Executive Summary

Introduction

This report presents results of a comprehensive examination of issues surrounding current Federal truck size and weight (TS&W) limits and potential impacts of changes to those limits. This is the first comprehensive TS&W study by the Department since 1981, although the Department, the Transportation Research Board (TRB), and others have conducted a number of studies since 1981 on various aspects of TS&W regulation. Those studies have highlighted the diversity of opinions about the need for changes in Federal TS&W regulations among States, shippers, carriers, and various other interested groups.

While the several recent TS&W studies have generally included options to both increase and decrease Federal TS&W limits, attention has focused primarily on options to improve productivity through various increases in TS&W limits. Virtually all previous TS&W studies have shown large reductions in shipping costs associated with increases in TS&W limits. The magnitude of cost reductions, of course, has depended on specific assumptions concerning allowable vehicle weights and dimensions and the extent of the road system upon which larger vehicles would be allowed to operate.

Past studies have also noted a variety of potential adverse impacts of increasing Federal TS&W limits including added infrastructure costs, financial impacts on competing railroads, disruption of traffic flow, and potential adverse impacts on safety.

Safety has been one of the issues of greatest concern in previous TS&W studies. Motorists are keenly aware of the growing volume of trucks on the road, and many express discomfort when driving in traffic with many large trucks. It has been particularly difficult to forecast how safe longer combination vehicles (LCVs) would be in operating environments other than the ones in which they have been allowed to operate to date. These multitrailer combinations currently operate at weights well above the 80,000-pound Federal gross vehicle weight limit, primarily on low-volume rural roads in western States or on turnpikes in several eastern States. In those environments their crash rates generally have been comparable to conventional tractor-semitrailer combinations, but many question their safety on more congested roads in other parts of the country. LCVs inherently have stability and control limitations because of their length and number of trailers.

To understand the views of the many groups with an interest in TS&W limits, extensive outreach was conducted in this study. Outreach included public meetings, focus groups with various interested parties, workshops to review data and analytical methods used in the study, requests for comments on study plans, working papers, and drafts of key parts of the report, and video conferences with State representatives. These outreach activities confirmed the complexity and degree of concern surrounding many TS&W issues.

Various segments of the trucking industry view TS&W regulation differently, based on their assessment of how it would affect their competitive and financial position. Not all segments of the industry believe they would benefit from increased size and weight limits. States also disagree on the appropriate Federal TS&W policy. Some States want the flexibility to set TS&W limits on all their highways including the Interstate System. Other States prefer stronger Federal control over TS&W limits to minimize pressures from shippers for increased weights and dimensions.

Background

The Federal Government did not begin regulating TS&W limits until 1956 when maximum vehicle weight and width limits were imposed on vehicles operating on the new Interstate Highway System. States historically had regulated the weights and dimensions of vehicles operating on State highways, but Congress believed that the large Federal investment in the Interstate System required more direct Federal controls on the weights of vehicles using the Interstate System. A maximum gross weight limit of 73,280 pounds was established along with maximum weights of 18,000 pounds on single axles and 32,000 pounds on tandem axles. Maximum vehicle width was set at 96 inches, but length and height limits were left to State regulation. States having greater weight or width limits in place on July 1, 1956 when Federal limits went into effect were allowed to retain those limits under a grandfather clause.

The Congress increased allowable gross weight and axle weight limits in 1975, in part to provide additional cargo carrying capacity for motor carriers faced with large fuel cost increases at the time. In the Surface Transportation Assistance Act (STAA) of 1982 (P.L. 97-424), Congress required States to adopt the Federal weight limits on Interstate Highways and also required them to allow vehicles with certain minimum dimensions on a National Network (NN) for large trucks to be designated by the Secretary of Transportation in consultation with the States. In particular, the STAA of 1982 required States to allow tractor-semitrailer combinations with 48-foot long semitrailers and twin- trailer combinations with trailers of 28 feet to operate on the NN.

The most significant legislative action related to Federal TS&W limits since 1982 was the freeze on LCV operations imposed in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) (P.L. 102-240). The Transportation Equity Act for the 21st Century (TEA-21) (P.L. 105-85) did not lift that freeze. Several studies in the 1980s by the Department of Transportation and the Transportation Research Board (TRB) had examined TS&W options involving LCVs. As noted above, such vehicles have operated in many western States and on some eastern turnpikes for a number of years, but the possibility that Federal TS&W limits might be changed to allow those vehicles to operate more widely was, and continues to be, widely debated. The "LCV freeze" enacted in the ISTEA prohibited States from allowing any expansion of LCV operations either in terms of routes upon which they may operate or the vehicle weights or dimensions that may be allowed.

Since 1982, States, various segments of the trucking industry, shippers and other groups have proposed changes to Federal TS&W limits. This Comprehensive Truck Size and Weight Study has developed a framework to analyze a broad range of potential options and has used that framework to analyze several types of changes that have been recommended by others. This information and the analytical tools developed for the study provide a basis for evaluating the benefits and costs of alternative TS&W policy options.

Study Approach

This study used a variety of methods to develop information concerning potential impacts of TS&W options. In addition to the extensive outreach process described above, an internal review process involving all interested elements within the Department was instituted to assure that the full range of

perspectives was considered in the study. In particular, study oversight and direction was provided by a Departmental Policy Oversight Group (POG), comprised of senior policy officials from the Office of the Secretary, the Federal Highway Administration, the Federal Railroad Administration, the National Highway Traffic Safety Administration, and the Maritime Administration. In addition to the POG, a Multimodal Advisory Group (MAG) was established to ensure that major technical decisions shaping the study would be made on an intermodal basis with consideration to potential effects that changes in TS&W limits might have on the Nation's total freight transportation system. Because the rail system is both a necessary and important element of the Nation's freight transportation system, the Department considered it critical to assess potential effects on the rail industry that might be brought about by the introduction of larger, heavier trucks.

The study was closely coordinated with the 1997 Federal Highway Cost Allocation study to assure that (1) consistent assumptions were used in the two studies, (2) consistent methods were used to estimate infrastructure and other impacts of highway use by different vehicle classes, and (3) cost recovery and equitable user fee issues could be addressed if they came up in the TS&W study or legislative proposals subsequent to completion of the study.

An important first step in this study was to review previous studies that had been conducted by the Department, TRB, and others concerning TS&W and related truck safety issues. In addition to the literature review, a series of case studies was conducted to examine different aspects of truck transportation in detail, including competition and cooperation between trucks and other modes of freight transportation, especially rail.

State-of-the-art methods for assessing potential impacts of TS&W options were examined. Impacts considered most important include safety, productivity, infrastructure impacts (pavements, bridges, and geometrics), traffic congestion, environmental impacts (primarily air quality and noise), and impacts on railroads.

A major part of the study involved developing and testing analytical tools to estimate potential diversion of traffic from one type of truck to another or between rail and truck if TS&W limits were changed. This study makes several significant improvements over previous studies by explicitly considering inventory and other logistics costs that shippers evaluate in making real-world transportation decisions and by analyzing in detail large numbers of specific moves rather than a few typical moves.

Like previous studies, this study analyzes several specific TS&W scenarios characterized by assumptions about the maximum weights and dimensions of vehicles that would be allowed to operate and the networks upon which larger, heavier vehicles could travel. Many potential scenarios could be identified, but resource constraints limited the number of illustrative scenarios that could be analyzed. While most scenarios assume some increase in TS&W limits, two scenarios assume reductions in allowable weights or dimensions.

For analytical purposes each scenario assumed one or more "scenario vehicles" into which traffic from existing trucks or from rail potentially could divert. Diversion estimates are based on truck traffic forecast for the year 2000, but it was assumed that all fleet changes and changes in shipper behavior that in practice would occur over many years would take place by 2000. Another important assumption is that States are all assumed to adjust their TS&W limits to conform to the scenario limits and that needed infrastructure improvements to accommodate all scenario vehicles will have been completed.

Developing the networks upon which certain LCVs would be allowed to operate was difficult because most States currently do not allow LCVs and many States in the Midwest and east have indicated they do not think LCVs could operate safely on their highways, especially in and around urban areas. Resource constraints did not permit analyzing scenarios in which LCVs would be assumed only in certain regions of the country. For analytical purposes it was assumed that LCVs would be allowed to operate on limited nationwide networks of Interstate and other National Highway System (NHS) routes.

As noted above analyses conducted for this study are much more detailed than analyses conducted in previous TS&W studies. In addition to the shipment-by-shipment diversion analysis described above, pavement and bridge impacts are based on analyses of large numbers of actual facilities using data from the Highway Performance Monitoring System and the National Bridge Inventory.

The safety analysis includes an extensive review of past safety studies and a synthesis of results that could be pulled from those studies. An important contribution of this study is the development of tools to evaluate stability and control properties of different vehicle configurations at different weights and dimensions. Differences in vehicle stability and control are perhaps the most important safety-related factors directly related to differences in vehicle weights and dimensions. Where crash rates and other direct evidence of the relative safety of certain vehicles are not available, the stability and control characteristics of the vehicle provide an indication of its relative safety compared to vehicles currently in widespread use.

Illustrative Truck Size and Weight Scenarios

Five TS&W scenarios were developed for this study to illustrate the nature and relative magnitude of impacts on safety, productivity, infrastructure, the environment, traffic operations, and the railroads. Scenarios are characterized by specific vehicles that would likely operate under the scenarios; gross weight limits and lengths at which those vehicles would operate; and the networks of highways upon which scenario vehicles would operate and the Federal TS&W limits would apply. Those illustrative scenarios are briefly described below.

Uniformity Scenario

This scenario assumes grandfather provisions in current Federal law would be removed and requires States to adopt Federal weight limits on all NN highways. States now exercising grandfather rights to allow heavier vehicles on the Interstate System would have to roll those weights back to the current Federal limits. They also would have to roll back any higher limits they may now have on other NN highways. With an 80,000-pound weight limit, LCVs would be impractical for all but the lightest loads. A few States have weight limits below Federal limits on non-Interstate portions of the NN. Those States would be required to bring weight limits up to Federal limits on those NN highways. Non-divisible load permits would continue. Off the NN, vehicles would continue to operate at current State-regulated weights.

North American Trade Scenarios

The North American Trade Scenarios allow heavier gross vehicle weights on certain configurations by increasing allowable tridem-axle loads to be more consistent with tridem-axle loads in Canada and

Mexico. Two alternative tridem-axle load limits are tested, one at 44,000 pounds and the second at 51,000 pounds. This second limit would allow transportation of international containers loaded to the International Standards Organization (ISO) limit. Gross weights of six-axle tractor-semitrailers carrying those containers would be 97,000 pounds. Other vehicles considered in this scenario are a four-axle single-unit truck weighing up to 71,000 pounds and an eight-axle twin-trailer combination weighing up to 131,000 pounds with trailer lengths of 33 feet. Because they corner as well as current tractor-semitrailers, the eight-axle twin-trailers would be allowed the same access. Eight-axle doubles are operated in some Canadian Provinces and in States along the U.S.-Canadian border, but not in Mexico. Current grandfathered weight limits would stay in effect in these scenarios.

Longer Combination Vehicles Nationwide Scenario

Longer combination vehicles currently operate in 16 States west of the Mississippi River and on turnpikes in 5 States east of the Mississippi River. The ISTEA contains an "LCV freeze" that prevents expansion of LCVs into States that did not permit those vehicles before June 1, 1991. The LCVs Nationwide Scenario assumes LCV operations on a nationwide network. Limited networks would be designated upon which LCVs could operate. Turnpike doubles (twin 53-foot trailer combinations weighing up to 148,000 pounds) and Rocky Mountain Doubles (combinations with one 53-foot trailer and one 28.5-foot trailer weighing up to 120,000 pounds) would not be allowed to leave the network because of their relatively poor maneuverability. They would have to use staging areas to assemble and disassemble; travel off the network would be in single trailer combinations. Triple-trailer combinations (combinations with three 28.5-foot trailers weighing up to 132,000 pounds) and eight-axle twin-trailer combinations with two 33-foot trailers weighing up to 124,000 pounds would be allowed to travel off their networks to get to origins and destinations because they can negotiate curves as well as current tractor-semitrailer combinations. In practice triple trailers and the eight-axle twin trailers might not be allowed unlimited access off their designated networks, but there was no way to estimate the extent to which access might be granted. To the extent that diversion to those two vehicles may be overestimated, all of the impact measures, both positive and negative, are also overestimated. The scenario assumes that all States would uniformly adopt the new limits, and therefore, captures the maximum impact. All other Federal size and weight controls would remain.

H.R. 551 Scenario

H.R. 551, "The Safe Highways and Infrastructure Preservation Act," was first introduced in 1994 during the 103rd Session of Congress, and again in 1997, as H.R. 551, during the 105th Session. The bill would federalize certain areas of truck regulation that are now State responsibilities. Specifically, H.R. 551 contains three provisions related to Federal TS&W limits: (1) it would phase out trailers longer than 53 feet, (2) it would freeze State grandfather rights, and (3) it would freeze weight limits (including divisible load permits) on non-Interstate portions of the NHS.

Triples Nationwide Scenario

This scenario assumes operation of triple-trailer combinations across the country at the same weights and dimensions as are assumed under the LCVs Nationwide Scenario.

Illustrative Scenario Impacts

Table ES-1 shows estimates of the diversion of traffic from existing trucks and from rail to selected vehicles for each of the scenarios. Total vehicle miles of travel (VMT) do not equal the sum of VMTs for individual vehicle classes because not all vehicle classes are shown. Also, it should be pointed out that total national truck VMT for all scenarios is greater than current levels due to the overall growth in the national economy forecast over the study period.

The two illustrative scenarios involving some roll back of State TS&W limits show small increases in travel by five-axle tractor-semitrailer combinations and small increases in total heavy truck VMT. The Uniformity Scenario would reduce travel by six-axle tractor-semitrailers and LCVs because those vehicles would not be able to travel at weights above 80,000 pounds on the NN. The H.R. 551 scenario has very small changes in VMT for these two vehicle classes.

The four scenarios allowing heavier vehicle weights all show large (greater than 70%) reductions in travel by five-axle tractor-semitrailers and very large increases in LCV travel. Total VMT estimated under the North American Trade Scenarios is about ten percent less than total base case VMT.

Most VMT that shifts from five-axle tractor-semitrailers diverts to eight-axle twin-trailer combinations rather than six-axle tractor-semitrailers in the North American Trade Scenarios since the twins are assumed to have wide access off the NN and have significantly greater cubic capacity and vehicle weight. In fact much of the diversion to the eight-axle twins is lower density traffic that takes advantage of the additional cubic capacity of the vehicle rather than the additional gross weight it can carry compared to the six-axle tractor-semitrailer. If States did not provide the liberal access assumed in this study, or if cargo handling and other logistics costs associated with using the eight-axle twins were larger than assumed, diversion would be lower.

Estimated reductions in total VMT under the two LCV scenarios are about twice as great as under the North American Trade Scenarios. In addition to diverting large volumes of traffic currently shipped in five-axle tractor-semitrailers, LCVs could also divert less-than-truckload traffic currently being shipped in STAA doubles. Even in the Triples Nationwide Scenario, considerable truckload traffic is diverted from five-axle tractor-semitrailers because of the greater cubic capacity and gross weight of the triple. While little truckload traffic currently moves in triples, the liberal access and high gross weight limit assumptions in the scenario result in a vehicle that has relatively low costs per payload ton-mile. If access were more restricted, as would be likely in many States, the allowable gross weight lower, and the handling and other logistics costs associated with using triples higher than are assumed in this scenario, the diversion to triples would be lower than shown in Table ES-1.

Impacts of the various TS&W scenarios on infrastructure, shipper and rail costs, and the environment are all related to the traffic diversion estimates summarized above. Table ES-2 shows estimated changes from base case levels for key impact areas. Bridge replacement costs change significantly under all scenarios, including those that would reduce certain vehicle weights and dimensions. The assumption in this study is that all bridges that would be stressed beyond overstress criteria underlying the Federal bridge formula ultimately would be replaced to accommodate vehicles allowed under the various

Table ES-1 Estimated Diversion for Selected Vehicle Configurations for Illustrative Truck Size and Weight Scenarios

Vehicle Class	5-axle tractor-semitrailer		6-axle tractor-semitrailer		LCVs		Total Truck [2]		Rail	
Illustrative Scenario	VMT (millions)	% change	VMT (millions)	% change	VMT (millions)	% change	VMT (millions)	% change	Car-miles (millions)	% change
Base Case	83,895	na	6,059	na	1,517	na	128,288	na	25,555	na
Uniformity	91,205	8.7	3,519	-41.9	542	-64.3	132,351	3.2	na	na[3]
N.A. Trade (1)	22,274	-73.5	6,209	2.5	49,837	3185.2	114,671	-10.6	24,354	-4.7
N.A. Trade (2)	24,997	-70.2	6,246	3.1	47,453	3028.1	114,632	-10.6	24,073	-5.8
LCV nationwide	19,611	-76.6	na[1]	na[1]	40,980	2601.4	98,562	-23.2	20,546	-19.6
H.R. 551	83,915	0.0	6,051	-0.1	1,517	0.0	128,311	0.0	na	na
Triples	23,405	-72.1	na[1]	na[1]	39,647	2513.5	102,400	-20.2	24,533	-4.0

N.A. Trade (1) – 44,000 pound tridem axles; N.A. Trade (2) – 51,000 pound tridem axles.

[1] To facilitate the diversion analysis, six-axle tractor-semitrailers were not included in the analysis for the two scenarios involving LCVs.

[2] The Total does not equal the sum of the three vehicle classes shown in the table because other vehicle classes included in the Total are not shown in the table.

[3] Potential diversion from truck to rail under the Uniformity and H.R. 551 Scenarios could not be estimated because of lack of data on rail pricing.

scenarios. This is similar to assumptions in previous TS&W studies by the Department and TRB, but it may overestimate bridge-related costs based on comments by several States. In practice, depending on the degree of overstress, the volume of vehicles expected to utilize the bridge, and the type of bridge, States might postpone replacement for a number of years or perhaps be able to strengthen the bridge rather than replace it. Impacts of heavy trucks on fatigue and bridge deck deterioration are not estimated. An on-going study under the National Cooperative Highway Research Program is examining fatigue and deck deterioration issues in more detail.

While bridge costs are primarily a function of weight, geometric costs are strongly influenced by trailer length. In general, the longer the trailer, the greater the vehicle's offtracking, especially in multitrailer combinations. Some freeway interchanges and at-grade intersections would have to be modified to accommodate the offtracking of longer vehicles.

In scenarios analyzed for this study, turnpike doubles and Rocky Mountain doubles are assumed to be restricted to limited networks. Staging areas would be required to allow those vehicles to assemble and disassemble for travel off those networks. Some western States currently allow those vehicles to travel more widely than is assumed in the illustrative scenarios, but the vehicles operating in those States are shorter and lighter than the configurations examined in this study. The additional length would make the scenario vehicles less maneuverable than the vehicles in use today.

As in other TS&W studies by the Department and TRB, this study estimates that certain scenarios could produce significant reductions in shipping costs. Changes in shipping costs shown in Table ES-2 are all smaller in percentage terms than changes in some other impacts, but the base for these changes is much larger. Assumptions about allowable vehicle weights and dimensions and the extent of the network available for LCVs result in estimates of shipper cost savings that are higher than estimates in most previous studies. If lower weights, shorter lengths, and smaller networks were analyzed, shipper cost savings would be lower, but so too would most of the other impacts.

The analysis of scenario impacts on rail revenues indicates that several scenarios could significantly reduce revenues available to cover railroad fixed costs, known as "contribution." Because contribution is closely linked to return on investment, contribution is an important measure of a railroad's ability to cover its fixed cost and sustain necessary ongoing investment. Industry-wide estimates showed that contribution could be reduced by over 50 percent under the LCVs Nationwide Scenario and by lesser amounts under the North American Trade and Triples Nationwide Scenarios, which also allow nationwide operations of LCVs. Volume III contains estimates of changes in rail contribution for several individual railroads for each scenario. If allowable vehicle weights and dimensions were reduced, as assumed in the Uniformity Scenario, impacts on rail contribution would be smaller.

Safety impacts are not shown on this table because there are so many dimensions to the safety issue that no one adequately captures safety considerations surrounding the illustrative scenarios. Previous TS&W studies have estimated changes in crashes and crash costs that might result from TS&W changes, but in this study the Department determined that changes in crash rates could not reliably be estimated for the LCV scenarios. The small body of evidence on LCV crash rates in western States is based on such different operating conditions and vehicles than those evaluated in this study that they do not provide a credible basis for estimating crash rates for vehicles with the dimensions and weights analyzed in this study, especially on congested highways on eastern portions of the illustrative LCV networks. Other

Table ES-2 Estimated Impacts of Illustrative Truck Size and Weight Scenarios
(Percent Change from Base Case)

	Uniformity	N.A. Trade (1)	N.A. Trade (2)	LCV Nationwide	H.R. 551	Triples
Pavement Costs	-0.3	-1.6	-1.2	-0.2	0	0
Bridge Costs	-13.0	+33.1	+42.2	+34.4	0	+10.4
Geometric Costs	0	+13.3	+13.3	+965.0	0	0
Congestion Costs	+0.6	-1.2	-1.2	-2.9	0	-7.6
Energy Costs	+2.1	-6.2	-6.3	-13.8	0	-12.8
Shipper Costs	+3.0	-5.1	-7.0	-11.4	0	-8.65
Rail Contribution[1]	na	-42.8	-49.7	-55.8	na	-38.2

N.A. Trade (1) – 44,000 pound tridem axles; N.A. Trade (2) – 51,000 pound tridem axles.
[1] The amount of rail revenue available to pay fixed costs after freight service (variable) costs have been covered.

factors, therefore, need to be considered in assessing safety impacts of possible TS&W changes. These include stability and control properties of different configurations, and perceptions of drivers concerning the safety of longer and heavier vehicles.

The LCV configurations generally show poorer stability or control properties than the base tractor-semitrailer configuration. Short multitrailer combinations have poor lateral stability that can result in the rearmost trailers traveling outside their lane or at the extreme rolling over if rapid steering maneuvers are required. In general the shorter the trailers, the worse the lateral instability, although certain types of trailer connections can improve stability. Thus while shorter trailers on triple trailer combinations reduce offtracking, they also reduce lateral stability. Reducing allowable weights and dimensions of scenario vehicles would improve stability and control, but would also reduce productivity for many segments of the trucking industry. Volumes II and III present detailed results of safety-related analyses conducted for this study.

Conclusions

Significant productivity benefits are estimated for each illustrative scenario that allows heavier vehicle weights, but these benefits are derived primarily from the use of LCVs even under the North American Trade Scenarios. Nationwide use of LCVs would entail significant infrastructure costs, adverse impacts on railroads, and potentially negative safety impacts. Furthermore, officials in many States that currently do not allow LCVs oppose policies that would relax restrictions on LCV use. In addition to concerns about infrastructure costs and safety risks, their opposition likely reflects apprehension about larger trucks by motorist and other interest groups in their States.

States differ markedly on their positions regarding changes in Federal TS&W limits. Some States oppose changes in Federal TS&W laws that would give States either the flexibility to allow higher gross weights or to allow LCVs. In general, they fear that if neighboring States allow LCVs they will face irresistible pressure to also allow LCVs to keep their businesses competitive.

States that presently allow LCVs on their State highways generally favor removing the LCV freeze and liberalizing rules under which LCVs may operate. They argue that grandfathered operations in most States are based on laws in effect in 1956 and that highways have become safer since that time. They also maintain that LCVs have had good safety records in their jurisdictions, that LCVs improve productivity, that LCVs can operate on their highway systems without staging areas or interchange improvements, and that current grandfather laws often result in LCVs having to operate off the Interstate System rather than on the safer Interstate Highways.

Still other States would like increases in gross weights allowed for six-axle tractor-semitrailers and single unit trucks like dump trucks, garbage trucks, and other specialized hauling vehicles. These States want additional truck productivity without the infrastructure costs and potential safety concerns associated with LCVs. No separate analysis was conducted in this study to estimate effects of allowing only those shorter vehicles. In general, such vehicles would not be expected to cause additional pavement damage on Interstate Highways, nor would they increase costs to improve roadway geometrics. Bridge impacts would be mixed depending on the gross weights allowed. The heavier vehicles allowed under the North American Trade Scenario would require substantial bridge improvements. Heavier six-axle tractor-semitrailers, such as the 97,000 pound vehicle that would be allowed to operate under H.R. 1667

introduced in 1999, generally would exceed bridge formula limits and would cause stresses exceeding bridge design stresses.

While basic Federal TS&W limits have not changed since 1982 with the exception of the LCV freeze, this does not mean that the status quo has been maintained. Several States have been granted exceptions to Federal gross weight or axle-weight limits in either authorizing or appropriating legislation since 1982, including four States that received such exemptions in TEA-21. States are granting increasing numbers of oversize and overweight permits, especially for international containers, but also for many other commodities. The cubic capacity of vehicles has also changed, primarily as the result of increasing trailer lengths. For example, at the time of the Department's last comprehensive report on TS&W policy issues in 1981, the standard trailer length was 45 feet, with 48-foot trailers becoming increasingly common. Fifty-three foot long semitrailers are becoming a standard for many carriers, and some States allow trailers up to 60 feet in length. Average operating weights of tractor-semitrailers have actually gone down slightly in recent years with decreases in cargo density and pressures to provide smaller, more frequent deliveries to support just-in-time and other advanced logistics operations.

There are several implications of these ad hoc trends that are occurring while basic Federal TS&W limits remain unchanged. With the increasing weights being allowed under permit, pavements and bridges will deteriorate faster. Increasing trailer lengths probably have not had as significant an effect because carriers are operating those vehicles with the rear axles pushed forward so that their offtracking is not significantly worse than 48-foot trailers. As trailer lengths have moved beyond 53 feet in some States, however, geometric deficiencies have increased because there is a limit to how far forward the rear axles can be pushed to minimize offtracking. The sum of these ad hoc changes at the State level has been to create an ever more diverse patchwork of TS&W limits nationwide. Increasing trade with Mexico and Canada, which have higher allowable gross weight and axle weight limits than the U.S., will cause even greater pressures to increase weight limits in this country, especially in major trade corridors.

One scenario evaluated in this study, the Uniformity Scenario, would virtually eliminate the lack of uniformity in State TS&W limits, but little sentiment to roll back Federal TS&W limits to the extent assumed in this scenario was expressed in comments on the draft report. The H.R. 551 Scenario would phase out trailers longer than 53 feet and freeze weight limits on the National Highway System, but would retain existing grandfather and other legislative exemptions to the basic Federal weight laws.

Cost recovery is an issue that several States mentioned in comments to the docket, and is an issue for the Federal Government as well. Most increases in TS&W limits would require some infrastructure improvements. Even if more incremental changes in TS&W limits were implemented than those included in the illustrative scenarios, bridge, geometric, and perhaps pavement costs could increase. Some States capture a large share of the additional infrastructure costs associated with operations of oversize and overweight vehicles through permit fees, but other States charge fees that cover little more than costs to administer the permit program. At the Federal level, there is no mechanism for capturing added costs of larger, heavier trucks through user taxes. Weaknesses of the current Federal user fee structure to reflect the cost responsibility of different vehicle classes were discussed in detail in the 1997 Federal Highway Cost Allocation Study.

The TRB has a study underway of Federal TS&W regulations as called for in TEA-21. That study will consider whether changes in Federal TS&W limits are advisable and evaluate how changes might affect the economy, the environment, safety, and services to communities.

The Department will continue to improve this analytical framework during the next several years. Comments submitted to the docket provided valuable recommendations for additional research in several areas. In May 2000 the Federal Highway Administration sponsored a nationwide truck size and weight policy workshop to discuss specific improvements that can be made in data and analytical methods used in assessing impacts of truck size and weight policy options. The workshop also was intended to provide solicit perspectives from a variety of stakeholders on future directions for Federal truck size and weight policy.

The Department will be prepared to update this TS&W study before the next surface transportation reauthorization using updated data and analytical tools and building on other on-going research by TRB, the National Cooperative Highway Research Program and other institutions. In the meantime, if requested by Congress, the Department is prepared to examine additional TS&W options that may be of interest. An analysis is already underway of a "Western Uniformity Scenario" as requested by the Western Governors Association.

The analytical framework developed for this study is flexible and many assumptions can be varied to assess specific proposals. While the illustrative scenarios analyzed in this study covered most basic TS&W alternatives, many variations are possible. An option might be identified that could improve shipper and carrier productivity, improve safety, have acceptable infrastructure costs, and cause little serious impacts to railroads or other modes. Identifying such an option would require close coordination with States, shippers, carriers, and other industry groups. If consensus could be developed that the benefits clearly outweighed potential costs, it might be possible to rationalize national TS&W policy, reduce or eliminate the need for the kinds of State exemptions to Federal TS&W laws that recently have been enacted, and improve safety, productivity, and international competitiveness.