

CHAPTER 7

ENFORCEMENT OF TRUCK SIZE AND WEIGHT REGULATIONS

INTRODUCTION

Enforcement issues arising from changes to truck size and weight (TS&W) regulations can be identified more easily after reviewing the administration and enforcement of existing size and weight regulations. Consequently, this chapter provides: (1) a review of how the joint Federal/State program evolved, (2) a description of how the program is currently being administered, (3) a disclosure of enforcement activity, (4) a summary of information obtained from nine case studies of State practices, and (5) a discussion of ways to improve program administration and enforcement.

EVOLUTION OF FEDERAL/STATE PROGRAM

The Federal and State roles in the enforcement of TS&W provisions have evolved over time with Federal involvement being expanded by the Federal-Aid Highway Act of 1956 and more so after the STAA of 1978 and 1982. The 1956 Act formalized the Interstate highway program and established Federal vehicle weight and width limits for Interstate highways. The 1978 Act provided for stronger Federal oversight of State weight enforcement. The 1982 Act established Federal minimum length limits for truck combinations among other size and weight provisions.

PRE-STAA of 1982

Federal size and weight regulation has evolved in response to changing national responsibilities, interests, and needs, including interstate commerce. A national highway system consisting of a network of “interregional” highways was envisioned as early as the 1921 Highway Act, and subsequently led to the designation of the Interstate System in the 1956 Federal-Aid Highway Act. This Act provided funding to the States raised from “highway use” taxes placed in the newly created Highway Trust Fund. Even with the designation of the Interstate System, States

still decided what roads were improved and what improvements were made. However, the provision of Federal-aid for highways carried with it a requirement that the States actively enforce both State and the newly imposed Federal weight and width limits.

Initially, each State sent a letter to FHWA stating that its laws were in compliance with Federal law, but starting in 1974, this annual statement was required to be a certification by the State's governor or his or her representative. The FHWA evaluation of State enforcement and permit practices focused primarily on the use of an "apparent low level of activity" as the trigger for considering sanctions for some States in the late 1970s. Measures to determine this "low level of activity" were ratios of truck registrations to truck weighings, citations to weighings, and number of scales to miles of highways eligible for Federal-aid.

The STAA of 1978 intended to strengthen the State certifications by authorizing FHWA to impose stricter requirements. In response to the Act, FHWA required an annual State Enforcement Plan (SEP). The annual SEP has become the measure of performance against which the certification is evaluated and compliance determined. A State found to be in noncompliance could be penalized by withholding 10 percent of its Federal-aid highway funding.

Although States may be sanctioned for noncompliance with the enforcement requirement, funding of weight enforcement activities remained solely a State responsibility until 1992. As State highway agencies construct and maintain the infrastructure; and State law enforcement agencies enforce all laws, including those pertaining to TS&W; the level of enforcement is, to a great extent, dependent on cooperation between two or more State agencies. This includes a commitment of resources for facilities and equipment from the State highway agency and personnel from the State law enforcement agency(ies).

A 1979 U.S. GAO report on State enforcement of weight limits cited a need for improving the enforcement program administered by FHWA. The report criticized FHWA for failing to provide guidance and assistance to the States to improve TS&W enforcement programs. Other concerns included the States' expanded use of grandfather provisions and the lack of uniformity in penalties, permit administration and enforcement among the States. The requirement of the annual SEP was one response by FHWA to the GAO report.

POST-STAA of 1982

Prior to the STAA of 1982 the Federal interest in enforcement was primarily to ensure that maximum axle and GVW limits, including the FBF, applicable to Interstate highways were enforced. The 1982 Act required the designation of a NN for longer and wider (but not heavier) semitrailer and short double-trailer combinations. Subsequently, the Federal preemption of State laws in ISTEA governing certain length limits and legal vehicle combinations expanded the Federal interest in size and weight regulation to include dimensions for LCVs. The States establish the size and weight limits for vehicles and loads on highways other than an Interstate (where weight, width, length, and configurations are largely governed by Federal law) or NN route (where size and configuration of vehicles are partly governed by Federal law). The NN has

approximately 200,000 highway miles (44,000 miles of Interstate and approximately 155,000 of Non-Interstate).

The impact of STAA preemption was significant for many States. Although FHWA solicited State input through a notice in the *Federal Register*, many States felt they did not have an opportunity to review the non-Interstate routes designated for the STAA vehicles in advance. Consequently, narrow, winding, mountainous routes with insufficient standards were included in the initial designation. FHWA subsequently revised the routes based on State review and submissions.

Further, State enforcement and administrative issues had not been addressed, creating confusion for both enforcement personnel and carriers. As access beyond the designated system was determined by the States, they developed procedures for a route review process. Enforcement of the restricted routes for the STAA vehicles required information such as maps or signs that showed which routes were restricted for which vehicle configurations. The enforcement of the limits on the nondesignated system was incorporated within State size and weight enforcement programs. FHWA regulations to standardize reasonable access for STAA vehicles became effective in 1990. Since then, virtually all access problems for these vehicles have been resolved.

The NN for large trucks provides a nationwide network for STAA combinations, however, because of problems associated with providing reasonable access for these larger combinations and because few of these trucks are actually loaded or unloaded at a site directly on an NN route, the actual miles open to these vehicles have increased substantially. As a result, the present NN may no longer be relevant. This raises the question whether any national system for larger or heavier trucks could be made to work successfully.

Further, assuming that all routes on the present NHS are suitable for larger and heavier trucks ignores the basic purposes for which the NHS was identified and the criteria used to identify its routes. Allowing such trucks on all NHS routes would probably have an adverse impact on some.

CURRENT ADMINISTRATION OF FEDERAL/STATE PROGRAM

The mission of FHWA's vehicle weight enforcement program is to administer its size and weight enforcement requirements and to monitor State compliance.¹ As noted by FHWA, "the need for truck weight enforcement must be balanced against other enforcement efforts including those for traffic law and criminal activity. The question is not, 'are States enforcing truck weight laws,' but rather how much enforcement is enough?" In this regard, FHWA noted in 1991 that, since the SEP requirement in 1979, State enforcement of truck weight limits had improved from a national perspective. FHWA cited the significant number of trucks that were weighed and

¹ Stated in FHWA comments to the OIG's 1991 draft "Audit of the Vehicle Weight Program."

citations issued and the increasing use of technology, primarily weigh-in-motion (WIM) for screening trucks, as indicators of improvement although problems continued to exist.

The State role can be described as implementing Federal and State policy through enforcement of size and weight laws in a judicious manner for the purpose of preserving Federal and State infrastructure investments. The SEPs provide the baseline for evaluating the certifications, and provide FHWA with a means of evaluating trends and identifying potential issues associated with State enforcement. In addition, the FHWA annual review of certifications often leads to changes in State laws determined to be inconsistent with Federal law.

State administration was reviewed by looking at FY 1995 SEPs and State enforcement certifications submitted to FHWA. The information and data obtained from these documents pertained to enforcement strategy, State funding (budget) for the enforcement program, truck weighings and citations issued, and off loadings. Inconsistencies in State interpretations of FHWA guidelines often result from changes in personnel at the State level. When this occurs, FHWA often provides on-site training on preparation of the SEPs and certifications.

STATE ENFORCEMENT

The importance of enforcement in controlling vehicle weight has been underscored in past studies. The degree of compliance depends on numerous variables, many of which are beyond the control of State program administrators and enforcement officials, such as funding and State legislative mandates. Further, it is difficult to obtain accurate information on the degree of noncompliance with weight limits. Quantifying the degree of noncompliance at the State and national levels continues to be difficult, as noted by Clayton and others in “Enforcement and Overweight Trucking.” This report discusses the difficulty of measuring the “real” picture of overweight trucking, but despite this, it emphasizes that without weight enforcement legal operators would be economically disadvantaged, road costs would be excessive, and there would be no incentive for operators to control loads.²

Nevertheless, actions are occurring at the State level to reduce incentives for overweight truck operation. Many States are in the process of reviewing the adequacy of fines and permit fees for overweight vehicles. Some have increased fines and/or fees to recover more of the damage costs. At the present time, fees and fines in the majority of States are too low to recover these costs.

While adequate fines and penalties are important elements in an effective program, judicial support is critical but beyond the direct control of State officials. Weight enforcement officers provide seminars or educational sessions for State legislators and judicial officers as part of their outreach. The problem of judicial support was evaluated in a 1985 FHWA report, which suggested alternative approaches to courts with administrative adjudication and expanded use of the Minnesota relevant evidence model.

² Clayton, Nix, and Fepke in *Enforcement and Overweight Trucking*, presented at the Canadian Transportation Research Forum, June 1992.

FEDERAL INVOLVEMENT

Federal regulations detail the requirements for submission of annual SEPs and certifications of enforcement (Part 657 of Title 23 CFR). The certification must be by either the governor or his or her official designee. The requirements specify the data and supplemental information required, including a statement of enforcement of the ISTEA “LCV freeze.”

Over the past 15 years, FHWA review of the effectiveness of enforcement programs has primarily focused on changes in numbers from year to year. For example, number of trucks weighed, number of citations issued, and violation rates are tracked. As noted earlier, perhaps the most important and difficult question to be answered prior to defining measures of effectiveness, is what is a reasonable level of enforcement given the uniqueness of each State’s laws and available resources.

Failure to comply with the conditions or provide the information required may result in a withholding of Federal-aid highway funds. The FHWA uses an incremental administrative procedure that gives States the opportunity to resolve discrepancies or problems and avoid sanction. Sanction proceedings may be initiated for one or more of the following reasons with the corresponding sanctions: (1) a State fails to submit the required certification--10 percent of highway funds, (2) FHWA determines there is inadequate size and weight enforcement on the Federal-aid system following review of the annual certification and SEP--10 percent of highway funds, and (3) FHWA determines there is an inconsistency between State and Federal weight limits for the Interstate System--100 percent of Interstate funds. Since 1978, 23 States have received conditional approvals following the annual FHWA certification review. Table VII-1 details the reasons for the conditional approvals.

Table VII-1
FHWA Conditional Approvals of State Annual Size and Weight Certifications
1978 to 1994

Reason Cited for Conditional Rating	Frequency of Use	Number of States
Failure to Submit	0	0
Inadequate Enforcement	15	11
Conflict of Laws or Inconsistency with Federal Weight Limits	22	12

Since 1978, several States have received conditional approval of their annual certifications and SEPs; some frequently. Through 1995, conditional acceptance of certifications has occurred on 40 occasions where sanctions were threatened. Seven of these 40 cases resulted in letters being sent to the governor on the impending sanction. In all cases, conflicts were resolved and

sanctions were not imposed. In two of the seven cases inadequate enforcement was given as a reason for the proposed sanction. As this illustrates, FHWA and the States make every effort to resolve conflicts administratively.

ENFORCEMENT ACTIVITY

State size and weight enforcement has increased in the last 10 years, even with the additional demands on the States for safety inspections under MCSAP. The increasing number of trucks operating in interstate commerce and the increased use of WIM technology for screening trucks is reflected in the increased number of vehicle weighings. In 1985, the States weighed 105.2 million trucks (including 7.9 million on WIM in four states). The increase in the number of vehicle weighings continued through 1993. A decrease occurred in 1994 and 1995, which reflects the inoperable condition of equipment in some States, as well as weather factors and personnel constraints. In 1995, the total number of trucks weighed (including 57.9 million on WIM) increased to 169.6 million, with 28 States using WIM in some capacity.

During the same period, the total number of overweight citations issued (axle, gross, and bridge formula) decreased slightly from 664,000 in 1985 to 655,000 in 1995 while the number of trucks weighed (excluding WIM) increased by 14.3 million. As the violation rates shown in Table VII-2 indicate, the percentage of trucks weighed that are cited for weight violations is very small and deviates little over time.

**Table VII-2
State Weight Enforcement**

Year	Weighed (including WIM)	Weighed (excluding WIM)	Weight citations	Violation rate	Offloaded	Load shift required
1985	105,234,000	97,330,000	664,033	0.007	106,618	371,104
1987	117,900,000	104,452,000	671,259	0.006	85,949	432,598
1989	146,950,000	124,687,000	692,673	0.006	79,309	438,584
1991	150,428,000	116,759,000	663,204	0.006	85,935	396,913
1993	162,615,000	111,889,000	653,492	0.006	76,611	451,643
1995	169,568,000	111,620,000	654,903	0.006	105,948	472,614

In addition to citations, the requirement for an overweight vehicle either to be offloaded or have the load shifted until the axle weights are within limits can be a strong incentive to comply. Off-loading and load-shifting requirements are effective immediately, and the inconvenience or added cost that the violator incurs may contribute to increased compliance. After decreasing from 1985 through 1991, off-loading and load shifting as enforcement tools appears to be increasing in use. The use of off-loading may be based on several factors, including mandatory

off-load parameters established by State legislatures, departmental guidelines, prosecutor guidelines, or officer discretion.

When the total number of trucks weighed is disaggregated by scale type, the distribution from 1985 through 1995, shown in Table VII-3, clearly indicates the significant influence of WIM as a screening tool on scale house efficiency. Enforcement strategies from year to year appear fairly constant, with the bulk of weighing occurring at fixed facilities. In 1995, only five States did not use fixed scales as part of their enforcement strategy.

**Table VII-3
Trucks Weighed by Scale Type**

Year	Fixed	Semiportable	Portable	WIM	Total
1985	94,685,000	1,152,000	1,494,000	7,903,000	105,234,000
1987	101,801,000	1,444,000	1,206,000	13,449,000	117,900,000
1989	122,188,000	1,312,000	1,187,000	22,263,000	146,950,000
1991	114,271,000	1,233,000	1,255,000	33,669,000	150,428,000
1993	109,347,000	1,238,000	1,304,000	50,726,000	162,615,000
1995	109,275,000	1,107,000	1,237,000	57,948,000	169,568,000

A State’s choice of enforcement strategies depends on many factors, including traffic patterns, resources, geography, and environment. Key factors influencing the choice between fixed facilities or mobile enforcement, as well as the advantages and disadvantages of each strategy, are noted in Table VII-4. The key physical elements of a fixed facility are stationary scales, space and lighting for safe inspections, voice and data communications, shelter, controlled highway and inspection facility signage, acceleration or deceleration lanes, washroom facilities, and the use of technology such as WIM, automated vehicle identification (AVI), and cameras.

Table VII-4 provides a summary of factors influencing the weight enforcement strategy a State might select. Generally, most States include all of the strategies, in varying degrees, with mobile and portable scale teams patrolling on bypass routes.

A relevant issue on TS&W enforcement is the number of truck axles—the more axles, the longer the time required to weigh the truck. For example, the average time required to weigh an 11-axle combination allowed in Michigan with portable scales is two hours.

A problem for weight enforcement at fixed facilities is “scale avoidance.”³ Over the years, it has been assumed that the only reason trucks avoid scales is because they are overweight. While this may have been the case in the early 1980s, it is probably less important in the 1990s. With 49 States and the District of Columbia participating in MCSAP, and an increasing emphasis on safety inspections, many trucks circumvent the scale houses to avoid a roadside inspection rather than to avoid being weighed. Therefore, mobile safety enforcement, as with weight enforcement, needs to be a part of a comprehensive safety enforcement program.

**Table VII-4
Selection Considerations for Weight Enforcement Strategies**

Criteria	Fixed Facility	Mobile/Portable and WIM
Volumes of trucks weighed	700-800 per shift (2,500 per day)	3-5 per hour
Facility and technology used	Best for space and technology use	Adequate to limited
Cost to construct¹	Ranges from \$1.7 million to over \$5 million ²	Cost of land, equipment and signage (\$300,000 or more)
Staffing requirements¹	24 hours (2) days a week operation: minimum staffing of 17 persons	8 hours operation: minimum of 2 enforcement/inspectors ³
Flexibility	Limited	Very flexible
Safety for officer, driver and vehicle	Excellent	Poor
Deterrence/visibility	High for primarily Interstate vehicles	Low visibility, high deterrence for local traffic and weigh station avoidance

¹ Source: “Enhancing the Effectiveness of Commercial Motor Vehicle Inspections.” Governor’s Commission on Economy and Efficiency in State Government. November 1990. Montpelier, Vermont

² \$1.7 million to construct St.Croix, Minnesota facility on I-94 in 1987; \$2.4 million for Woodburn, Oregon on I-5 in 1986; \$5.3 million (Arizona share) for joint port-of-entry at St.George, Utah on I-15 in 1990. Vermont Agency of Transportation

³ Operation limited to daylight hours, weather is a serious consideration

SAFETY AND WEIGHT ENFORCEMENT

The 1982 Motor Carrier Safety Act established MCSAP, a grant program to provide for State enforcement of Federal Motor Carrier Safety Regulations. Due to a significant increase in the number of commercial vehicles operating in interstate commerce, the resources available to FHWA were insufficient to meet the enforcement demands of carrier audits and field safety inspections. Prior to 1982, Federal motor carrier safety inspectors coordinated field inspections with State weight enforcement personnel, since the Federal inspectors had no legal authority to stop vehicles.

³ General Accounting Office, “Excessive Truck Weight: An Expensive Burden We Can No Longer Support,” Washington, D.C., 1979.

In general, there are three commercial vehicle enforcement functions performed during roadside and scale house inspections. These are credentials verification, vehicle size and weight enforcement, and driver and vehicle safety inspections. Weight enforcement and MCSAP inspections are not mutually exclusive. Therefore, it is essential for determining the current level of enforcement that data from both motor carrier programs be included.

Currently, the States provide the bulk of the funding for weight enforcement, but since ISTEA, Federal funding is available for weighing vehicles incidental to MCSAP inspections. The States annually commit resources of approximately \$281 million to enforce State and Federal weight laws and meet their SEP goals. In Fiscal Year 1995, the Federal and State MCSAP and State TS&W enforcement expenditures totaled \$342 million; 82 percent of this total came from State funds, as Table VII-5 shows. Table VII-6 shows the increase in MCSAP inspections relative to the increase in truck weighings.

As in the weight enforcement program, States determined by FHWA to have laws or regulations inconsistent or incompatible with Federal laws and regulations are subject to sanctions, in this

**Table VII-5
Funding of State Motor Carrier Enforcement
Fiscal Year 1995**

	<u>Expenditures</u>	<u>Personnel</u>
<u>MCSAP Basic Grant</u>	\$61,267,000	1,069
Federal (80 percent)	\$49,028,000	
State (20 percent)*	\$12,239,000	
<u>Weight Enforcement</u>	\$280,706,000	6,061
State (100 percent)		
TOTAL	\$341,973,000	7,130

*The 20 percent represents only the required State match for MCSAP funds and not the total expenditure by the States for safety enforcement. All States were handling safety enforcement long before MCSAP and continue to place an emphasis on safety enforcement in such areas as speed limits, brake checks, vehicle equipment checks, and driver licensing checks.

**Table VII-6
Comparison of State Motor Carrier Enforcement Activity**

	1985	1995
Trucks weighed (excluding WIM)	97,330,000	111,620,000
Trucks inspected (MCSAP)	372,000	1,799,000
TOTAL	97,702,000	113,419,000

case the withholding of up to 50 percent of their basic grant. Also, as in the weight enforcement program, the majority of States facing MCSAP sanctions implement the necessary changes and avoid loss of funding. Exceptions occurred in FY 1995 when sanctions were imposed on Maine and Pennsylvania and 50 percent of their basic grants was withheld.

CASE STUDIES

Interviews with size and weight enforcement officials were conducted in nine States to supplement available information on their operations. The criteria used to select the States included those allowing LCVs, not allowing LCVs, having marine ports, having high truck traffic corridors, using ITS-CVO in their program, being ranked in top 10 States for number of trucks weighed or weight citations issued, using fixed facilities, or having no fixed facilities for weighing. Table VII-7 provides descriptive information on the weight enforcement programs for each of the nine States. Key points from the case studies follow:

Weighing Facilities and Equipment

Problems of inoperable or obsolete equipment, repair or maintenance work not completed expeditiously, and inconsistencies between States and regions are common issues cited by FHWA in its annual review of the State certifications and confirmed in some of the case study States. For example, States subject to harsh winter weather conditions and with a very limited number of fixed weigh facilities, as with three of the case study States, contend with the problem of locating plowed roadside inspection areas for weighing trucks safely.

**Table VII-7
Overview of Case Study States**

State	Enforcement Agency	Type of Scales Used	Grandfather Rights	LCVs Allowed	Relevant Evidence
Arizona	Dept. of Public Safety	Portable	No	Yes	Yes/1
California	Highway Patrol	Fixed, Portable	No	No	No
Georgia	DOT	Fixed, Portable	Yes	No	No/2
Maryland	State Police Transportation Authority	Fixed, Portable	Yes	No	No
Massachusetts	State Police	Portable, Mobile Units	Yes	Yes	No
Minnesota	State Patrol	Fixed POE, Portable	Yes	No	Yes
New Hampshire	Dept. of Safety	Portable	Yes	No	No
Oregon	DOT	Fixed POE, Portable	Yes	Yes	No
Pennsylvania	State Police, DOT	Fixed, Portable	Yes	No	No

1 Arizona enforcement may use weight slips as basis for tickets on GVW violations without weighing trucks on scales

2 Georgia's fines for overweight violations are treated as administrative penalties and collected through an administrative adjudication process which could be an alternative for collection of fines.

Also roadside inspection facilities are often insufficient to provide a safe environment for the officer and for the vehicle being weighed such that they limit the number of vehicles that can be safely stopped for weighing. The Minnesota State Patrol has written guidelines on selecting appropriate inspection areas for weight enforcement. Enforcement agencies in other States may consider implementing such guidelines, as in 1996 an Indiana State inspector and the driver of the truck being inspected were killed. This led to calls by some enforcement and industry representatives at the 1996 Commercial Vehicle Safety Alliance annual meeting to end roadside inspections

Grandfather Rights and Nonuniformity Between States

Nonuniformity in weight limits and permits resulting from grandfather rights in one or more States in a contiguous group is an issue raised by officials in many of the case study States. The impact of different limits or exceptions in neighboring States often results in permits or other exception in adjoining States without grandfather rights. The nonuniformity created by frequent changes in limits and exceptions suggests that a uniform standard, whether Federal or regional, may be desirable. Uniformity could level the playing field between States and the industries in those States. For instance, weight permits for hauling milk in New York and steel coils in Ohio were cited by Pennsylvania officials as one reason legislation was passed for new overweight blanket permits for hauling milk and steel coils in 1995. In late 1995, the Pennsylvania permit law led to inquiries from the Maryland industry about pursuing a similar law. This sequence is an example of the process of “ratcheting” weight limits upward, although only for specific commodities in these cases, over time because of competitive pressure from neighboring States.

Complex Regulations

State field enforcement personnel and officials interviewed during the case study process generally believed that complex regulations should be avoided, which confirms the TRB study findings presented in Special Report 225. National standards, particularly those that require field enforcement in the States, should be developed in full consultation with State enforcement officers. Regulations must be easily comprehended by enforcement personnel as well as by those expected to comply with them. Often, the education of industry occurs only when a ticket is written, and the State enforcement officer must explain the law to the driver. Consequently, regulations that require specialized equipment or facilities and technical expertise would be difficult to enforce.

IMPROVING ENFORCEMENT

Recent efforts that may improve State size and weight enforcement operations include pilot projects supporting relevant evidence legislation in four States, advances in ITS-CVO development and deployment, and revisions to the SEP and certification process published under an Advanced Notice of Proposed Rulemaking (ANPRM–Docket Number FHWA 93-28).

RELEVANT EVIDENCE

A 1985 FHWA report identified various administrative adjudication options that could be used to improve the effectiveness of State enforcement programs. One option was “relevant evidence,” used in Minnesota since 1980. Minnesota allows bills of lading, weight tickets, and other documents that indicate the weight of a truck to be used as evidence in a civil proceeding to establish overweight violations. Enforcement is through an audit, generally of shipper or freight forwarder files; and civil action can be taken against the driver, the shipper, the owner, or the lessee for all or part of the fine, depending on the degree of responsibility for causing the overweight movement. The audit also provides a means to enforce multitrip permit use, determine how frequently they are used, and recover damage costs. Enforcement personnel interviewed believe the program has been a great success and are strong supporters of the approach. The findings of a 1985 program effectiveness audit by Minnesota DOT and State Police indicated that, as part of a comprehensive weight enforcement system, relevant evidence proved to be extremely successful in restricting the operation of illegally overweight vehicles.

In 1993, FHWA initiated a three-year pilot project to assist Iowa, Louisiana, Mississippi, and Montana in adopting relevant evidence laws. However, none of the States succeeded in passing legislation. Indications are that industry opposition contributed to defeat of the proposed bills. Several States have expressed a renewed interest in relevant evidence laws, which may be a viable option for the future.

Using a different approach, Georgia DOT adjudicates all weight citations through an administrative process rather than through a court system. In theory, this should increase the probability of collecting fines. The process is quite similar to the way in which tax audits are processed, that is, the citation is issued, and the fine must be paid within a period of time or a hearing requested. Failure to pay results in the initiation of a collection process by the DOT investigative unit. This may include impoundment of the vehicle, suspension of its registration, or placement of a lien on the vehicle.

ITS–CVO DEPLOYMENT

CVISN DEVELOPMENT AND USE

The ITS elements that support CVO are collectively referred to as CVISN. CVISN includes activities associated with commercial vehicle credentials and tax administration, roadside inspections, and freight and fleet management. It is a national effort to coordinate and integrate technologies in use or under development to improve the operation of motor carrier programs to benefit government, carriers, and other stakeholders. Until recently, the use of technology for CVO had been more prevalent in the West and Northwest. In its oversight role of State weight enforcement programs, Federal involvement in CVO technology deployment has been most prominent in its advocacy of WIM and AVI systems.

Although CVISN technology holds some long-term promise in the identification of overweight vehicles, it also holds promise for permitting of vehicles and loads and collection of enforcement

data into a “real-time” entry and access database. In fact, many States have either implemented computerized permit systems or are in the process of doing so. Minnesota's computerized permit system was one of the first implemented and has served as a model for other States. It has reduced the time involved for carriers and the State agency for issuing a “routine” permit to approximately 30 seconds.

The technology discussed below has been in use, is currently being tested, or is available for use for State size and weight administration and enforcement. The Federal role in promoting the use of technology in the 1980's focused on the combination of WIM and AVI for monitoring and collecting data on vehicles and in encouraging States to use WIM for screening of vehicles. As new technologies evolve, additional opportunities for improving enforcement may present themselves.

Weigh-In-Motion

The use of WIM for screening at fixed facilities provides enforcement with a tool to improve the efficiency and effectiveness of operations. Although WIM is excellent for screening purposes, it is not without its problems⁴. The WIM equipment has frequent maintenance requirements arising primarily from heavy use. Thus, this almost indispensable enforcement tool is often inoperable for extended periods of time.

A 1994 study by Florida DOT to assess the feasibility of using WIM for weight enforcement exemplifies the benefits to be gained. The findings strongly support WIM use for identifying areas in need of enforcement targeting. They also support the conclusions of previous studies that lack of any enforcement results in high noncompliance and that high enforcement results in complete, or near complete, compliance for those trucks weighed. Periodic replication of this study approach in other States could provide useful information for evaluating the extent of the overweight problem nationwide. One study recommendation was to require the States to report on weigh station bypass enforcement in the annual certifications. One limiting factor of the study is that the vehicles weighed were exclusively five-axle tractor trailers.

One possible use of WIM for enforcement would combine WIM with photo imaging for assessing civil penalties for violations. Another, within the scope of CVISN, is to expand the use of high speed weigh-in-motion (HSWIM) off the Interstate System for enforcement in States not currently using WIM. This could increase the number of trucks that could be screened for weighing by portable scales.

⁴ “Weigh-In-Motion Technology Improves Highway Truck Weight Regulation” by Laurita, Sellner, and DuPlessis discusses WIM benefits and problems, citing New Jersey and Delaware's incorporation into planning of weigh stations and uses in by-pass route monitoring.

Weigh-In-Motion and Photo Imaging

Photo imaging is a technique currently used for traffic enforcement in some States and large metropolitan areas where laws allow a citation to be issued for violations of stop signs and red lights based on a photograph or video reading of the vehicle plate. A combination of WIM and a camera license plate reader to match an overweight truck with the owner is being evaluated in Minnesota for the impact of weather and speed on the photo image. This combination of technologies could provide a means to enforce weight limits on overweight vehicles bypassing scales if problems associated with climate can be resolved.

AVI and Automatic Vehicle Classification (AVC) Systems

The AVI and AVC systems have been in use for many years, primarily by the private sector for tracking intermodal containers, parking lot control, and fee assessment. The potential use of AVI for CVO and enforcement was tested in the Heavy Vehicle Electronic License Plate (HELP) Crescent Demonstration Project during the 1980s along the I-5 corridor from British Columbia through Washington, Oregon, and California to Arizona. The project evaluation team concluded that there were benefits to be derived if technical problems and barriers could be overcome and that the CVO services most ready for deployment are the automated roadside dimension and weight screening technologies.

More recent examples of the use of AVI and AVC technology for size and weight and other enforcement purposes are the Advantage I-75 project implemented in 1995 and the designation in 1996 of Maryland and Virginia as prototype States for technology deployment along the I-95 Corridor.

Bar Codes and Readers

Bar codes and readers may be used in the future to facilitate permitting and enforcement. This could potentially include checking credentials and data collection on registration, taxation and overweight permits. Customs brokers on the Canadian border use bar codes for international freight documents. This allows the documents to be scanned by customs officers providing a screen display of the data and entry into a database.

Geographic Information Systems

Geographic information systems (GIS) currently used by State transportation planners has potential use in strategic weight enforcement planning. State DOT GIS databases could include information on known “generators of truck traffic” such as asphalt plants, quarries, and landfills and access to the information could be provided for enforcement planning. Although individual enforcement officers may be familiar with the location of facilities in their patrol areas, a compilation of Statewide facilities is unlikely.

COSTS OF DEPLOYMENT AND MAINTENANCE

The use of ITS-CVO beyond Federal “prototype” and “pilot” State testing and evaluation is contingent on overcoming legal, institutional, and financial barriers and gaining industry acceptance. The cost of deployment and the required system maintenance are two issues that remain to be resolved. For example, the cost to implement and maintain the system proposed in Oregon’s 1993 ITS-CVO Strategic Plan is \$23.3 million (1993 dollars) over a six-year period.⁵ The technology included WIM and AVI (7 Interstate sites, 14 sites on the State primary system, and other sites on or off the State highway system) and dynamic warning systems. Federal funding for implementing a portion of the plan as a National CVO project prototype was made available at an 80/20 match, with six million dollars appropriated for the Federal share.

The Oregon plan further projected total costs over a 20-year period to be \$48.2 million and the benefit to the State as \$150.2 million due to reduced tax administrative costs, tax evasion, and road damage. Motor carrier costs were estimated over the same 20-year period to be \$23.1 million, and benefits equal to \$195.1 million from time savings, reduced procedures, and reduced tax administrative costs.

POTENTIAL PROGRAM CHANGES

The current relationship between the Federal and State administrators of the TS&W enforcement program is best characterized as federally guided and State-administered.⁶ However, the effectiveness of the relationship was reviewed in a 1991 audit by the DOT OIG, which found that improvements were needed in the vehicle weight enforcement and that FHWA should strengthen its administration of the program. The OIG review recommendations are shown by category in Table VII-8. The FHWA responded to the review by clarifying several legal and operational misunderstandings and started implementing other suggested improvements. The OIG also recommended that FHWA request congressional action to prohibit use of divisible load permits and multitrip nondivisible load permits on the Interstate system.

In further response, FHWA issued an ANPRM in December 1993 on State certification of size and weight enforcement. Comments were requested on nine problem areas identified by the OIG and FHWA in SEP and certification procedures. These were: (1) the magnitude and locations of the national overweight problem, (2) weight tolerances at scales are common despite Federal law, (3) preparation of SEPs and certifications is time consuming, (4) not all States are taking advantage of improved data collection to enhance program management and effectiveness, (5) the amount of pavement deterioration attributable to vehicles with special permits is unknown, (6) permit fees and overweight penalties do not always reflect true costs, (7) enforcement plans lack specific, measurable goals, (8) there is inadequate vehicle size and

⁵ \$13.2 million for construction, \$4.6 million for operations and maintenance, \$4.1 million for information systems, \$0.9 million for research and development testing, and \$0.5 million for planning and coordination.

⁶ Federal guidelines for annual certification and SEPs are specified in Part 657 of Title 23, CFR.

weight enforcement in some urban areas, and (9) sanction procedures do not clearly identify State settlement options.

**Table VII-8
OIG Recommendations on Federal/ State
Weight Enforcement Program**

1. Quantification of Nature and Extent of Overweight Vehicles	2. Plans and Strategies to Combat Overweight Vehicles	3. Application and Evaluation of Enforcement Techniques
<p>Expand WIM use to collect data for use in quantifying the magnitude of the problem.</p> <p>Increase WIM use for planning enforcement details to be more effective.</p> <p>Improve WIM calibration. Purchase new equipment.</p> <p>Direct FHWA Divisions to work with the States to evaluate existing fine structures.</p>	<p>Develop comprehensive criteria to evaluate the adequacy and effectiveness of State programs needs to be developed by FHWA.</p> <p>Revise SEPs to contain information needed to measure effectiveness.</p> <p>Analyze SEPs more critically.</p> <p>Promote use of nontraditional enforcement technique.</p>	<p>Consider infrastructure damage factor in permit fee.</p> <p>Direct FHWA Divisions to promote, monitor, and evaluate WIM use more actively.</p> <p>Enforce prohibition of administrative weight tolerances.</p> <p>Use more off-loading.</p> <p>Use “relevant evidence” laws.</p>

Comments to the docket were received from 21 State DOTs, and 9 State enforcement agencies. Twenty other interested parties also submitted comments. Generally, the States said by category:

1. Quantification of Nature and Extent of Overweight Vehicles

- Ⓒ The magnitude of the overweight truck problem could possibly be measured using WIM technology, but only with an infusion of significant Federal funding to the States.
- Ⓒ Use of ITS will be limited until its reliability and durability have been proven.

2. Plans and Strategies to Combat Overweight Vehicles

- Ⓒ The process for preparation and submittal of the SEPs and certifications is time consuming (one estimate is 4,160 hours) and could be improved.
- Ⓒ There is no one model for enforcement that fits all States.
- Ⓒ SEPs and certifications should take into account regional enforcement performance.
- Ⓒ The use of sanctions should be replaced with incentives such as a grant program for the States.

3. Application and Evaluation of Enforcement Techniques

- Enforcement discretion on tolerances should be accepted as a given with less emphasis by FHWA. If tolerances should be adopted by FHWA, they should not be percentage based.
- Ⓒ Permit fees do not recover damage costs
- Ⓒ Relevant evidence should not be mandated unless Federal funds are provided for implementation.

The process for submittal and acceptance of the annual State certifications and SEPs is complex, time consuming, and convoluted. Additionally, the process for review of the SEPs by FHWA is also time consuming and complex. The increasing demand for more detailed information from the States is not only the result of a need to measure program effectiveness for FHWA and Congress but also of a need to be able to provide comparative data on potential conflicts and inconsistencies in policies. FHWA suspended the rulemaking pending the completion of this Study.