate to the project. The opinions and conclusions expressed or implied are those of the research agency that performed the research, and, while they have been accepted as appropriate by the technical committee, they are not necessarily those of the Transportation Research Board, the National Research Council, the American Association of State Highway and Transportation Officials, or the Federal Highway Administration of the U.S. Department of Transportation.

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## FOREWORD

*By Staff  
Transportation  
Research Board*

Highway administrators, engineers, and researchers often face problems for which information already exists, either in documented form or as undocumented experience and practice. This information may be fragmented, scattered, and unevaluated. As a consequence, full knowledge of what has been learned about a problem may not be brought to bear on its solution. Costly research findings may go unused, valuable experience may be overlooked, and due consideration may not be given to recommended practices for solving or alleviating the problem.

There is information on nearly every subject of concern to highway administrators and engineers. Much of it derives from research or from the work of practitioners faced with problems in their day-to-day work. To provide a systematic means for assembling and evaluating such useful information and to make it available to the entire highway community, the American Association of State Highway and Transportation Officials—through the mechanism of the National Cooperative Highway Research Program—authorized the Transportation Research Board to undertake a continuing study. This study, NCHRP Project 20-5, “Synthesis of Information Related to Highway Problems,” searches out and synthesizes useful knowledge from all available sources and prepares concise, documented reports on specific topics. Reports from this endeavor constitute an NCHRP report series, *Synthesis of Highway Practice*.

The synthesis series reports on current knowledge and practice, in a compact format, without the detailed directions usually found in handbooks or design manuals. Each report in the series provides a compendium of the best knowledge available on those measures found to be the most successful in resolving specific problems.

## PREFACE

This report of the Transportation Research Board will be of interest to local, regional, state, and federal officials, as well as to other transportation professionals and the public that work with them, in dealing with the challenges of increasing truck traffic. The report documents recent efforts by transportation organizations that construct, operate, and manage the transportation system. In many cases, plans and strategies have been developed without precedent to provide guidance in determining effective strategies. This synthesis identifies truck-related challenges, planning activities for goods movement being undertaken, truck management strategies being considered, factors that have influenced the selection of particular strategies, and benefits expected from selected strategies. The types of projects being implemented most frequently include pavement improvement or rehabilitation, climbing lanes, lane restrictions, and weigh-in-motion. Primary factors driving the selection of these projects include potential benefits and public acceptance.

Information was derived from a survey of state departments of transportation (28 responses) and metropolitan planning organizations (8 responses), supplemented by a review of available literature.

A panel of experts in the subject area guided the work of organizing and evaluating the collected data and reviewed the final synthesis report. A consultant was engaged to collect and synthesize the information and to write this report. Both the consultant and the members of the oversight panel are acknowledged on the title page. This synthesis is an immediately useful document that records the practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As progress in research and practice continues, new knowledge will be added to that now at hand.

# CONTENTS

1	SUMMARY
3	CHAPTER ONE INTRODUCTION Background, 3 Synthesis Objective, 4 Synthesis Organization, 4
5	CHAPTER TWO CHALLENGES OF INCREASING TRUCK TRAFFIC Types of Challenges, 5 Current Challenges, 8 Summary of Current Challenges, 9
11	CHAPTER THREE PLANNING FOR INCREASING TRUCK TRAFFIC Planning Activities, 11 State of the Practice, 12
18	CHAPTER FOUR POTENTIAL MANAGEMENT STRATEGIES Potential Strategies, 18 Application of Strategies to Challenges, 22
25	CHAPTER FIVE STRATEGIES SELECTED FOR APPLICATION Strategies Selected for Implementation, 23 Expected Benefits and Factors Influencing Implementation, 28 Strategies Studied but Eliminated in Some States, 28
30	CHAPTER SIX CONCLUSIONS
32	REFERENCES
33	BIBLIOGRAPHY
35	APPENDIX A SURVEY
41	APPENDIX B SURVEY RESPONDENTS
42	APPENDIX C SUMMARY OF SURVEY RESPONSES



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Abbreviations used without definition in TRB Publications:

AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
IEE	Institute of Electrical and Electronics Engineers
ITE	Institute of Transportation Engineers
NCHRP	National Cooperative Highway Research Program
NCTRP	National Cooperative Transit Research and Development Program
NHTSA	National Highway Traffic Safety Administration
SAE	Society of Automotive Engineers
TCRP	Transit Cooperative Research Program
TRB	Transportation Research Board
U.S.DOT	United States Department of Transportation

# STRATEGIES FOR MANAGING INCREASING TRUCK TRAFFIC

## SUMMARY

Increasing truck traffic poses many challenges for the transportation organizations that construct, operate, and maintain the transportation system. As such challenges have increased in importance, public agencies have begun to develop plans and implement strategies to address them. In most cases, these plans and strategies have been developed without the precedents that provide guidance in determining effective strategies.

The objective of this synthesis is to document the current state of the practice of these agencies contending with the challenges of increasing truck traffic. To do so, the synthesis used a survey of state departments of transportation (DOTs) and metropolitan planning organizations (MPOs) to identify the specific challenges being addressed, planning activities being undertaken, management strategies being considered, factors influencing the selection of particular strategies, and benefits and costs of selected strategies. Responses were received from 28 states and 8 MPOs.

State DOTs and MPOs are facing a broad array of challenges attributable to increasing truck traffic. These include 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).

DOTs and MPOs are 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, and those that have are largely in response to federal mandates, indicating that planning for goods movement is still in its early stages of evolution.

Similarly, DOTs and MPOs have considered a wide 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, regulatory changes in allowed vehicle size or configuration, enhanced enforcement and compliance, and investments in alternative infrastructure.

All survey respondents are studying and implementing some types of management strategies for dealing with truck traffic. The types of projects being implemented most frequently include pavement improvement or rehabilitation, climbing lanes, lane restrictions, and weigh-in-motion. Expected benefits of these projects primarily include improvements in

safety, reductions in congestion, and increases in productivity. Potential benefits and public acceptance are among the primary factors considered in selecting such projects.

The more controversial strategies, which have been considered but rejected in some states, include changes in vehicle size or configuration limits, special roadway facilities for trucks, restrictions on lane usage or time of day, enhanced enforcement, and improvements in alternative infrastructure. Not all strategies are appropriate in all situations, and consideration must be given to public opinion, project cost, likely benefits, and ease of implementation.