



**ADVOCATES
FOR HIGHWAY
AND AUTO SAFETY**

*Increasing Truck Sizes and Weights
Threatens Safety and U.S. Highways and Bridges*

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Oversight Hearing on

**Truck Weights and Lengths:
Assessing the Impacts of Existing Laws and Regulations**

Before the

Subcommittee on Highways and Transit

House Committee on Transportation and Infrastructure

July 9, 2008

Introduction

Good morning, Mr. Chairman and members of the Subcommittee on Highways and Transit. I am Gerald A. Donaldson, Ph.D., Senior Research Director for Advocates for Highway and Auto Safety (Advocates). Founded in 1989, Advocates is an alliance of consumer, health and safety organizations, and insurance companies and associations working together to make our roads and highways safer. Advocates encourages the adoption of federal and state laws, policies, programs, and regulations that save lives and reduce injuries in motor vehicle crashes on our nation's highways. Advocates has had a long involvement in highway and traffic safety issues including the dangers posed by commercial motor vehicle (truck and bus) operations on our nation's roadways.

We commend the Committee and Subcommittee chairs and ranking members for confronting the increasing pressure to lift big truck size and weight limits yet again on the nation's highways. Throughout the past 50 years, trucking interests have relentlessly sought increases in truck sizes and weights. They largely have been successful. The result has been a growing list of numerous exemptions from existing truck size and weight regulations granted at both the state and the federal levels of government. These wide-ranging exemptions have been granted to the detriment of public safety and at the risk of increased bridge and pavement damage while imposing unfair, staggering costs on U.S. taxpayers for severe truck crashes and roadway damage. I am attaching a brief history of the major pieces of federal legislation to my testimony for inclusion in the record of this hearing.

The hearing being held today by this Subcommittee could not be more timely. While this hearing is being conducted, massive efforts by the nation's trucking industry are underway to ratchet up truck sizes and weights throughout the U.S. by using different strategies in several states while also attempting to persuade Congress to grant more exemptions. Using a divide-and-conquer approach, trucking interests first pursue size and weight increases in a few states and place pressure on neighboring states to conform to these higher limits in order to compete for transportation business and aid special interests. Eventually, the trucking industry invokes the higher limits adopted in many states to urge Congress to adopt a higher, uniform federal requirement for truck sizes and weights that compels reluctant states to raise truck sizes and weights on federally assisted highways. A new round of this saga of "ratcheting" is already underway in several states.

The adverse impact of these efforts, if successful, would be enormous. More lives would be lost in large truck crashes, more highways would be damaged, and more bridges would be placed at increased risk of catastrophic failure. Congress may well be asked in the next reauthorization legislation to allow higher sizes and weights, including thawing the 1991 Longer Combination Vehicle (LCV) freeze, at a time when the amount of the underpayment by heavy trucks to cover the cost of their destruction of lives and highway infrastructure is unprecedented. In addition to the loss of nearly 5,000 lives each year in truck-involved crashes, bigger and heavier trucks would only compound an already rapidly mounting federal and state infrastructure crisis in both highway funding and highway serviceability. Allowing greater numbers of bigger, heavier trucks on more U.S. highways would further expand the already enormous backlog of highway and

bridge infrastructure needs. This further blow delivered to our nation's roads and bridges would come at a time when both state and federal reports show that highway funding is not only insufficient but also declining.

Deaths In Big Truck Crashes Continue to Mount

It should come as no surprise that, by overwhelming margins, the American public has long opposed increases in the size and weight of large trucks. In poll after poll, the public has consistently and emphatically expressed the view that sharing the road with big trucks is unsafe. In a poll conducted earlier this year, two-thirds of the public, by a margin of 66 to 16 percent, oppose efforts to have Congress allow trucks that would carry heavier loads on U.S. highways.¹ An even larger majority of Americans, 82 percent (more than a 4-to-1 margin), believe that multi-trailer LCVs are more dangerous than trucks pulling a single trailer.

The consistently wide and deep opposition by the American public and state authorities to bigger, heavier trucks is based on their realistic fears over the safety consequences that tragically are in evidence every day on our nation's roadways. Although big trucks are only 3 percent of U.S. registered vehicles, they are dramatically over-represented in fatal crashes. Despite their small presence in the traffic stream, big, heavy trucks each year are responsible for 12 to 13 percent of all motor vehicle crash deaths.

Even more frightening is the disproportionate fatal consequences for the occupants of a passenger motor vehicle involved in a fatal crash with a big truck. When a car has a crash with a big, heavy truck, *98 percent of the people who die are in the small passenger vehicle.*²

Since 1982, the year in which Congress passed the Surface Transportation Assistance Act (STAA) a total of *126,107 people have been killed in large truck crashes.*³ The STAA pre-empted the states' control not only over their Interstate highways, but also, in an unparalleled legislative action, compelled the states to accept much longer, wider, heavier trucks on hundreds of thousands of miles of their state roads.

In 2006 alone, 4,995 people died in large truck crashes, more than the annual number of deaths in 1991 and 1992, and about the same number that died in large truck crashes in 1995. It is clear that we have made no progress whatever in significantly reducing the actual number of deaths produced by large truck crashes. And it is equally clear that a large part of the reason is the increased numbers of longer, wider, heavier

¹ Lake Research Partners national survey, released May 14, 2008, prepared for Advocates for Highway and Auto Safety, Public Citizen and the Truck Safety Coalition, a partnership of Citizens for Reliable and Safe Highways and Parents Against Tired Truckers.

² *Fatality Facts 2004*, Insurance Institute for Highway Safety.

³ Fatality Analysis Reporting System (FARS), 1982-2006, National Highway Traffic Safety Administration (NHTSA).

trucks, sometimes pulling two and even three trailers behind a tractor, operating on more and more miles of highways, both on and off the U.S. Interstate system.

Bigger, Heavier, Longer Trucks Are More Dangerous

There are many aspects of heavier, bigger trucks that make them more dangerous. For example, a 100,000-pound truck takes 25 percent longer to stop than an 80,000-pound truck. A 120,000 pound truck can travel as much as 50 percent further before stopping than an 80,000 pound truck, especially if these heavy trucks have unadjusted brakes. Federal standards require passenger cars to stop in 215 feet, but big tractor-trailers are allowed to take up to 355 feet in which to come to a stop, the length of a football field. Where a fully loaded big rig at the current maximum weight of 80,000 pounds is required to come to a stop in 355 feet, a 100,000 pound truck would take 444 feet and a 120,000 pound truck would take 533 feet to stop. Even these stopping distances are unrealistic in trucks that do not have well maintained brakes. Truck inspections often find up to one-third of all trucks with out-of-adjustment brakes, the most frequent citation by enforcement authorities for placing a large truck out of service.⁴

Over the years, many studies have been conducted showing the dangers of bigger, heavier trucks. Those studies, including Working Papers authored for the Federal Highway Administration (FHWA)⁵ show repeatedly that adding more weight to big trucks results in longer stopping distances, reduced margins of safe maneuverability at high speeds, more loss of control crashes, and increased risk of rollovers. Adding multiple trailers behind a tractor further increases the risk of crashes by promoting even more instability in these big double- and triple-trailer rigs, including increased high- and low-speed offtracking into opposing traffic lanes and major reductions in a commercial driver's ability to control double- and triple-trailer combinations.

Studies also clearly show the increased crash risk and crash severity produced by the use of longer, heavier trucks. Some of these studies show the increased risk of crashes as rigs get longer because the increased length of combination trucks using tractors to pull longer semi-trailers or multiple trailing units causes more offtracking across road edgelines and centerlines. These longer rigs also swing entirely into opposing lanes to make right-angle turns.⁶

Heavier trucks also are increasingly likely to create impediments in the traffic stream because they operate more slowly while climbing grades. This promotes motorists attempting to pass these long vehicles, a risky action especially when a car must accelerate to get past a truck that can be as much as 120 feet long.

⁴ See, for example, *Study of the Braking Performance of Heavy U.S. Vehicles*, National Highway Traffic Safety Administration, 1987.

⁵ *Comprehensive Truck Size and Weight Study*, U.S. DOT, 2000. The Working Papers were authored in 1995 and are available on the FHWA web site, <http://www.fhwa.gov>.

⁶ See, Working Paper No. 5, *Comprehensive Truck Size and Weight Study*, U.S. Department of Transportation, 1995.

Extra-heavy trucks often have other serious safety deficiencies. They accelerate more slowly and are unable to make a safe maneuver to enter a traffic stream from departure points of exit ramps. In many cases, this is due to thousands of merger lanes throughout the U.S. that are built to substandard lengths for making high-speed entries into mainline traffic. In numerous cases, these merger lanes are even too short for safe passenger vehicle merging maneuvers in high-speed, congested traffic conditions.

Similarly, deceleration lanes are often highly dangerous for overweight trucks to safely negotiate because of the considerable difference between mainline travel speeds, often in excess of 70 miles-per-hour, and the safe speed for entering an exit ramp that is frequently as much as 50 miles-per-hour lower than mainline vehicle speeds. The result is an extremely high rate of large, heavy trucks rolling over on these ramps.⁷ In addition, many on- and off-ramps on freeways and expressways are elevated and bordered by bridge parapets. In numerous cases, these ramps are too narrow and have curve radii that are too short to accommodate the offtracking of very long combination trucks. Many extra-long trucks are simply unable to use these ramps.

Longer, heavier trucks often have additional axles that require more frequent maintenance. The Commercial Vehicle Safety Alliance (CVSA) regularly finds about one-third of all trucks inspected during its annual Roadcheck to have faulty brakes that require enforcement officers to issue Out of Service Orders (OOS) to the drivers and motor carriers until the vehicle is properly repaired. In fact, Roadcheck 2008, just conducted, found that 52.6 percent of all commercial motor vehicle defects resulting in OOS Orders were faulty brakes.⁸ The U.S. Department of Transportation (DOT) has stated its concern in several studies about the increased chances of finding poor brakes on bigger trucks with more axles.⁹

Heavier trucks also have a higher risk of rollovers as they add more weight on the same number of axles, often surpassing gross vehicle weights of 80,000 pounds by wide margins. Many hundreds of thousands of trips by legal and illegal overweight trucks throughout the U.S. every day raise the chances of rollover crashes because standard “18-wheelers” are transporting loads that result in the rig far exceeding the maximum federal gross weight limit. When those loads also involve cargo that can easily shift, such as various types of liquids in cargo tanks, extra-heavy trucks become extremely unstable in

⁷ See, for example, R.D. Ervin, *et al.*, *Influence of Size and Weight Variables on the Stability and Control Properties of Heavy Trucks*, University of Michigan Transportation Research Institute, FHWA Report No. FHWA/RD-83/029, July 1986.

⁸ See, http://www.occupationalhazards.com/Classes/Article/ArticleDraw_P.aspx, a summary of the initial figures for Roadcheck 2008.

⁹ See, for example, the Comprehensive Truck Size and Weight Study, U.S. Department of Transportation, 2000, *op. cit.*, and “Study of the Braking Performance of Heavy U.S. Vehicles,” *op. cit.*

emergency steering maneuvers or when rapid deceleration is required to negotiate a sharp curve.¹⁰

When longer, heavier trucks are LCVs, that is, tractors pulling multiple trailing units, such as big Triples, Rocky Mountain Doubles, and Turnpike Doubles, safety problems are further magnified by the swaying and increased low- and high-speed offtracking of these very long combination rigs. Even the U.S. DOT in its *Comprehensive Truck Size and Weight Study* found that if LCVs increased their operations nationwide, they would suffer an 11 percent higher overall fatal crash rate.

This finding was further confirmed in the Executive Summary of the 2004 U.S. DOT study, *Western Uniformity Scenario Analysis*.¹¹ The study specifically cautioned against the increased use of long combinations pulling multiple trailers because increased amplification or sway of the last trailing units and poorer control of load transfer as compared with single semi-trailer trucks makes LCVs more prone to out-of-control and rollover crashes. This is especially pronounced in multi-trailer combination trucks transporting light loads or carrying no freight in an empty “backhaul.”

This increased crash risk of trucks pulling multiple trailers is accompanied by increased crash severity. As trucks grow larger and heavier, and add more trailers pulled by a tractor, the cost of crashes grows rapidly. A 2006 FHWA study of truck crash costs found the expense of a multi-trailer crash *was more than three times* the cost of crashes by tractors pulling a single semi-trailer.¹² This finding strongly supports the substantially increased crash problem of LCVs. It also points to the bigger crash “footprint” of LCVs – longer rigs with more trailers often will involve more vehicles in crashes, resulting in a greater number of occupant deaths and injuries.

The 2006 FHWA Truck Crash Costs Study showed that the annual cost of fatal large truck crashes for 2001-2003, calculated in 2005 dollars, was *\$41.5 billion each year*. The average cost per fatal crash of a tractor-trailer rig in this study was *\$3.6 million*, many times higher than the cost of a fatal passenger vehicle crash. And the cost of each tractor-semi-trailer, “18-wheeler,” crash, in turn, was found to be almost *double* the cost of a crash involving a straight or single-unit big truck.

As combination trucks grow longer and invade more lower-class roads, the danger of severe crashes rapidly increases. These roads often have narrow lanes, winding and hilly alignment with short radius vertical and horizontal curves and severely limited sight

¹⁰ Evaluation of some of the problems of very large trucks negotiating interchanges is found in, *e.g.*, R. Ervin, *et al.*, *Impact of Specific Geometric Features on Truck Operations and Safety at Interchanges*, University of Michigan Transportation Research Institute, August 1986.

¹¹ *Western Uniformity Scenario Analysis – A Regional Truck Size and Weight Scenario Requested by the Western Governors’ Association*, April 2004.

¹² *Costs of Medium and Heavy Truck Crashes (Truck Crash Costs Study)*, FHWA, December 2006.

distances. Two-way, two-lane roads often have no shoulders for errant vehicles, and their roadsides are strewn with lethal fixed-object hazards such as trees and telephone poles. Yet, many states have been persuaded by the trucking industry to open more miles of lower-class roads to longer, heavier trucks despite the low design and safety standards on these routes that often have remained essentially the way they were designed and built decades ago.

When longer combination trucks use these roads, drivers negotiate these winding, narrow highways by offtracking into the opposing lanes of traffic. In many instances, that offtracking is not just part of the combination rig such as a front corner of the tractor or semi-trailer, but actually consists of the entire 18-wheeler operating in the opposing traffic lane. This situation is graphically illustrated in photographs of the offtracking of big combination rigs on rural two-way, two-lane roads that we have brought with us today to show the Subcommittee and submit for the hearing record. Later in this testimony I will address the pending North Carolina legislation on bigger combination trucks that, if enacted, will result in an increased risk of large truck crashes, deaths, and injuries, and in more extensive destruction of North Carolina's roads and bridges.

Highway and Bridge Destruction By Bigger, Heavier Trucks Is Increasing

The nation's highway transportation infrastructure is being hammered by the impacts of big, extra-heavy trucks. The result is an astonishing list of unmet reconstruction and rehabilitation needs. At the national level, the American Society of Civil Engineers (ASCE) has periodically reviewed the nation's infrastructure and issued report cards both for the country as a whole as well as for many states. In its updated, 2008 national surface transportation report card ASCE found that the national infrastructure rated a "D", roads were rated "D", and bridges were rated "C". ASCE estimated that the U.S. needs *\$1,6 trillion dollars* over just the next five years to bring the country's infrastructure up to good condition. The Road Information Program (TRIP), a non-profit foundation started in 1971, has made similar findings about the nation's roads and bridges. TRIP estimates that *33 percent* of America's major roads are in poor to mediocre condition and *26 percent* of America's bridges are obsolete.

Heavy Trucks Are Tearing Up the Nation's Highways:

Heavy trucks are overwhelmingly responsible for pavement damage. Highway engineers more than 40 years ago calculated a truck pavement damage function, finding that a single traversal of highway pavement by an 18,000-pound truck axle was equivalent to the damage produced by 9,600 passenger motor vehicle traversals of the same pavement.¹³ While this finding has been refined¹⁴ since then, it has not been refuted.¹⁵

¹³ American Association of State Highway Officials (AASHO) Road Test (1962). AASHO has since changed its name to the American Association of State Highway and Transportation Officials (AASHTO). The figures were calculated using the standard pavement loading concept of Equivalent Single Axle Loads (ESALs) of 18,000 pounds. Considering that a typical automobile weighs between 2,500 and 5,000 pounds curb weight, even a fully loaded large passenger van ranging well above 5,000 pounds will only generate about 0.003 ESALs while a

The relationship between axle weight and inflicted pavement damage is not linear but exponential. That is, as axle weight rises even in small increments the resulting damage increases disproportionately at a very rapid rate. As a rule of thumb, the pavement damage caused by a particular load is related to the axle weight by a power of four for reasonably strong pavement surfaces.¹⁶ As an example, when the weight of a single axle rises from 20,000 to 22,000 pounds, only a 10 percent arithmetical increase, the amount of pavement life is reduced by 50 percent. At 24,000 pounds for a single axle, pavement damage is more than double than that inflicted by a 20,000-pound axle. A 20,000-pound single axle consumes *1,000 times more pavement life than a 2,000-pound single axle*, a typical axle weight of a mid-sized passenger motor vehicle.¹⁷

These calculations have real impact because the U.S. taxpayers are paying the price for heavy truck axle loads on U.S highway pavement. Under the federal-aid highway Resurfacing, Restoration, and Rehabilitation (R-R-R) program, FHWA allowed states to use federal funding to apply thin overlays on primary and secondary highways, often as little as three-quarters of an inch (3/4") of asphalt, while the agency also usually required *no safety improvements* to Depression-era roads that had every well-known cross-section and alignment design and performance safety defects. These older, often two-way, two-lane highways had narrow lanes, severe horizontal and vertical sight distance restrictions, no shoulders, roadsides strewn with fixed-object hazards, and serious traffic engineering deficiencies, most often the absence of centerlines and/or edgelines to guide the driver. As a consequence, the surge in the use of heavier, wider, longer Surface Transportation Assistance Act (STAA)-dimensioned large trucks on many hundreds of thousands of miles of highways where they formerly were barred, especially in the northeast, mid-Atlantic, and southeast, destroyed these state roads at astounding rates.

Heavy Trucks Put the Nation's Bridges at Risk:

According to U.S. DOT, damage to highway bridges represents the single most expensive infrastructure cost of allowing larger, heavier trucks on the nation's highways.¹⁸ Most states substantially underestimate bridge improvement needs and costs because of the unrealistic, indulgent manner in which they rate bridges for excessive

fully loaded tractor-semi trailer can generate up to about three ESALs (depending upon pavement type, structure and terminal serviceability).

¹⁴ A table of typical load equivalency factors is available at: <http://www.pavementinteractive.org/index.php?title=ESAL>.

¹⁵ See, Transportation Research Circular No. EC-188, Transportation Research Board, July 2007.

¹⁶ AASHTO Fourth Power Law.

¹⁷ Based on research conducted by the South Dakota Department of Transportation, available at: http://www.sddot.com/docs/SDDOT_Truck_Briefing_2d.pdf.

¹⁸ "Western Uniformity Scenario Analysis," *op. cit.*

loads and the widespread practice of routine, multiple trip permits for overweight trucks. The study also states that the extra safety margin of Interstate bridges constructed years ago *has essentially vanished because of overweight trucks.*

Bridges throughout the U.S. are being severely overstressed from a combination of factors. These include heavier, often illegally overweight, trucks and excessive, uncontrolled permitting practices, including permits for alleged “non-divisible” loads.¹⁹ Thousands of bridges are also being overstressed because they have not been reconstructed to higher safety and structural standards, and they are often posted for higher weights than they should safely carry.²⁰ In numerous cases, these bridges even when posted properly have their maximum gross weight limits routinely violated with little or no chance of detection and enforcement leading to penalties.

Bridges in the U.S. are also being overstressed and damaged by the weight of the loads that are allowed to be carried on the Interstate system. The weight of loads over bridge spans is controlled by the federal Bridge Formula B.²¹ That bridge formula has been found in recent studies to allow far heavier trucks than is warranted because Bridge Formula B, while it limits axle weight, does not limit the number of axles. Greater and greater gross weights can be carried by adding more and more axles beneath the loaded truck up to the federal statutory, maximum gross weight limit of 80,000 pounds or to the higher limits that are grandfathered for some states.²²

¹⁹ These loads consist of freight that cannot be readily divided into smaller, separate loads in order to comply with maximum axle and gross weight limits.

²⁰ Bala Sivakumar, *et al.*, *Legal Truck Loads and AASHTO Legal Loads for Posting*, NCHRP [National Cooperative Highway Research Program] Report No. 575, 2007 (NCHRP 2007 Report).

²¹ 23 U.S.C. § 127. Bridge Formula B essentially dictates how much gross weight a heavy commercial motor vehicle can carry across bridges in relation to the weight of axles, the number of axles carrying the weight, and how those axles are spaced in relation to each other. Bridge Formula B in federal law is a “capped” formula, that is, although the Formula could be extrapolated to allow more and more gross weight by increasing the number of axles and their spacing that would result in a total load above 80,000 pounds, Congress in 1974 chose to “cap” the Formula by restricting maximum gross weight to 80,000 pounds regardless of how many axles were used to transport a load.

²² Gongkang Fu, *et al.*, *Effect of Truck Weight on Bridge Network Costs*, NCHRP Report No. 495, 2003 (2003 NCHRP Report). This study effectively countered the excessive weights that were rationalized as acceptable in two Transportation Research Board benchmark studies, *Truck Weight Limits: Issues and Options – Special Report No. 225*, Transportation Research Board, 1990; *New Trucks for Greater Productivity and Less Road Wear: An Evaluation of the Turner Proposal – Special Report No 227*, Transportation Research Board, 1990. The 2003 NCHRP Report showed that the gross weights and bridge formula judgments of these two earlier TRB studies advocating greater truck weights severely misjudged the amount of damage that U.S. bridges would incur from higher truck gross weights.

Increasing the weight of heavy trucks on bridges results in accelerated rates of wear and deterioration. Generally speaking, a 10 percent increase in effective truck weight causes more than a tripling of fatigue damage. For example, increasing the weight of a heavy truck by only 10 percent increases fatigue damage by 33 percent and dramatically reduces remaining bridge life, according to a recent study.²³ If a bridge is 50 years old and calculated total service life span is 70 years, then the remaining life, under the existing truck weight limit, is 20 years. However, if the effective stress is 10 percent higher, such as a 5-axle combination rig increasing its gross weight from 80,000 pounds to 88,000 pounds, then calculated total service life span plummets to only 52.5 years. That means that the 50-year old bridge has *only 2.5 years of remaining service life*. Accordingly, when truck weights are only slightly increased, many bridges that are marginally adequate become inadequate, especially if the loads permitted on the bridge are indexed to the operating rating (a higher rating) rather than to the bridge inventory rating (a lower rating).

The cited 2003 NCHRP study also found that bridge engineers nationwide have little reliable data and information for calculating the actual and projected effects of fatigue inflicted by heavy trucks. Although many states have a database of bridge costs relevant to heavy truck weight effects, only seven states were found to keep track of weight-inflicted fatigue damage related bridge costs, and most states underestimate the damage effects of heavy trucks and consequential costs of maintenance, rehabilitation, and replacement.

Another NCHRP study already cited has even more alarming findings.²⁴ Because of the way Bridge Formula B for Interstate bridges is applied, legal truck axle weights are resulting in excessive gross vehicle weights that are routinely overstressing many unposted bridges. The investigation performed for the report found that some of the deck shear and superstructure moment effects of legal Bridge Formula B trucks are as much as 50 percent greater than the legal loads allowed by AASHTO formulae for posting bridges.

In fact, the 2007 NCHRP report concluded that Bridge Formula B was simply mistaken in its reasoning that adding more axles beneath a heavy truck within the length of its wheelbase will allow it to bear more weight on bridges with no additional adverse effects. Increasing the number of axles in an axle group without also increasing the overall length of the group has very little effect in reducing bridge load damage. Unlike pavement where axle weight primarily governs the damaging effects of heavy truck axles, bridge stress is affected far more by the total amount of load than by the number of axles, and the number of axles under a truck means little in mitigating the extent of the bridge damage that is inflicted.

²³ "Effect of Truck Weight on Bridge Network Costs," *op. cit.* This study applies the well-known Miner Third Power Fatigue Damage Principle.

²⁴ "Legal Truck Loads and AASHTO Legal Loads for Posting," *op. cit.* (NCHRP 2007 Report).

The 2007 NCHRP Report concluded that the provision of greater weight allowed by adding axles was a cardinal error in Bridge Formula B and should not have been made part of the formula. Bridge Formula B actually encourages *more* bridge fatigue damage by promoting the addition of more axles to justify higher gross weights even though underlying bridge stress criteria may be exceeded.

The 1974 federal legislation enshrining Bridge Formula B grandfathered state bridge formulas that permit even higher, more damaging weights than allowed under the federal standard. Bridge Formula B also spawned new truck configurations designed to exploit maximum permissible truck weights by adding and spacing as many axles as needed to reach the capped gross weight limit of 80,000 pounds. The axle configurations of some single-unit, that is, straight trucks are an extreme example of the trucking industry response to Bridge Formula B. In fact, truck manufacturers have produced some single-unit trucks that can carry 80,000 pounds within a 30-foot wheelbase by using eight axles to support the load.

Bridge Formula B also fostered the use of long tongues to connect the trailing units of double-trailer configurations in order to increase axle spacing or to use split tandem axles on 5-axle semi-trailer combinations so that a higher gross weight can be achieved. Since a tandem axle under federal law is limited to a maximum of 34,000 pounds, but a single axle is limited to 20,000 pounds, increasing the spacing between the two axles in a tandem axle set in accordance with the constraints of Bridge Formula B allows the two axles to be treated as separate single axles and, accordingly, allowed to carry 40,000 pounds rather than only 34,000 pounds. This increases allowable maximum gross weight that, in turn, inflicts more bridge damage.

The 2007 NCHRP Report also indicated the severe misjudgment by many states of heavy truck weight damage effects because these states “are rating their bridges for heavy loads based on only a single truck on the span at a given time, a practice that results in severely underestimating total yield stress and resulting fatigue, reduction of service lives, and increased susceptibility to bridge failures.” Another NCRHP study²⁵ found that one of every 15 heavy truck bridge crossings, on average, occurs with *two trucks side by side* simultaneously traversing the span. This subjects bridges to live loads that are more than three times the loading effect of a single truck.

It remains to be determined what complex factors interacted to bring down the I-35 Bridge in Minnesota on August 1, 2007, a tragic loss of lives that stunned this nation. However, one of the contributing factors, according to FHWA, could be the heavy truck traffic over the bridge by international freight transportation fostered by the North American Free Trade Agreement (NAFTA). The *World Net Daily* reported on August 5, 2007, that FHWA issued a warning to Minnesota in 1998 that increasing NAFTA truck traffic was expected to create safety concerns with bridges all along the I-35 corridor. FHWA conducted a study of the corridor in conjunction with the state transportation agencies of Texas, Oklahoma, Kansas, Missouri, Iowa, and Minnesota, assessing the condition of I-35 from Laredo, Texas to Duluth, Minnesota. The agency warned that:

²⁵ NCHRP Report No. 368, 1999, cited in NCHRP Report No. 575.

Over the next few decades, about 65 percent of I-35 will require major upgrades, however the entire route will have a continued need for rehabilitating pavements, resurfacing sections of the highway, and providing replacements of some bridge decks. Bridge substructures and superstructures will also need to be maintained, requiring repairs to maintain the integrity of the bridges.

States through which I-35 truck traffic courses daily have not been able to keep up with the demands of resurfacing, reconstruction, and replacement of U.S. bridges from the Canadian to the Mexican border.

U.S. Highways and Bridges Are In Crisis From Chronic Underfunding

While it is common knowledge that the highway transportation infrastructure suffers from chronic underfunding, the recent, comprehensive report from the Surface Transportation Revenue and Policy Commission, *Transportation for Tomorrow*,²⁶ documents the problem. *Transportation for Tomorrow* has several harsh things to say about the contribution of heavy trucks to infrastructure damage, preservation, and upgrading. The Commission found that heavy trucks were contributing only \$3 billion a year sales tax on trucks and trailers, \$1 billion from the Heavy Vehicle Use Tax (HVUT), and only \$500 million from the tax on heavy vehicle tires, when national highway and bridge funding needs amount to hundreds of billions of dollars.

Transportation for Tomorrow found that even at a low level of annual investment, the U.S. would need nearly \$6 trillion until 2035 to attempt to meet the demands of deteriorating surface transportation infrastructure. The *Transportation for Tomorrow* report also repeatedly emphasized the shortfalls in federal and state revenue to accomplish even this lower level of infrastructure investment.

In particular, *Transportation for Tomorrow* found that heavy trucks were substantially underpaying their fair share for the use and damage to the nation's highways and bridges, and that heavy truck contribution to infrastructure preservation and improvement had to be dramatically increased. The Commission recommended that:

- User fee equity for large trucks should be achieved through weight-distance taxes.²⁷

²⁶ *Transportation for Tomorrow: Report of the National Surface Transportation Policy and Revenue Study Commission*, December 2007.

²⁷ Oregon has proven that user fee equity can be approached through the application of weight-distance fees geared to the damage that heavier vehicles inflict on highways and bridges. Equitable weight-distance fees prevent small passenger motor vehicle owners from bearing a disproportionate, unfair burden for highway improvements while simultaneously subsidizing the damage produced by heavy trucks. See, for example, <http://www.leg.state.or.us/comm/commsrvs/wtmile.pdf>. Also see, *The Oregon Weight-Distance Tax: Theory and Practice*, Administrative Subcommittee on Financial Management of the

- Heavy trucks should pay an additional infrastructure damage fee.
- Diesel fuel taxes should be indexed to a realistic inflation measure.
- The HVUT – which only contributes \$1 billion each year to the Highway Trust Fund – has not been changed since the early 1980s and should be amended and indexed retroactively to 1997.²⁸

The Commission also corroborated findings by FHWA in its 1997 and 2000 update of its Highway Cost Allocation study, and the Government Accountability Office (GAO) 2008 report,²⁹ that as trucks grow heavier, the user fees contributed by heavy trucking are far below equitable levels. FHWA, in its updated 2000 Highway Cost Allocation Study, showed that heavy trucks exceeding 70,000 pounds gross vehicle weight were increasingly underpaying their fair share of highway use as weights were raised.

The HVUT was lifted in 1982 federal legislation to \$1,900 dollars, but then, under pressure from the trucking industry, it was dramatically lowered to only *a maximum \$550 per year regardless of the weight of a truck*. Even at the nominal Interstate highway gross weight of 80,000 pounds, a “legal” heavy truck is substantially underpaying its share of highway and bridge damage costs. And FHWA found that passenger vehicle owners were overpaying their fair share, essentially subsidizing the trucking industry’s use of extra-heavy trucks. Similarly, GAO found in its 2008 Report that a 100,000-pound truck, like the ones currently allowed to run anywhere on any road in Maine except for the northern portion of I-95, *only pays about 40 percent of its actual cost responsibility*.³⁰ Several state highway cost allocation studies have reached similar conclusions concerning the overpayment of user fees by small, light motor vehicles.

This GAO finding buttresses a previous GAO report conclusion that states “could virtually eliminate damage caused by overweight trucks” if the states implemented its recommendation that lower weight limits be established on all federally assisted

Standing Committee on Administration, AASHTO, 1996. Oregon has withstood several legal challenges to its weight-distance user fee regime.

²⁸ See, <http://www.fhwa.dot.gov/policy/hcas/final/four.htm>, for a good discussion of the history and contribution of the HVUT to highway funding. The tax is triggered at a gross vehicle weight of 55,000 pounds that, in turn, requires an annual \$100 fee. The tax then increases at a fixed rate so that a truck weighing 75,000 pounds pays the maximum fee of \$550 each year. However, after that weight ceiling, the HVUT does not increase for a heavy truck no matter how much it exceeds 75,000 pounds.

²⁹ *Freight Transportation: National Policy and Strategies Can Help Improve Freight Mobility*, Government Accountability Office, January 2008 (GAO 2008 Report).

³⁰ "Freight Transportation: National Policy and Strategies Can Help Improve Freight Mobility," *op. cit.*

highways, not just on the Interstate system.³¹ This GAO 1979 Report also recommended a rational scheme of national truck weight limits, including Congress putting an end to the numerous exceptions in federal law provided primarily through the enactment of grandfather rights provisions that allow many states to substantially exceed Interstate axle and gross weight limits, and sometimes to use older bridge formulas allowing more weight on Interstate bridges than permitted by the 1974 legislative adoption of Bridge Formula B. GAO also called for an end to the state practice of routinely issuing overweight permits, a policy that is a prime cause of rapid highway and bridge deterioration. For all practical purposes, however, the findings and recommendations of GAO were ignored.

The 1979 GAO Report determined that 22 percent of all trucks in the U.S. operate overweight. That figure is nearly 30 years old and is clearly outdated. Although FHWA has not studied and reported on the extent of overweight truck operations in the U.S. since 1991, there is little doubt that the proportions of the current overweight truck problem are far higher than this number. Evidence just from the state of Maine, which is reviewed in detail later in this testimony, underscores GAO's concerns over an epidemic of overweight trucks wreaking havoc on U.S. highways and bridges.

It cannot be overemphasized how strongly overweight truck damage affects overall highway safety in the U.S. An ever-increasing number of heavier trucks traversing an expanded network of roads and bridges, especially those off the Interstate system, presents an explosive combination inevitably resulting in more crashes, more deaths, more injuries, and further highway and bridge destruction. When states suffer more and more bridge and road destruction and the rate of damage is faster and faster, vast amounts of money are necessary just to keep up with the most basic repairs to maintain vehicle mobility. That means that bridges that need to be substantially upgraded or replaced, or highways that need widening, or more lanes, or better control of access, continue to go begging for these crucial safety improvements.

Six States Currently Are Targeted for Higher Trucks Weights

One approach being urged by the trucking industry right now, through an organization known as Americans for Safe and Efficient Transportation (ASET), is to gain Congressional approval for a "state option" plan or a so-called "demonstration program" that would allow even heavier, longer trucks weighing up to 97,000 pounds to be placed on the highways and bridges of six states: Georgia, Maine, Minnesota, South Carolina, Texas, and Wisconsin.

These six states had 983 fatalities in 2006, *one-fifth of all U.S. truck crash fatalities*. And the level of fatal crash deaths has *increased* in these six states over the

³¹ *Excessive Truck Weight: An Expensive Burden We Can No Longer Support* (GAO 1979 Report), General Accounting Office (now the Government Accountability Office), July 23, 1979. This recommendation is similar to the effects of Representative James McGovern's proposed legislation, H.R. 3929, that would re-establish a uniform, maximum axle and gross weight platform throughout the states extending beyond Interstate highways to encompass the entire National Highway System.

years. For example, compare the number of truck crash deaths in these six states for 2006 – 983 fatalities – with the number of deaths sustained 15 years earlier – 761. Truck crash deaths have *increased by 29 percent* in these states over the past 15 years. An additional *222 people have lost their lives in large truck crashes in 2006 compared to 1992 in these six states alone*. The cumulative losses over just the last 15 years including the 1992 level of 761 deaths has been staggering. It is folly to think that more trucks that are also bigger and heavier, traveling on more highways in these states at these greater sizes and weights, will not inflict even more tragic losses on thousands of families and friends who lose their loved ones to big truck crashes.

These six states also have bridge inventories showing hundreds of spans that are in severe jeopardy because they are no longer able to serve the traffic demand placed on them. According to the latest FHWA National Bridge Inventory, these six states have the following levels of structurally deficient and functionally obsolete bridges: Georgia – 20 percent; Maine – 34 percent; Minnesota – 12 percent; South Carolina – 23 percent; Texas – 20 percent; and Wisconsin – 15 percent. TRIP has reported that Georgia, for example, faces a \$51 billion transportation-funding shortfall through 2035 that will lead to further deterioration of its highways and bridges.

Another study sponsored by FHWA in Arizona found that overweight trucks on the state's bridges and highways impose up to \$53 million each year in uncompensated damage to Arizona's roads.³² This is one of several state studies demonstrating the severe bridge damage effects of extra-heavy trucks and the documentation of their underpayment to remedy the deterioration. Increasing truck size and weights will not only endanger public safety but will exacerbate the infrastructure and economic problems that already exist.

Congress needs to be aware that special interests exploit major studies on truck safety and truck infrastructure impacts by selectively using what appear to be favorable findings or judgments of the authors or actually misrepresenting the conclusions and recommendations of these studies. For example, a study published in 2002 by the Transportation Research Board (TRB), *Regulation of Weights, Lengths, and Widths of Commercial Motor Vehicles*, Special Report No. 267, has been advanced by ASET as an endorsement by the prestigious National Academy of Sciences of longer, heavier trucks on more highways, as well as justifying piecemeal increases in truck sizes and weights as a “state option.” TRB Special Report No. 267 along with, in particular, the U.S. Department of Transportation’s *Western Uniformity Scenario Analysis – A Regional Truck Size and Weight Scenario Requested by the Western Governors’ Association*, U.S. Department of Transportation, April 2004, are two major examples. Advocates has already presented a detailed rebuttal paper at the TRB Annual Meeting a few years ago of the mischaracterizations of the findings and recommendations of TRB Special Report No. 267 .

³² *Estimating the Cost of Overweight Vehicle Travel on Arizona Highways – Final Report 528*, Arizona Department of Transportation, January 2006.

Three State Case Studies of the Impacts of Longer, Overweight Trucks

Maine: A Tragic Case of the Severe Consequences of Overweight Trucks

A good indicator of the extent of the severity of the national problem of overweight trucks is the state of Maine. The state allows 88,000-pound 5-axle and 100,000 6-axle trucks to use all of Maine's roads, both on and off the Interstate system, except for the northern part of I-95 to the Canadian border. Maine also issues a wide variety of generous, multiple trip overweight permits for several major commodities.

In 2004, a report produced for the state of Maine, commissioned to justify the extension of 100,000-pound truck operations to the remainder of I-95, found that a high percentage of trucks using Maine's 88,000-pound and 100,000-pound gross weight ceilings were exceeding even those much higher limits.³³ This was especially glaring for the 6-axle combinations operating under the 100,000-pound exemption. The worst figures were found on the central portion of the Maine Turnpike, part of the southern portion of I-95 in Maine that allows 88,000-pound and 100,000-pound combination trucks. For this portion of the Turnpike, *the study found that there were more overweight trucks exceeding the 100,000-pound limit than operating at or below that gross weight ceiling.* Trucks were monitored with weigh-in-motion scales, and some were found to weigh 140,000 pounds

Because Maine has so many special permits available for so many different commodities, some of these 100,000-pound trucks might actually be operating legally. The researcher could not determine what percentage of trucks even exceeding 100,000 pounds were operating illegally. The important point here, however, is that these findings show that even the 100,000-pound weight limit is only a nominal figure that, in practice, is routinely exceeded. Trucks that are substantially heavier than 100,000 pounds are pummeling Maine's roads and bridges.

Maine has argued that it wants to place the 100,000-pound overweight trucks on all of the Interstate system to relieve traffic on non-Interstate roads. Yet the state has refused to consider revoking the permission granted to motor carriers to operate extra-heavy trucks exceeding 80,000 pounds even on secondary highways and local township roads. Although the Maine DOT Commissioner admits that heavy truck crash rates on rural secondary roads in Maine are nearly 10 times the rates than on the Maine Turnpike, there is no move by the state to reduce truck weights or traffic on lower-class roads throughout the state.

Several national and regional organizations, including TRIP, ASCE, and the Maine Better Transportation Association, have sharply criticized Maine every year for allowing unabated destruction of all of its roads and bridges, both on I-95 and on other state highways, while repeatedly failing to provide adequate funds to reconstruct these roads and bridges to make them safer and more structurally sound.

³³ *Study of Impacts Caused by Exempting the Maine Turnpike and New Hampshire Turnpike from Federal Truck Weight Limits*, Wilbur Smith and Associates (June 2004).

For example, ASCE's most recent Infrastructure Report Card rated Maine *as having one of the worst bridge restoration and replacement problems in the entire U.S.* And 20 percent of Maine's public roads are listed as either "mediocre" or "poor" in condition while 69 percent are listed as only "fair" or even worse, according to the federal Bureau of Transportation Statistics. ASCE stressed that driving on the deteriorated roads in Maine costs Maine's motorists \$150 million each year in extra vehicle repairs and operating costs – \$165 per motorist. Heavy trucks are responsible for almost all of the damage to Maine's roads and bridges caused by traffic – and Maine's motorists are subsidizing the rapid destruction of the state's highway system by extra-heavy trucks.

The detailed report on Maine's highway system released by TRIP found that Maine has such a severe funding shortfall that it is unable to proceed with critical highway and bridge improvement projects.³⁴ The report indicated that some of the needed but unfunded projects include improvements to portions of I-95 where Maine wants to operate 100,000-pound trucks.

TRIP's Maine report cited the Maine DOT finding that, from 2007 to 2016, the state would need \$5.4 billion to allow the state to significantly improve road and bridge conditions, make reasonable highway safety improvements, and address other infrastructure needs. However, TRIP reported that Maine DOT estimates that highway funding levels are anticipated to amount to only \$3.2 billion for that same timeframe. TRIP also determined that the cost per motorist of Maine's decaying highways were even greater than found by ASCE: roads needing repair cost each Maine motorist an average of \$285 annually in extra vehicle operating costs and \$286 million statewide. Those costs comprise accelerated vehicle depreciation, additional vehicle repair costs, increased fuel consumption, and increased tire wear.

The *State of the State Report*, prepared by the Maine DOT Systems Management Division in November 2002 points out that a very large percentage of Maine's bridges are more than 60 years old and that these structures will need restoration or replacement within this decade. The report said that post-Depression bridge improvement needs are escalating over the 2002-2010 timeframe and that the overall bridge sufficiency rating on the Interstate system alone had substantially declined over the preceding several years. This finding accords with Maine DOT's own determination that it needs to replace or repair about 32 bridges each year in order just to keep the current share of bridges that are deficient – one-third of all bridges in the state – from increasing. However, at current funding levels, Maine DOT estimates that it will have the funds to replace or substantially repair only 14 bridges each year.

Finally, Maine's DOT *State of the State Report* points out near the end that the current level of funding will not address capital improvement needs on Maine's bridges and that Maine will face a rapidly rising demand for funding bridge work over the next

³⁴ *Future Mobility in Maine: Meeting the State's Need for Safe and Efficient Mobility*, TRIP, June 2007.

15 years. The report also identified heavy truck traffic increases as a prime source of increased crashes – truck crashes continue to rise in Maine as a result of more and more trucks on the road each year. Clearly, much heavier trucks on Maine’s highways have not resulted in fewer trucks on its roads.

Similarly, the Maine Better Transportation Association issued a 2005 report that contained a 22 single-spaced page list of deficient Maine bridges.³⁵ Several of those deficient bridges are northern I-95 and I-395 bridges that the Commissioner of Maine DOT regards as “acceptably overstressed,” and, as a result, he wants to open these bridges to use by 100,000-pound trucks. The report chronicles decades of neglect and deterioration of Maine’s bridges, including decay to the point of requiring emergency responses by a Maine DOT that is already underfunded for basic state infrastructure needs. Numerous bridges have been posted for years at lower weight limits because they have badly deteriorated, and funds are simply not available to restore or replace them.

Delivering an even more dire message was the *Summary* of the report of the Maine Governor’s Capital Transportation Funding Working Group published January 31, 2006, stating that Maine faces a funding and infrastructure crisis. In fact, in the fall of 2005, Maine DOT was compelled to defer transportation projects, including many bridge projects, worth \$130 million, or 20 percent of Maine DOT’s 2006-2007 Capital Work Plan because of unprecedented increases in costs and other funding shortfalls.

Maine’s current truck weight policies are propelling the state quickly into an even more severe safety and infrastructure repair crisis. The state, in direct cooperation with national trucking organizations, initiated an effort 14 years ago to raise Maine’s weight limits on the Turnpike portion of the Interstate, and it is cooperating now with the same organizations to advance a federal legislative provision allowing Maine to permit 100,000-pound trucks to operate on the remainder of I-95 to the Canadian border.

Maine's highway infrastructure is in crisis – there is no other way to characterize it. The state was warned two years ago in a FHWA analysis of its Interstate bridges that several were being overstressed to the point of failure, but Maine has persisted in the dangerous, destructive practice of allowing extra-heavy trucks on its roads and bridges, facilities that are being destroyed at dramatic rates of deterioration.

Vermont: A Small State With Rapidly Decaying Highways

Vermont's Interstate highways are currently governed by the weight limits contained in 23 U.S.C. § 127. Single axles are limited to 20,000 pounds, tandems to 34,000 pounds, and Bridge Formula B controls maximum big truck bridge weight. Gross vehicle weight is limited to 80,000 pounds. However, trucking interests have approached the Vermont Congressional delegation in recent weeks with a request for the state to raise its Interstate gross weight limit to 99,000 pounds.

³⁵ *Losing Ground: A Report on the State of Maine’s Highway Fund*, Maine Better Transportation Association, July 2005.

Vermont's non-Interstate highways, despite being built to lower standards – sometimes much lower standards – already allow higher axle and gross weights. Vermont over the years has also responded to pressure to issue routine overweight permits for a unlimited number of trips for 5-axle trucks up to 108,000 pounds and even up to a maximum of 120,000 pounds if more axles are added. These permits also allow routine use of single axle weights up to 24,000 pounds (20 percent higher than the federal limit for Interstate highways) and tandem axles up to 48,000 pounds (more than 40 percent higher than the federal Interstate limit).

At these extreme axle and gross weights, Vermont's bridges both on and off its Interstate highways are being badly overstressed, and highway pavement is also being destroyed at an alarming rate. As explained earlier, pavement destruction from the heavy axle weights of big trucks is inflicted at an exponential rate, a damage function operating at the fourth power. This means that only small increases in axle weight trigger dramatically increased rates and severity of pavement damage.

This is basically the dire situation Vermont finds itself in right now. Vermont's roads and bridges are rapidly destroyed by extremely overweight large trucks while the state has a funding crisis undermining its ability to repair its highways. According to the TRIP analysis for Vermont in its 2007 Fact Sheet:

- Driving on roads needing repairs in Vermont already costs Vermont motorists \$167 million each year in extra vehicle repairs and operating costs, \$296 every year for each motorist.
- Motor vehicle crashes in Vermont cost the state \$221 million each year, \$362 for each resident due to medical costs, lost productivity, travel delays, and workplace, insurance, and legal costs.
- Thirty-six (36) percent of Vermont's roads are currently in poor or mediocre condition, one of the worst ratings in the nation.
- Thirty-five (35) percent of Vermont's 1,000 bridges are currently functionally or structurally obsolete, again one of the worst rates in the nation.
- One hundred seventy-three (173) of these bridges alone are on the state's major roads constituting its NHS routes where the Governor and trucking interests are pressuring the Vermont Congressional delegation to enact federal legislation allowing 99,000-pound trucks.

News articles have dramatically increased in recent years pointing out Vermont's woefully poor highway infrastructure, with its crumbling highways and bridges, and the state's chronic shortfalls in road funds while the state repeatedly defers more and more major reconstruction and rehabilitation projects throughout the state. These articles often mention the disproportionate impact of big, heavy trucks on Vermont's highways and bridges, and how the state has failed to keep pace with transportation needs by using rail instead of relying excessively on large trucks. See the *Montpelier Times-Argus* for May 2, 2008.

Compared to other states, Vermont has very poor surface transportation infrastructure, and the state is already unable to deliver proper services to its residents needs for adequate commercial and personal transportation. See *Understanding Vermont*, the Vermont Community Foundation, 2007. Putting big, overweight trucks on Vermont's already deteriorated roads and bridges would be making the same major policy mistake that is so glaringly obvious in Maine. The rate of destruction of Vermont's highways and bridges would even further increase, and the chances of a bridge failure would be compounded.

North Carolina: A Southern State With an Infrastructure Crisis

One thousand five hundred forty-seven (1,547) people died in highway crashes in North Carolina in 2005. Of these deaths, *204, or one of every seven fatalities, were the result of large truck crashes*, according to NHTSA's National Center for Statistics and Analysis (NCSA) truck fatality data compiled for Advocates in 2008. In 2005, North Carolina had the *5th highest number of truck crash fatalities in the U.S.*, outstripped only by Texas, California, Florida, and Georgia.

The state provides another good example of industry pressure to increase truck size is North Carolina. The state legislature is currently rushing through a bill to allow combination trucks pulling 53-foot semi-trailers to operate on almost all of North Carolina state roads, including highways outside the state's 1982 STAA Designated National Network (DNN) routes. This is the *13th time in 11 years that the state legislature has moved to expand the sizes or weights of large trucks in the state.*

Recently, North Carolina State University researchers used North Carolina DOT's Traffic Engineering Accident Analysis System for the years 2001 through 2005 to investigate large truck operations off the state's DNN. The study found that *the chances of an off-DNN truck crash was twice that of a crash taking place on the STAA-designated network.* The study concluded that extending the use of 53-foot semi-trailers to what are almost entirely narrow, two-lane, two-way roads in the state would substantially increase the chances of more large truck crashes on these roads.³⁶

Here are just three of the arresting photographs of big, long tractor semi-trailer rigs operating on North Carolina's lower-class two-lane, two-way roads.³⁷ In the first photo, the long tractor-trailer rig is offtracking completely into the opposing lane of traffic in order to negotiate a curve on this road with very narrow lanes:

³⁶ *Estimating the Off-Network Presence of STAA-Dimensioned Vehicles on North Carolina Roadways Using CMV [Commercial Motor Vehicle] Crash Data*, North Carolina State University (May 2008).

³⁷ All photographs printed here are drawn from publicly available materials on the Internet.



In the second photograph, the truck driver could not successfully negotiate the sharp curve confronting him with his long combination rig without moving into the opposing lane. Note that the driver of the pickup truck was forced off the road.



The third photo shows a long semi-trailer combination on a rural two-way, two-lane North Carolina road. This long truck and its driver were close to a disaster:



The calculations performed in the North Carolina State University study cited above show that a high percentage of the roads on which the state legislature wants to allow 53-foot, 102-inch wide trucks have only 10-foot wide travel lanes. The study found that a perfectly aligned tractor pulling a 102-inch wide, 53-foot semi-trailer *had only nine inches of clearance between the centerline on its left and the edge of a roadway on its right*. It has to be emphasized that 94 percent of North Carolina state road mileage consists of two-lane, two-way roads, and 78 percent of these are less than 21 feet wide. And, as the North Carolina State University Study stressed, these roads often have lanes even narrower than 10 feet. Nevertheless, many of these substandard roads – even some with eight or nine feet wide lanes – could be opened to the use of longer combination trucks pulling 53-foot semi-trailers rather than the 48-foot semis that North Carolina has allowed for years.

Observations jointly conducted by the North Carolina State Highway Patrol and North Carolina DOT corroborated the findings of the North Carolina State University Study. Both North Carolina DOT and the state's Highway Patrol have opposed the expanded use of 53-foot long semi-trailers. The three organizations observed combination trucks pulling 53-foot semi-trailers *frequently off-tracking entirely in the opposing lane of two-lane, two-way roads*, as shown in the photographs above.³⁸

³⁸ *Observations of Truck Operations on Routes Added to North Carolina STAA Truck Network as a Result of 2008 Ruling by the North Carolina Attorney General's Office*, North Carolina State University Institute for Transportation Research and Education, April 2008.

Incredibly enough, North Carolina state legislators in 2005 *cut* the fines of overweight trucks *in half*. In fact, fines for overweight trucks have not been increased in the state since 1981.³⁹ According to this major, comprehensive investigative news series, North Carolina's weigh stations are underfunded, understaffed, are rapidly deteriorating, and have little effectiveness either in detecting overweight trucks or deterring overweight violations. Illegally overweight trucks regularly circumvent the state's weigh stations when they are open.

North Carolina is plagued with older, crumbling bridges that are not being replaced or upgraded in a timely manner. On older roads where current legislation would allow bigger trucks pulling 53-foot semi-trailers, the state has 15,145 bridges of which 4,556, or *30 percent*, are either functionally deficient or structurally obsolete.

The *Raleigh News-Observer* in its 2005-2006, multi-part investigative reporting series on big trucks on North Carolina highways and bridges found that *more than 1,000 bridges in the state are being overstressed and left unprotected due to overuse by extra-heavy trucks*. A December 2, 2004, newspaper article in the *Charlotte Observer* quoted a North Carolina state bridge engineer as saying that *about two bridges collapse in North Carolina every year*.

Bridge quality in North Carolina is continuing to deteriorate due to reduced maintenance and repair. The state only replaced 134 bridges in 2003, for example, and it ranks the 10th worst state for its percentage of substandard bridges, according to the *Raleigh News-Observer* of June 22, 2003.

Of the state's obsolete bridges, more than half – 2,244 – are functionally inadequate to serve traffic because they often have narrow lanes and usually no shoulders. These facilities cannot safely accommodate longer, wider combination trucks.

Adding the state's bridges on roads that have a higher functional classification, including the NHS highways comprising major arterials and North Carolina Interstate highways, more than doubles the number of bridges need repair or replacement. Of the 17,783 bridges in the state, North Carolina has a total of 5,059 deficient and obsolete bridges requiring repair or replacement, according to the FHWA National Bridge Inventory for 2007.

Thirty-four (34) percent of North Carolina's roads are in poor or mediocre condition, according to the ASCE North Carolina Infrastructure Report Card 2005. The state was warned in the *Raleigh News-Observer* 2005-2006 investigation of heavy truck impacts in the state that overweight trucks were tearing up North Carolina highways at an unprecedented rate. That newspaper series cited the North Carolina DOT study released in 2006 that heavy trucks were costing state taxpayers *at least \$130 million each year*, and probably more, in road and bridge destruction.

³⁹ *Raleigh News-Observer*, May 22, 2005, re-published Feb. 21, 2006.

The ASCE Report Card for North Carolina cited above estimated that driving on the state's crumbling roads costs North Carolina motorists *\$1.7 billion each year* in extra vehicle repairs and operating costs – \$282 for each motorist. As is typically the case, shown in the FHWA 2000 *Addendum to the Highway Cost Allocation Study*, the great majority of the cost of highway and bridge damage in the state is not paid for by the trucking industry but by ordinary citizens using cars and pickup trucks.

A 2008 report authorized by the state legislature confirms many of these observations.⁴⁰ The NCOSBM Report shows that the state's highways and bridges are badly underfunded, and that North Carolina is not keeping pace with repairs and improvements of its deteriorating infrastructure. The report judged that current infrastructure quality and projected highway revenues cannot fulfill the expectations of the state legislature for the long-term quality of North Carolina surface transportation. The result will be decreased economic productivity in the state, decreased employment, lower overall economic condition of the state's residents, and poorer attraction of businesses and industries. As a North Carolina civil engineer emphasized in a quotation in the ASCE North Carolina Report Card for 2005, "[n]othing has been done to improve roads and bridges due to apathy on the part of the public and infrastructure administrators."

North Carolina's freight transportation system is badly imbalanced, with up to 95 percent of all freight being moved by truck, according to the NCOSBM Report. Along with an apparent disregard of the adverse safety and infrastructure impacts of allowing more longer trucks on more North Carolina highways – trucks that will be heavier as well – North Carolina legislators are acting as if nothing is wrong with the state's roads and bridges and that deferring infrastructure repairs will have little effect on the state. North Carolina currently is not pursuing a policy of improving freight transportation productivity improvements. In fact, by allowing increases in truck size and weight on additional lower-class roads, the state is acting to further compromise its ability to move goods to customers and is incurring a tremendous cost for the public health and safety of North Carolina families.

Conclusion

Public policy leaders at the state and federal level must come to grips with these facts and the information that has been provided in numerous credible and compelling studies. Public safety, U.S. highway infrastructure, and the budgets of federal and state highway and bridge programs cannot bear the burden of yet another round of increases in truck size and weights. While Advocates understands how integral the trucking industry and truck transportation is to national and local economies, the optimal balance between the special interests that want a never-ending cycle of increased truck size and weight and the public interest in safety and infrastructure protection and restoration has already been reached and, indeed, surpassed. Further increases will only make the situation on our roads more unsafe with greater economic burdens and lethal consequences for road users and taxpayers.

⁴⁰ *Statewide Logistics Plan for North Carolina – Final Report*, North Carolina Office of State Budget and Management (May 13, 2008) (NCOSBM Report).

Advocates submits the following recommendations for Congressional action:

- Congress should ensure that truck safety for the public is the highest priority in legislating truck size and weight laws. The next authorization bill should include provisions that reduce the unacceptable death and injury tolls on our roads inflicted by large, extra-heavy trucks. This comprises both motor carrier safety provisions and requirements to bring down truck sizes and weights to protect the public as well as to arrest the decline of U.S. highways and bridges.
- Do No Harm: When Congress considers and enacts new surface transportation authorizing legislation, it should:
 - ▶ Reject any provisions to roll back truck safety by thawing the LCV freeze.
 - ▶ Refuse any programs to allow “state options” for bigger and heavier trucks.
 - ▶ Stop granting special exemptions to specific states, to specific industries, and for transporting specific commodities.
- Congress needs to enact the proposed legislation introduced by Congressman James McGovern, H.R. 3929, to terminate state grandfather rights, a perennial, major source of truck size and weight abuses.
- Congress needs to take special action to stop the uncontrolled use of overweight permits granted by the states, including state issuance of overweight permits for divisible loads that some states are regarding as non-divisible loads.
- Congress needs to restore FHWA’s enforcement powers over truck size and weight practices so that the federal steward has the backing of Congress to get tough on truck size and weight abuses in the states. This includes explicit instruction to the agency to resume publishing an annual report accurately tallying the type and numbers of overweight permits being issued by the states, the extent to which the permits depart from legitimate grandfather rights and federal legislation controlling divisible loads, how pervasive are illegally overweight truck operations, and the amount of damage being done to bridges from both legal and illegal overweight trucks.
- Congress should adopt the recommendation of the National Transportation Policy and Revenue Commission’s report, *Transportation for Tomorrow*, stressing the need to restore user fee equity by ensuring that heavy trucks, for the first time, actually pay their fair share for the use and destruction of U.S. highways and bridges. It is time to stop allowing 100,000-pound overweight trucks from paying only 40 percent of their cost responsibility and transferring the balance of the costs to ordinary taxpayers and light vehicle owners.

Advocates appreciates this opportunity to testify on this crucially important topic of public safety and infrastructure protection. We are prepared to answer any questions that you may have.

APPENDIX

Legislative History of Truck Size and Weight Laws

Over the past half-century since the inception of the U.S. Interstate highway system, trucking and shipping interests have routinely sought increases in truck sizes and weights.

Truck Size and Weight Increases Are a Never-Ending, Upward Spiral

The history of truck size and weight increases consists of continual efforts by the trucking industry to put ever-increasing numbers of bigger, longer, heavier trucks on our nation's highways and bridges despite both public and state opposition. As we have discussed in this testimony, the current, heightened concern among the states is their inability to guarantee highway safety and to protect highway infrastructure that has reached a crisis stage in serviceability and funding, as recently described in great detail by the Congressionally-directed Surface Transportation Policy and Revenue Commission in its comprehensive December 2007 report, *Transportation for Tomorrow*. Bigger, heavier combination trucks on more surface miles of highways and bridges, including an unknown, but growing number of these extra-heavy, extra-long large trucks on more miles of lower-class roads, are dealing a double blow to the states by increasing large truck crash risk while also accelerating the destruction of their highways and bridges.

The unfortunate truth is that these increases in truck sizes and weights have been facilitated by Congressional legislation that has either pre-empted the states, compelling them to accept bigger, heavier trucks on more miles of state highways and bridges, or has resulted in special exemptions for specific states. Those exemptions have often raised truck size and weight in one state after another, and successful legislative efforts have encouraged the trucking industry to seek longer, wider, and heavier trucks in state after state. The plan is that when enough states have accepted the bigger, heavier rigs, the trucking industry will approach Congress with a request for federal pre-emption through provisions that will force the states to accept bigger, heavier combination trucks.

The story of federal legislative large truck size and weight increases over the years is an important cautionary tale. It shows that this approach to size and weight policy, as U.S. DOT pointed out in its concluding section of its 2004 *Western Uniformity Scenario Analysis* study, undermines any rational, long-range Congressional management of surface transportation logistics, infrastructure, and safety needs.

The Federal-Aid Highway Act of 1956 and State Grandfather Rights

The trucking industry effort to ratchet up truck sizes and weights began quickly after the passage of the 1956 Federal-Aid Highway Act. At the time, Congress agreed in the legislation to grandfather existing state axle and gross weight limits. Some states elected to grandfather the weight limits that were in effect prior to enactment of the legislation. The result is that 14 states had the privilege of exceeding the 18,000 pounds

single axle, 32,000 pounds tandem axle, and 73,280 pounds maximum gross weight limits adopted in the 1956 Act. At least 30 states, if not more, also have the grandfathered right to issue overweight permits for divisible loads. However, what counts as a divisible load is not uniformly implemented, despite clear federal legislation in the 1991 Intermodal Surface Transportation Assistance Act (STAA), followed by implementing FHWA regulations, that make it perfectly clear that much of large truck freight for which many states grant non-divisible load permits for being either oversized or overweight are loads that are inherently divisible. For example, many states grant overweight permits for numerous commodities that could easily be broken down into smaller, lighter loads.

Trucking industry efforts with state highway departments and legislatures in the late 1950s and through the 1960s began the process of convincing one state after another either to exercise their Interstate highway grandfather rights allowing bigger, heavier trucks than previously operated, or to increase the non-Interstate weight limits on state roads and bridges that were under complete state control. The strategy was not only to gain the use of bigger, heavier trucks on more and more highway mileage, both on and off the Interstate system, but especially to use a weight increase in one state to pressure another nearby state also to raise its size and weight limits. A typical argument used to influence state government representatives was how a state would fall behind in economic growth and competitiveness if it did not commensurately raise its size or weight limits, or did not allow the higher weights or bigger trucks on more miles of state highways. This approach is being used right now in the North Carolina legislature to justify the use of 53-foot long semi-trailers on more lower-class roads and bridges in the state.

A glance at the recent table of size and weight limits constructed by FHWA for the *Comprehensive Truck Size and Weight System* shows the outcome of decades of ratcheting sizes and weight upward at both the federal, Interstate and the state levels. The chart is a crazy-quilt of size and weight limits that were grandfathered in 1956 and are indexed to specific axle and gross weight limits, and to bridge weight formulas, and indicates which states regularly issue overweight permits.

The number of overweight permits granted by the states has exploded in numbers and variety in the states issuing them. Oftentimes, these permits are issued on a routine basis, usually for a year, and are handed out for nominal fees that not only do not capture the extraordinary damage to roads and bridges inflicted by heavy trucks, but sometimes do not even cover the costs of administering the permit system.

FHWA used to report on overweight permits and the extent of illegally overweight trucks, but those reports ended at the start of the 1990s and have never resumed. The reports even in the late 1980s and in 1991 showed a breathtaking number of annual, multiple trip overweight permits being issued by the states and, in addition, an extraordinarily high percentage of illegally overweight trucks, despite the widespread issuance of generous state overweight permits. Other, later reports or judgments on

illegally overweight trucks have estimated that about one of every three large trucks transporting loads in the U.S. is illegally overweight.

There is no official, federal government reporting currently being sent to Congress that determines the proportions of overweight permitting among the states, the extent to which the permits issued flout the 1991 ISTEA provision that adopted stringent criteria for what counts as a non-divisible load, and the proportions of the illegally overweight truck problem that not only make U.S. roads and bridges more dangerous, but also rapidly accelerate the damage to what is already a highly compromised surface transportation network of highways. The agency needs to be directed by Congress to conduct these annual studies of permitting practices and illegally overweight trucks, and annually to report its findings to the relevant committees in the House and the Senate.

1974-1975 Congressional Legislation

By the early 1970s, the trucking industry had convinced many states to raise their weight limits in accordance with what was claimed as their grandfather rights on the Interstate system. By this time, several states had exercised grandfather rights that FHWA did not regard as authorized by the 1956 Federal-Aid Highway Act. The agency began a series of challenges to these states through the 1970s and into the early 1980s to limit the expansion of truck sizes and weights on the Interstate system. However, that legal leverage of FHWA, the steward of federal size and weight limits, came to a screeching halt in 1982.

At the urging of the trucking industry, Congress in the Federal-Aid Highway Act Amendments of 1974 allowed the states starting in 1975 the option to raise axle and gross weight limits above the limits set in the 1956 Federal-Aid Highway Act. In the following year, Congress enacted legislation establishing the Bridge Formula B in an attempt to hold down the amount of weight that Interstate bridges would be allowed to carry by limiting gross weight in relation to the number of axles.

Unfortunately, this approach to limiting truck weights on bridges allowed higher and higher weights to be imposed on Interstate bridges by encouraging the use of extra axles so that trucks could carry heavier loads. Many of these bridges were built to lower standards, and heavier trucks have resulted in severe overstress, as recent National Academy of Sciences studies have shown. This is a serious, national problem that is increasing on a daily basis.

Following the 1974 amendments, many states raised their axle and gross weights to the new, higher limits of 20,000 pounds single-axle, 34,000 pounds tandem axle, and 80,000 pounds maximum gross weight, as limited by Bridge Formula B. Other states already had higher weight limits that were grandfathered by the 1956 Federal-aid Highway Act.

But not all states capitulated to the heavier trucks. A few midwestern states refused to concede ground to what they regarded as more dangerous and more destructive

bigger trucks. As a result, the industry went to Congress with a plea for requiring the states to accept longer, wider, heavier combination trucks.

The Surface Transportation Assistance Act of 1982 (STAA)

The STAA was a watershed in federal truck size and weight legislation. This legislation made an unprecedented incursion into states' rights. Not only did the Act demand that the states accept Western Doubles, that is, two short, single-axle trailing units each 28.5 feet in length, pulled by a tractor, it also forced the states to accept semi-trailers and trailers that were expanded from 96 inches to 102 inches in width.

The legislation also compelled the nationwide operation of semi-trailers and trailers that had to be at least 48 feet long. States that allowed the operation of semi-trailers or trailers longer than 48 feet had those operations grandfathered by the STAA. In addition, the STAA voided state control over limits on the total length of a truck – trucks could no longer be limited to a maximum overall length of, say, 55 or 60 feet. Trucks had to be allowed that used at least 48-foot trailing units or twin 28.5 short doubles. The STAA also finally put an end to “state option” by compelling the hold-out states in the Midwest to accept heavy trucks that were 80,000 pounds gross weight instead of 73,280 pounds, used single axles weighing up to 20,000 pounds instead of 18,000 pounds and tandem axles weighing 34,000 pounds instead of 32,000 pounds.

But there was more. The legislation went beyond the Interstate highway system. Congress in the STAA also required the adoption of an interconnected, national network of Primary System arterial highways beyond the Interstate that also would have to allow the bigger, longer, heavier combination trucks. After the STAA was enacted, FHWA began the rulemaking process by allowing each state to choose the system of roads beyond the Interstate where it would allow the longer, wider, heavier trucks to operate. Together, the Interstate and that system of highways on non-Interstate roads would be part of a Designated National Network (DNN) of highways that would facilitate interstate commerce with bigger, heavier trucks. FHWA also required the states to adopt reasonable access provisions in state law or regulation so that the bigger, heavier trucks could get on and off each state's portion of the DNN.

Many states were angered by the STAA demands. They were deeply concerned with both safety and infrastructure protection, especially because of the use of bigger, heavier trucks on their non-Interstate highways. This resentment was especially strong in the eastern third of the states, ranging from the northeast through the southeast.

The outcome was the refusal of several states to designate large amounts of non-Interstate highway mileage for use by the STAA-dimensioned, heavier combination trucks. In fact, several states refused even to create an interconnected system of roads off their Interstate highways as their part of the DNN. They also provided access rights for the STAA combinations that often consisted of very short sections of spur routes for getting on and off the DNN in order to prevent the incursion of STAA-dimensioned and higher weight trucks onto local roads with lower safety and pavement design standards.

The outcome was predictable. FHWA rescinded its initial effort to allow the states to choose their own routes for the DNN. Instead, the remainder of the rulemaking actions through the middle 1980s was the agency's unilateral, prescriptive designation of each state's routes that would comprise the national DNN. FHWA also erected criteria for reasonable access that many states did not meet. As a result, many states had to substantially increase the amount of spur mileage off their DNN routes for reasonable access by the STAA-dimensional trucks.

These legislative actions did not exhaust the amendments in the STAA that put the states on the defensive for protecting their citizens and their highways from the severe consequences of longer, wider, heavier trucks on far more miles of U.S. highways than ever before. The STAA also adopted an amendment by Senator Steven Symms (R-ID) that effectively ended FHWA's role for overseeing and enforcing the states' use of their 1956 Federal-Aid Highway Act grandfather rights. The amendment inserted only four words into a single sentence of 23 U.S.C. § 127(a):

This section shall not be construed to deny apportionment to any State allowing the operation within such State of any vehicles or combinations thereof which the State determines could be lawfully operated within such States on July 1, 1956, except in the case of the overall gross weights of any group of two or more consecutive axles, on the date of enactment of the Federal-Aid Highway Amendments of 1974.

This small legislative change gave the states the right to interpret their own grandfather rights for the use of bigger, heavier trucks, and the steward of federal size and weight laws, FHWA, was shunted aside.

The result, once again, was predictable. State after state was quickly pressured by trucking and broker interests to raise truck size and weight limits on the basis of what often were thinly supported claims that certain configurations, lengths, and widths of combination trucks *could have* been operated prior to July 1, 1956, but the states were only now implementing those residual rights to use bigger, heavier trucks. Those self-interpreted grandfather rights comprised not only blatant increases in the axle, gross weights, and sizes of trucks that could operate on several of the states' Interstate highways, but also often involved the implementation of claims that a given state had the right to allow routine overweight or oversize permits that heretofore it had not issued.

There was explosive growth in both the sizes and weights of big trucks over the next several years. Surprisingly, the next major surface transportation authorizing legislation, the Surface Transportation Uniform Relocation and Assistance Act of 1987 (STURAA), contained no size and weight exemptions.

Legislative and regulatory actions by many states from 1982 to 1995 resulted in further upward ratcheting of the states' large truck size and weight limits on both their Interstate and non-Interstate highways. Increases in size and weight limits accelerated from year to year. A major strategy was to move from state to state to exploit the 1982

STAA size and weight amendments that required *minimum* widths, lengths, weights, and configurations of large trucks, but without ceilings on these parameters.

Special interests always advanced the same argument: a state not only was arresting the growth of its own economy by continuing to use shorter and lighter trucks, but it also was doubly disadvantaged because adjacent states had agreed to higher size and weight limits that leapfrogged the reluctant state in increased productivity. Essentially, the STAA had rendered the states defenseless.

Trucking interests successfully persuaded state after state to ratchet up sizes and weights in several different ways during this era. One major target was “18-wheeler” semi-trailer length. The industry wanted more volume and more weight to be carried on a single combination truck.

The reason was simple: many types of commodities “cubed out” before they “weighed out,” that is, the volume of a 48-foot semi-trailer was filled before the rig could reach maximum allowed axle and gross weight limits. If the industry could move the states to 53-foot semi-trailers, more than a 10 percent increase in volume could not only benefit the transport of lighter goods that still could not reach maximum weight limits, but also allowed a certain range of commodities that used to only “cube out” to now “weigh out.” These bigger trucks raised the bar for the gross weights of many types of cargo that could be transported by a single combination truck. Along with increased permitting by the states that rose quickly through the 1980s, the result was more bigger, heavier trucks than ever before being used on more miles of both Interstate and non-Interstate highways, posing both an increased highway safety threat and accelerating the damage of the nation’s roads and bridges.

But longer, wider, heavier “18-wheelers” were not the only target for increasing combination truck sizes and weights. The other goal of trucking interests was to increase the use of LCVs. States were approached and asked either to interpret their own grandfather rights more liberally in light of Senator Symm’s 1982 STAA amendment and to allow triples where, for example, there now were only Rocky Mountain Doubles, or to allow Turnpike Doubles where only shorter doubles were used, and the like. In addition, states asserted rights to allow certain configurations of LCVs on non-Interstate highways, especially on the states’ non-Interstate DNN roads.

Some states, particularly in the western U.S., agreed to a greater or lesser extent to the more extensive use of LCVs, but other states resisted or simply refused. These refusals to allow LCVs were most prominent in the eastern third of the U.S. and on the west coast, particularly California.

Deficit Reduction Act of 1984 (DFA)

In 1982, FHWA released the results of its *Highway Cost Allocation Study*. That 1982 study was published at the same time that Congress had raised the Heavy Vehicle Use Tax (HVUT) to \$1,900 for the heaviest trucks allowed by 23 U.S.C. § 127. But that tax increase was short-lived.

The DFA charged U.S. DOT with conducting and reporting the results of a *Heavy Vehicle Cost Responsibility Study*. That study was released far too late, in 1988, one year after the next major surface transportation re-authorization legislation, STURAA. The study showed that heavy trucks were almost entirely responsible for pavement damage, and that heavy trucks were substantially underpaying their fair share for highway use and damage. The study also concluded that the only way user fee equity could be achieved was through a heavy truck weight-distance tax, the same conclusion generated by the FHWA 1997 *Highway Cost Allocation Study* and its 2000 updated *Addendum*.

The findings of these studies have been independently reproduced by several states that have conducted their own heavy vehicle cost responsibility investigations. Texas in 1990, for example, concluded that overweight trucks in the state were rapidly damaging state highways and bridges, and that the permit system used for overweight trucks was irrational and allowed extra-heavy trucks to operate at nominal fees while passenger vehicle owners subsidized the trucking industry.

To date, the only state that has implemented and sustained such a fair, successful approach to heavy vehicle cost responsibility is Oregon, which has suffered a barrage of legal actions and legislative initiatives by the trucking industry over the years to repeal its weight-distance user fee regime. Several other states attempted such weight-distance taxes in the 1980s and 1990s, but they all voided their systems after sustained legal and political assaults by the trucking industry on their systems of user fee assessments.

Long before the *Heavy Vehicle Cost Responsibility Study* reached Congress with its findings of dramatic heavy vehicle federal user fee underpayment, Congress had acted to reduce the HVUT from \$1,900 for the heaviest trucks, to a maximum of \$550, the figure that has remained unchanged for 24 years. The result has been that more, heavier, bigger trucks have increased the risk of crashes and damaged more miles of U.S. roads and bridges each year, but the maximum HVUT paid by motor carriers has been allowed to stagnate. As a consequence, American taxpayers and light vehicle owners substantially subsidize heavy truck operations in the U.S. But the findings and recommendations of the 1985 *Heavy Vehicle Cost Responsibility Study* had no meaningful effect on Congressional truck size and weight cost responsibility legislation.

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)

ISTEA was another watershed in the history of truck size and weight legislation. For the first time, Congress appreciated the threat of the spread of extra-long, overweight trucks and enacted ISTEA with a “freeze” on the increased use of LCVs. State after state had agreed either to re-interpret their grandfather rights for allowing the use of LCVs or had agreed to allow LCVs already in use in several states to access more miles of highways formerly closed to Triples, Rocky Mountain Doubles, and Turnpike Doubles. The freeze on the spread of LCVs indexed the configuration type, weight, sizes of semi-trailers and trailers, routes in use, and other conditions governing their operation such as commercial driver qualifications or restrictions, to where LCVs had operated as of June 1, 1991. Except for a few minor, limited exemptions later enacted by Congress for

specific LCV use in a few states, the LCV freeze has remained in place for the past 17 years and is clearly one of the most successful safety laws ever enacted.

The National Highway System Legislation Act of 1995 (NHS Act).

The NHS Act allowed three exemptions to the LCV freeze and to truck weight limits in four states, Nebraska, South Dakota, Iowa, and Wisconsin. In each instance, the exemptions were for certain overweight single- or twin-trailer combinations traveling certain routes between two states, or for a general weight limitation exception for operating between two routes in Wisconsin for a highway that was to be designated as an Interstate highway.

The Interstate Commerce Commission Termination Act of 1995 (ICC Sunset Act)

Concurrent with the NHS Act exemptions, Congress also acted in 1995 to end the ICC as an independent regulatory agency. A set of numerous exemptions was enacted in the bill that excepted several different kinds of commodities or types of CMV operations. These included, among other things, exempting CMVs operated by farmers and transporting agricultural or horticultural commodities, products, or supplies; transportation of livestock; specific commodities listed as exempt in the Commodities List of a March 19, 1958, Bureau of Motor Carriers ruling; transportation of property related to air carrier service; transportation of used pallets and empty shipping containers; and transportation of certain kinds of rock and of wood chips. These exemptions had major consequences for state size and weight control over extra-heavy CMVs on the Interstate highway system.

The Transportation Equity Act for the Twenty-First Century (TEA-21)

The enactment of TEA-21 resulted in the renewed march of special state size and weight exemptions. In 1994, Maine began to defy federal law and regulation by allowing big, overweight trucks weighing up to 100,000 pounds to operate on the Maine Turnpike and the small portion of non-Turnpike I-95 from the southern end of the Turnpike to the New Hampshire border.

But Maine itself admitted that it had no grandfather rights in federal law to exceed the gross and axle weight limits set for Interstate highways in 23 U.S.C. § 127. Nevertheless, the state persisted in its defiance of federal enforcement proceedings that attempted to stop Maine from operating these grossly overweight trucks. Maine went ahead with its resolve to allow 5-axle trucks at 88,000 pounds and 6-axle trucks at 100,000 pounds gross vehicle weight to operate on I-95 within the Turnpike boundaries. TEA-21 included an amendment of the last sentence of 23 U.S.C. § 127 that made Maine's overweight trucks on the southern portion of I-95 to be legal under federal law. That exemption allowed Maine to operate the higher weight trucks that it already had allowed on all of the state's non-Interstate highways.

TEA-21 contained three other special state Interstate truck weight exemptions – exemptions that U.S. DOT specifically decried in the 2004 *Western Uniformity Scenario Analysis* study as a terrible way to manage truck size and weight policy at the national

level. The first was an exemption for Colorado to allow heavy vehicles carrying two or more pre-cast concrete panels to be regarded as a non-divisible load. This set a very poor precedent by sending the message to the states that certain types of loads that were inherently divisible could be regarded as non-divisible. Some states increased their issuance of permits for new categories of so-called non-divisible loads that were, in fact, divisible loads.

The second TEA-21 weight exemption was for Louisiana. Again, the essential nature of the exemption allowing trucks weighing 100,000 pounds transporting sugarcane on the state's Interstate highways was to render an inherently divisible load as non-divisible. It should be recalled that existing federal law required loads to meet a stringent federal definition for what could be regarded as non-divisible. The federal law and regulation conflict was obvious between the special-interest exemptions for certain companies and commodities in specific states and controlling what counted as a divisible load.

The last exemption was for New Hampshire. TEA-21 provided that state laws and regulations in effect on January 1, 1987, for vehicle weight limitations for non-Interstate New Hampshire highways, could apply to New Hampshire Interstate highways. Essentially, this allowed New Hampshire to operate 99,000-pound gross weight trucks on all of the state's Interstate highways.

The Safe, Accountable, Efficient Transportation Equity Act for the Twenty-First Century – A Legacy for Users (SAFETEA-LU)

To its credit, Congress resisted nearly all pleas for special truck size and weight exemptions in SAFETEA-LU. Some provisions granting generous commercial driver hours of service exemptions were adopted, but size and weight exceptions were rejected save for an amendment allowing longer saddlemount vehicles to be used on the Interstate system. In other actions, Congress built upon the foundation it had laid to advance motor carrier safety in the Motor Carrier Safety Improvement Act of 1999 to require better data systems on motor carriers and to set more stringent requirements for commercial driver licensing, among many actions targeting the enhancement of truck and bus safety on the nation's highways.