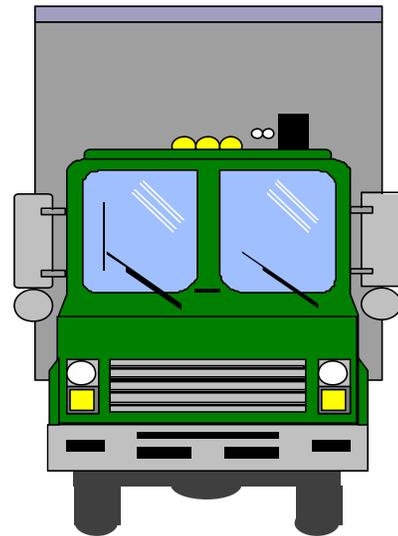

CHAPTER I

Introduction



Introduction

The Federal government first became involved in truck size and weight (TS&W) regulation during the 1950s when truck axle and vehicle gross weight and width limits were established for the Interstate System.

Federal law now regulates TS&W limits by specifying basic standards and excepting certain situations from those standards by grandfather rights and/or provision of special permits. Federal laws governing truck weights apply to the Interstate System while Federal laws governing vehicle size apply to a designated National Network (NN) for STAA vehicles which includes the Interstate System. Interstate weight limits are intended to prevent premature deterioration of the infrastructure, while minimum length limits are intended to enhance uniformity and productivity. (See Figure I-1 for current Federal limits).

Underlying Federal regulation of TS&Ws is a myriad of State and local regulations. The size and weights of vehicles have been controlled by State and local law since the early part of this century. Today, while some States closely follow

Federal limits on non-Interstate or non-NN highways, many differ from at least one of the Federal limits. Over the years, State limits have been changed many times in response to need and circumstances. Change continues—often without Federal involvement or influence.

Volume II has a complete discussion of the Nation's TS&W laws, past and present. In addition, Chapter 3 of this Volume summarizes Federal and State TS&W regulations.

TS&W limits directly affect motor carrier productivity because vehicle capacity determines the number and cost of trips required to transport a given amount of freight. Changes in this fundamental relationship may impact the size of the Nation's freight bill as well as international competitiveness.

Vehicle capacity is only one factor affecting freight transportation efficiency, however. Highway system reliability is an important determinant of the efficiency of the freight transportation system. Advanced production and logistics processes, such as just-in-time delivery, depend on carriers meeting their schedules. The lowest cost transportation often is not

as important as the most reliable when entire production processes depend on receiving goods on time.

Current Federal Truck Size and Weight Limits

Current Federal law includes the following limits:

! 20,000 pounds for single axles on the Interstate System;

! 34,000 pounds for tandem axles on the Interstate;

! Application of the Federal Bridge Formula for other axle groups up to the maximum of 80,000 pounds gross vehicle weight on the Interstate;

! 102 inches for vehicle width on the National Network (NN) for large trucks;

! 48-foot (minimum) or longer, if grandfathered, for semitrailers in a semitrailer combination on the NN; and

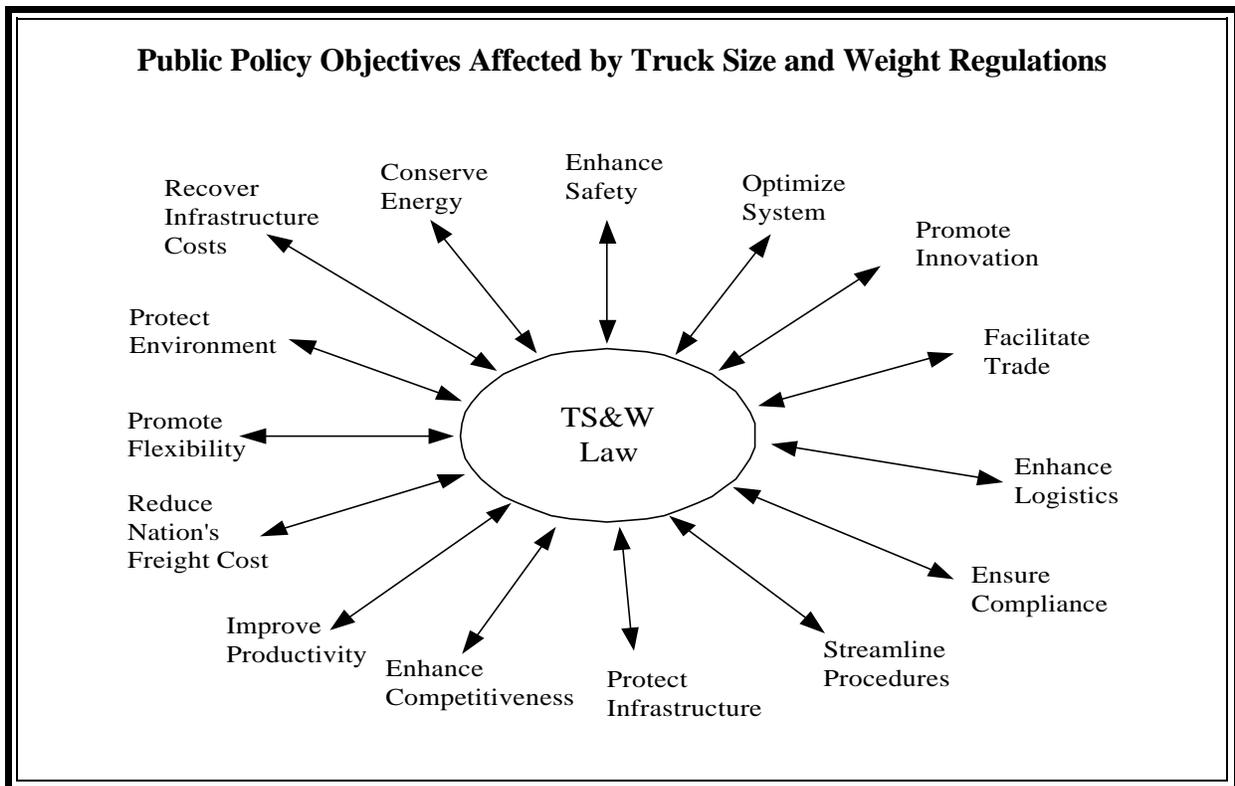
! 28-foot (minimum) for trailers in a twin-trailer combination on the NN.

All levels of government are interested in providing a transportation system that is responsive to the changing requirements of shippers and carriers. However, the optimal way to improve motor carrier productivity and system reliability is not immediately apparent and, in fact, may vary depending on the types of commodities and the origins and destinations being served.

Truck size and weight regulations have many potential effects that must be considered when evaluating the desirability of changing those regulations. Figure I-2 illustrates important

interrelationships between TS&W regulations and other public policy objectives. For example, increases in vehicle capacity, while potentially reducing the number of trucks, may have negative safety consequences. Also of concern are the fiscal implications of preserving and enhancing the condition of the highway infrastructure. Larger and heavier trucks can impose additional costs due to increased pavement wear, the need to improve intersections and interchanges to accommodate longer vehicles, and the need to strengthen or reconstruct bridges to safely carry heavier vehicles.

Government officials, as well as interest groups and the general public, are interested in the environmental impacts of changes to the Nation's TS&W limits. Further, competing modes concerned about inequitable operating conditions and potential loss of market share are important stakeholders in this issue. Finally, the TS&W issue includes an international dimension. For example, the flow of North American continental trade is constrained by differences in allowable limits imposed by the United States, Mexico and Canada. Also, containers used in international trade often cannot be hauled in the



United States without special overweight permits.

The competing economic and social dimensions of the TS&W issue challenge policy makers to find a reasonable balance. This has proven very difficult in the past as some of the factors are not readily quantifiable. For example, the ability to assess the historical accident and safety experience of certain specific truck configurations is very limited. There are simply too few operations in many cases to establish such a record and to extrapolate that experience to different operating environments. Further complicating the discussions are the different perspectives of those participating in the debate and the different operating conditions in various regions of the country.

In an effort to better understand the effects of TS&W policy changes on the wide range of possible impacts, the Department of Transportation (DOT) has undertaken this *Comprehensive TS&W (CTS&W) Study*.

The last such study conducted by the DOT was completed

in 1981. The Transportation Research Board (TRB) and the General Accounting Office conducted studies looking at specific aspects of the TS&W issue in the late 1980s and 1990s. (See Figure I-3)

Study Purpose

The purpose of this study is to provide a policy architecture within which the Nation's current body of TS&W laws may be assessed. The study tools can be used to estimate the impacts of alternative TS&W laws on safety, intermodal competition, infrastructure performance, economic productivity, traffic flow, environmental quality and energy consumption. However, limitations in data and analytical methods preclude precise answers.

The study is not intended to provide specific policy recommendations. Rather, it will provide a fact-based framework within which policy alternatives to the current Federal TS&W regulations may be considered.

Study Approach

This study draws heavily from the several TS&W studies that have been conducted by the Department, the Transportation Research Board, the General Accounting Office, and others. Figure I-3 summarizes key TS&W studies since 1981. An extensive review process was established within the Department to coordinate both this study and the 1997 Federal Highway Cost Allocation Study. Outreach to the many groups with an interest in TS&W issues was also an important element of this study. Finally, the study was designed to establish an ongoing TS&W analysis capability within the Department. The study approach is described in detail below.

Internal Departmental Coordination

Policy oversight and direction were provided by a Department Policy Oversight Group (POG). The POG comprises executives from

Major Truck Size and Weight Studies Since 1981

U.S. Department of Transportation

- 1981** *An Investigation of Truck Size and Weight Limits*: This study examined--among other issues--the requirement for, and desirability of, uniformity in maximum truck size and weight (TS&W) limits throughout the United States.
- 1985** *Feasibility of a Nationwide Network for Longer Combination Vehicles*: This study addressed the potential benefits and costs that could be anticipated from the establishment of a nationwide network for Longer Combination Vehicles (LCVs).
- 1986** *Longer Combination Vehicle Operations in Western States*: In 1985, the Senate Appropriations Committee called for a study of LCV operations in the western States.

Transportation Research Board

- 1986** *Twin Trailer Trucks (Special Report 211)*: This study addressed the safety and infrastructure impacts of vehicles with twin short trailers.
- 1989** *Providing Access for Large Trucks (Special Report 223)*: This report defined reasonable access for the longer semitrailer and double-trailer combinations which were allowed by the Surface Transportation Assistance Act of 1982.
- 1990** *Truck Weight Limits: Issues and Options (Special Report 225)*: This study focused primarily on the grandfather rights issue.
- 1990** *New Trucks for Greater Productivity and Less Road Wear: An Evaluation of the Turner Proposal (Special Report 227)*: This study evaluated a TS&W proposal which provided increased truck weights when additional axles were added.

General Accounting Office

- 1992** *Truck Safety: The Safety of Longer Combination Vehicles is Unknown*
- 1993** *Longer Combination Trucks: Driver Controls and Equipment Inspections Should be Improved*
- 1994** *Longer Combination Trucks: Potential Infrastructure Impacts, Productivity Benefits, and Safety Concerns*

throughout the Department including representatives from the Office of the Secretary of Transportation, FHWA, the Federal Railroad Administration, the National Highway Traffic Safety Administration and the Maritime Administration. The POG is chaired by the Assistant Secretary for Transportation Policy.

In addition to POG oversight, a Multimodal Advisory Group (MAG) was established to ensure that major technical decisions

shaping the study would be made on an intermodal basis. The MAG provided ongoing guidance and early review of draft documents associated with the final study.

In 1997, these two groups collaborated to publish a Departmental National Freight Policy Statement. This statement guided development of the study's analytical framework, particularly the selection of relevant impact areas. It establishes the most important principles to guide Federal

decisions affecting freight transportation across all modes. The guiding principles are shown in Figure I-4.

Highway Cost Allocation Study

This *CTS&W Study* was coordinated closely with the Federal HCA Study completed in August 1997. The *HCA Study* provides information on highway-

National Freight Transportation Policy Statement

The Department of Transportation established eight principles to guide freight transport policy development:

- Provide funding and a planning framework that establishes priorities for allocation of Federal resources to cost-effective infrastructure investments that support broad National goals;
- Promote economic growth by removing unwise or unnecessary regulation and through the efficient pricing of publicly financed transportation infrastructure;
- Ensure a safe transportation system;
- Protect the environment and conserve energy;
- Use advances in transportation technology to promote transportation efficiency and safety;
- Effectively meet our defense and emergency transportation requirements;
- Facilitate international trade and commerce; and
- Promote effective and equitable joint utilization of transportation infrastructure for freight and passenger service.

rrelated costs attributable to different vehicle classes and relationships between the cost responsibility and user fees paid by different vehicles. The study found large variations in the extent to which user fees paid by different vehicle classes cover highway costs attributable to those vehicles. Infrastructure costs attributable to many of the heaviest vehicles are greater than the user fees they pay which means that other vehicle classes are subsidizing operations of those heavy vehicles. These two studies when taken together, provide information on how alternative TS&W limits might affect highway infrastructure and related costs and the equitable payment of highway user fees by different vehicle classes.

Table I-1 displays (1) the estimated responsibility for Federal highway-related program costs funded from the Highway Trust Fund in 2000; (2) the Federal highway user fees projected to be paid in 2000 assuming the Federal highway user fee structure remains unchanged; and (3) estimated Federal equity ratios in 2000 which assume the current highway user charge structure and the

same highway program composition as during the base period.

Ongoing Truck Size and Weight Research Effort

The current *CTS&W Study* effort establishes an ongoing TS&W research activity within DOT. Data will be updated on a continuing basis and the analytical framework for evaluating various impacts of TS&W changes will be refined as the state-of-the-art improves and as new policy issues arise.

The FHWA arranged for the TRB to organize a peer review panel which will provide input to the DOT's long-term TS&W research agenda. The *CTS&W Study* will be a point of departure for exploring future research activities. The panel will address the following questions:

- (1) What information is needed to formulate efficient, effective and equitable TS&W laws;
- (2) What information is available with respect to TS&W issues;
- (3) What data and analytical tools are required to bridge the gap between what is available and what is required?

Public Outreach

An unprecedented level of outreach was undertaken in conducting the study.

Outreach activities included: (1) a Federal Register Notice requesting initial public comment, (2) public meetings with representatives of large and small carriers, trucking industry associations, safety advocates, and representatives from State and local governments; (3) regional focus sessions focused on securing input from major constituencies and experts; (4) special teleconference sessions addressing issues of importance with our State partners; and (5) external review of draft documents by Congress, State representatives and other interested parties, prior to finalization.

Study Presentation

Overview

The *1998 CTS&W Study* is provided in four volumes. Volume I, "Summary Report," synthesizes the findings presented in

Table I-1. 2000 Federal Cost Responsibility and User Fees by Vehicle Class

Vehicle Class/ Registered Weight	Cost Responsibility cents-per-mile	User Fee Payments cents-per-mile	Ratio of User Charges to Occasioned Costs
Autos	0.65	0.64	1.0
Pickups/Vans	0.65	0.89	1.4
Buses	2.57	0.27	0.1
All Passenger vehicles	0.66	0.70	1.1
Single Unit Trucks			
≤ 25,000 pounds	1.75	2.66	1.5
25,001 - 50,000 pounds	4.38	3.18	0.7
> 50,000 pounds	14.60	6.57	0.5
All Single Units	3.51	3.13	0.9
Combination Trucks			
≤ 50,000 pounds	2.78	4.53	1.6
50,001-70,000 pounds	4.25	4.72	1.1
70,001-75,000 pounds	6.25	6.24	1.0
75,001-80,000 pounds	7.08	6.41	0.9
80,001-100,000 pounds	12.50	7.18	0.6
> 100,000 pounds	16.60	8.30	0.5
All Combinations	6.90	6.30	0.9
All Trucks	5.48	4.92	1.0

Source: 1997 Federal Highway Cost Allocation Study Summary Report

Volume II and Volume III. Volume II, "Background and Issues," summarizes the information developed during the course of the study in the following areas: (1) TS&W regulations; (2) motor carrier operations and industry structure; (3) truck-rail competition; (4) shipper concerns; (5) highway safety and traffic operations; (6) highway infrastructure; and (7) enforcement.

Volume III, "Scenario Analysis," is described in the following section. Volume IV, "Guide to Documentation," presents a listing of the technical reports where methodological details related to analytical aspects of the study may be found.

Organization of Volume III

Volume III presents a broad assessment of the impacts that could be expected as a result of changes in TS&W limits. Part I (Chapter 1 - Chapter 3) provides back-ground information required to understand the analytical findings. The first chapter includes the motivation for the study, the study's purpose and the Department's

approach. Chapter 2 provides an overview of the analytical framework. Chapter 3 offers descriptions of the illustrative TS&W policy scenarios evaluated for the study.

Part II (Chapter 4) presents a key component of the TS&W analysis: the freight distribution model. The methodology for estimating diversion from rail boxcar to truck, from rail intermodal to truck and from one truck configuration to another is provided. The chapter concludes with a presentation of the travel (vehicle miles and car miles) expected for each of the illustrative scenarios.

Part III - Part V (Chapter 5 - Chapter 11) is organized by impact area. Each impact

area discussion includes a brief description of the issue and analytical approach, the sources of data and any relevant caveats. Within the context of the impact area discussions, analytical findings for each scenario are provided.

Part III (Chapter 5 - Chapter 7) deals with the relationship between commercial vehicle sizes and weights and highway agency costs associated with pavements, bridges and roadway geometry.

Part IV (Chapter 8 - Chapter 10) provides a discussion of the projected external costs (or benefits) associated with a new mix of commercial vehicles in terms

of configurations, sizes and weights. Externalities included are safety, traffic flow, energy consumption and environmental quality.

Part V (Chapter 11 - Chapter 12) offers information on the change in shipper transportation costs that could result from each of the illustrative scenarios. Specifically, post scenario costs to truck and rail customers are provided.

The Volume concludes with a summary chapter in Part VI (Chapter 13) where the illustrative scenarios are discussed and guiding principles, based on the analysis, are provided.