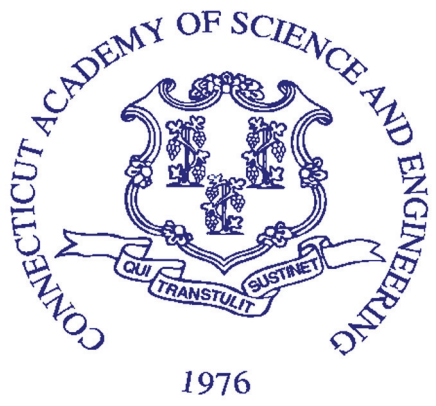
Alternative Methods for Safety Analysis and Intervention for Contracting Commercial Vehicles and Drivers in Connecticut

June 2012

A Report By

The Connecticut Academy of Science and Engineering



For

The Connecticut Department of Transportation

Alternative Methods for Safety Analysis and Intervention for Contracting Commercial Vehicles and Drivers in Connecticut

A Report By

The Connecticut Academy of Science and Engineering

Origin of Inquiry:	The Connecticut Department of Transportation
Date Inquiry Established:	May 25, 2011
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This study was initiated at the request of the Connecticut Department of Transportation on May 25, 2011. The project was conducted by an Academy Study Committee with the support of Study Manager Eric Jackson, PhD, and Study Advisor Nicholas Lownes, PhD. The content of this report lies within the province of the Academy's Transportation Systems Technical Board. The report has been reviewed by Academy Member Herbert S. Levinson, PE. Martha Sherman, the Academy's Managing Editor, edited the report. The report is hereby released with the approval of the Academy Council.

Richard H. Strauss
Executive Director

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16. Abstract
This study evaluated Connecticut's current system for qualifying contractors for the use of commercial vehicles on state contracts, identifies its impacts, and makes recommendations on how the state should revise the current system. The primary conclusion is that the current contractor qualification system used by Connecticut for the award of state contracts should be revised. Specifically, the use of a contractor's out-of-service rating and CSA/SMS scores is neither statistically valid nor justified for the purpose of qualifying contractors for the use of commercial vehicles on state contracts. Under the recommended system, the state would qualify contractors based on proof of required insurance coverage and certification by the contractor that: they are enrolled in a drug and alcohol testing program, if applicable; they are not currently suspended from operating commercial vehicles by FMCSA; their drivers are in good standing; they are in compliance with all state/federal regulations/laws; and they have no outstanding fines or fees due to the state. Additionally, state agencies would periodically sample contractor records to verify compliance with contractor qualification requirements throughout a contract period. It is also recommended that subcontractors should be held to the same standards as the primary contractor, as stated above.

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TABLE OF CONTENTS

LIST OF ABBREVIATIONS AND ACRONYMS

BASICs	Behavior Analysis and Safety Improvement Categories
CASE	Connecticut Academy of Science and Engineering
CMVs	Commercial Motor Vehicles
ConnDOT	Connecticut Department of Transportation
CRs	Compliance Reviews
CSA	Compliance, Safety, Accountability model
DAS	Connecticut Department of Administrative Services
DMV	Connecticut Department of Motor Vehicles
DMV/CVSD	DMV's Commercial Vehicle Safety Division
FMCSA	Federal Motor Carrier Safety Administration
FMCSRs	Federal Motor Carrier Safety Regulations
HMRs	Hazardous Materials Regulations
HOS	Hours-of-Service
MCSAP	Motor Carrier Safety Assistance Program
MCSIP	Motor Carrier Safety Improvement Process
MMR	Meets Minimum Requirements
NGA	National Governors Association
NR	Not Recommended
OOS	Out-of-Service
PRISM	Performance and Registration Systems Management
PUs	Power Units
SEAs	Safety Evaluation Areas
SFD	Safety Fitness Determination
SFR	Safety Fitness Review
SMS	Motor Carrier Safety Measurement System
USDOT	US Department of Transportation
VMT	Vehicle Miles Travelled

EXECUTIVE SUMMARY

STUDY PURPOSE

This study evaluated Connecticut's current system for qualifying contractors for the use of commercial vehicles on state contracts, identifies its impacts, and makes recommendations on how the state should revise the current system. The objectives of this study include

1. Identify how other states seek to assure the safety of vehicles utilized in state contracts.
2. Identify and summarize the purposes for which the Federal Motor Carrier Safety Administration's (FMCSA) Compliance, Safety, Accountability model (CSA)/Motor Carrier Safety Measurement System (SMS) is intended and SafeStat was intended, including benefits and weaknesses. Differences in the two systems will be provided.
3. Review Connecticut's current contractor qualification system and the use of CSA/SMS for use in making contracting selection decisions.
4. Identify alternatives to utilizing CSA 2010/SMS, if appropriate, to accomplish state goals of commercial vehicle and highway safety, as well as other issues related to the state's inspection program for commercial vehicles.

This study was conducted by the Connecticut Academy of Science and Engineering (CASE) at the request of the Connecticut Department of Transportation (ConnDOT).

BRIEF STATEMENT OF PRIMARY CONCLUSION

The current contractor qualification system used by the state of Connecticut for the award of state contracts should be revised. Specifically, the use of a contractor's out-of-service rating and CSA/SMS scores is neither statistically valid nor justified for the purpose of qualifying contractors for the use of commercial vehicles on state contracts. Under the recommended system, the state would qualify contractors based on proof of required insurance coverage and certification by the contractor that

- they are enrolled in a drug and alcohol testing program, if applicable;
- they are not currently suspended from operating commercial vehicles by FMCSA;
- their drivers are in good standing;
- they are in compliance with all state/federal regulations/laws; and
- they have no outstanding fines or fees due to the state.

Additionally, state agencies would periodically sample contractor records to verify compliance with contractor qualification requirements throughout a contract period.

Furthermore, the current contractor qualification system only applies to primary contractors. Subcontractors engaged by primary contractors are not reviewed by the state for contract

awards. It is recommended that subcontractors should be held to the same standards as the primary contractor, as stated above.

SUMMARY OF BACKGROUND

On July 29, 2005, a commercial vehicle operated by a company with numerous commercial vehicle violations lost its brakes on the steep downgrade on Route 44 on the west side of Avon Mountain. As a result of this crash, then Governor M. Jodi Rell's office contacted the Connecticut Department of Motor Vehicles (DMV), the Department of Administrative Services (DAS), and the Connecticut Department of Transportation (ConnDOT) and issued a verbal directive to institute a program to ensure the safety of commercial vehicles operated by contractors awarded state contracts. In 2005, the three agencies convened to develop a system to evaluate the safety record and fitness of contractors to determine their eligibility for contract awards for providing services to the state that involve the use of commercial vehicles.

According to DMV, early versions of this evaluation system were subjective and loosely based on quantifiable metrics. The agencies have implemented revisions to the system over the last five years in an attempt to make this process more objective and quantitative. However, there are still concerns over the basis of this system and its impacts on contractors that conduct business with the state of Connecticut.

CURRENT CONTRACTOR QUALIFICATION REVIEW PROCESS SUMMARY

The DMV/CVSD is responsible for conducting a motor carrier (company) Safety Fitness Review (SFR) for each contractor that has been selected for contract award by ConnDOT and DAS. The purpose of this process is to ensure that any company selected to provide services for the state that involve the use of that company's commercial motor vehicles has an acceptable safety record. A summary of the current contractor qualification review process is provided in Figure ES-1 (page xiii).

SUMMARY OF RECOMMENDATIONS

Based on the study findings, the CASE study committee offers the following recommendations with respect to the commercial vehicle qualification process for the award of state contracts. The foundation of the recommended process requires contractor certification of compliance with qualification process elements through submittal of a Certification Statement at bid submittal and state agency auditing of contractors that are awarded state contracts.

A summary of the recommendations is provided in Table ES-1 (pages xiv-xv). Figure ES-2 (page xvi) contains a revised qualification system flowchart based on the proposed changes.

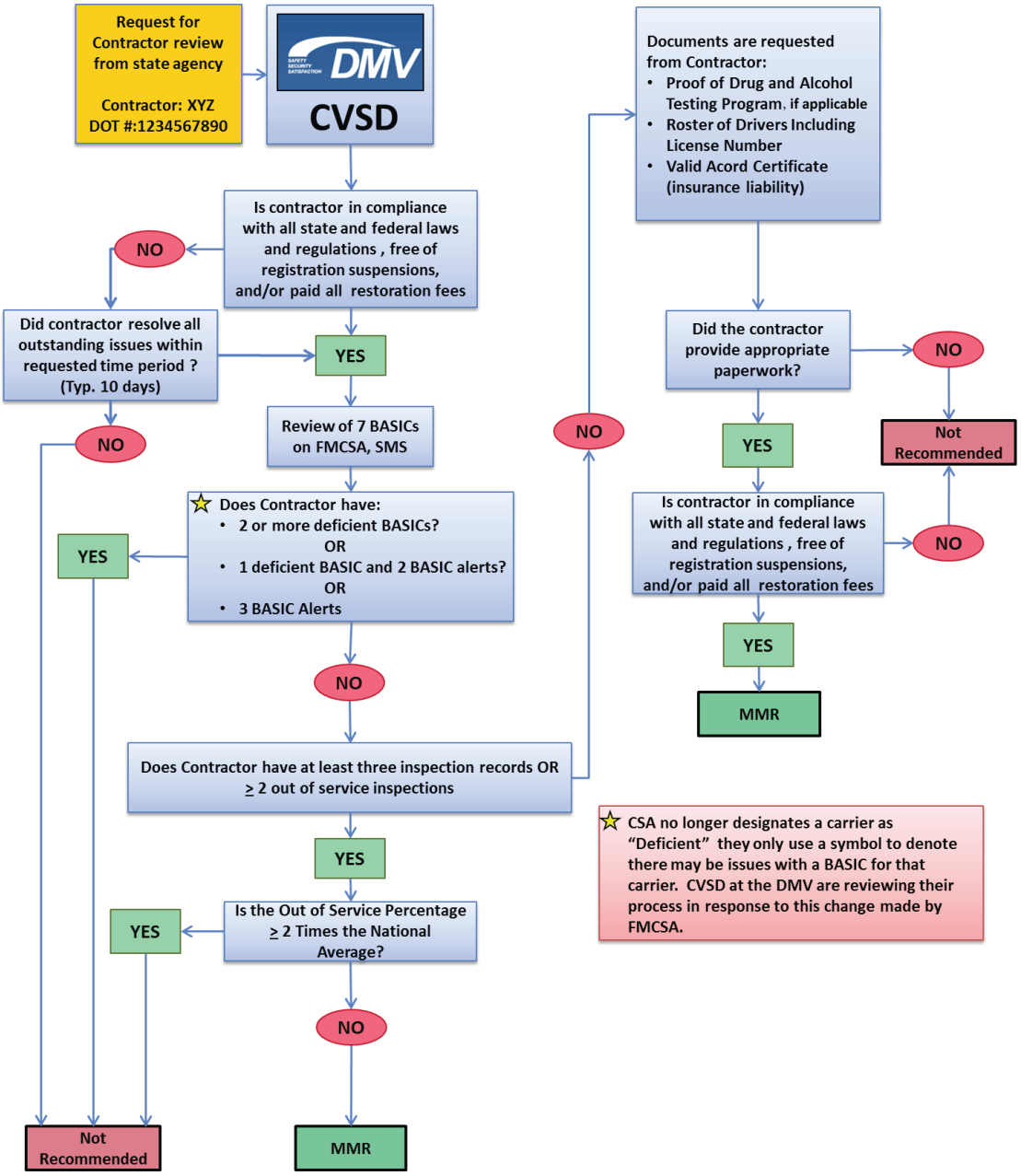

FIGURE ES-1: CURRENT CONTRACTOR QUALIFICATION REVIEW PROCESS

TABLE ES-1: COMPARISON OF CURRENT AND RECOMMENDED QUALIFICATION PROCESSES

	REQUIREMENT		TIME OF REVIEW		AGENCY RESPONSIBLE		
QUALIFICATION PROCESS ELEMENTS	**CURRENT**	**REC.**	**CURRENT**	**REC.**	**CURRENT**	**REC.**	**COMMENT**
Contractor Certification Statement	NO	YES	Not Applicable	Bid Submittal	Not Applicable	Contracting Agency	Contractor provides Certification Statement attesting to compliance with contracting requirements to Contracting Agency.
Insurance Certification: Acord Certificate of Liability Insurance	YES	YES	During Contractor Review	Bid Submittal & During Contractor Review	DMV/CVSD	Contracting Agency	Require signed statement for contract bid submittal and documentation during contractor review; and renewal documentation, as applicable during a contract period. State agencies conduct contractor audits to assure compliance during contract
Drug and Alcohol Testing Program: Documentation Certifying Program Enrollment	YES	YES	During Contractor Review	Bid Submittal & At Will by Agencies	DMV/CVSD	Contracting Agency	Require signed statement for contract bid submittal, if applicable; State agencies conduct contractor audits to assure compliance during contract
Compliance with State and Federal Laws/Regulations & Contractor Payment of all Fees and Fines to DMV	YES	YES	During Contractor Review	Bid Submittal & At Will by Agencies	DMV/CVSD	Contracting Agency through DMV	Require signed statement for contract bid submittal of compliance with requirement. State agencies conduct contractor audits to assure compliance during contract
OOS Ratings: Use of OOS Rating for Contractor Qualification for State Contracts	YES	NO	During Contractor Review	Not Applicable	DMV/CVSD	Not Applicable	Use of OOS ratings for contractor qualification under the current system is not valid, and should not be used to qualify contactors for state contracts.

TABLE ES-1: COMPARISON OF CURRENT AND RECOMMENDED QUALIFICATION PROCESSES (CONTINUED)

Contractor's FMCSA, Safety Fitness Record (In Good Standing; Not Suspended)	YES	YES	During Contractor Review	Bid Submittal and At Will by Agencies	DMV/CVSD	Contracting Agency or DMV	Require signed statement for contract bid submittal of compliance with requirement. State agencies conduct contractor audits to assure compliance during contract period
SMS BASICs Review	YES	NO	During Contractor Review	Not Applicable	DMV/CVSD	Not Applicable	If a contractor is not removed from service by an FMCSA OOS order, they should be eligible for state contract awards.
SMS Driver Records	NO	YES	Not Applicable	Bid Submittal and At Will by Agencies	Not Applicable	Contracting Agency or DMV	Contractors submit written certification with bid submittal that any driver operating a commercial vehicle on a state project is in good standing and not suspended. State agencies conduct contractor audits to assure compliance during contract period
Subcontractor Notice and Certification Statement	NO	Meet Same Requirements as Primary Contractor	Not Applicable	At will by Agencies	Not Applicable	Certification Statement Provided to Primary Contractor	Subcontractors comply with same requirements as Primary Contractors. Primary Contractors required to provide "Notice" of contracting requirements to Subcontractors. Subcontractors provide compliance Certification Statement to Primary Contractor. Primary Contractor provides Subcontractor USDOT # to Contracting Agency at time of engagement. State agencies conduct Subcontractor audits to assure compliance during contract

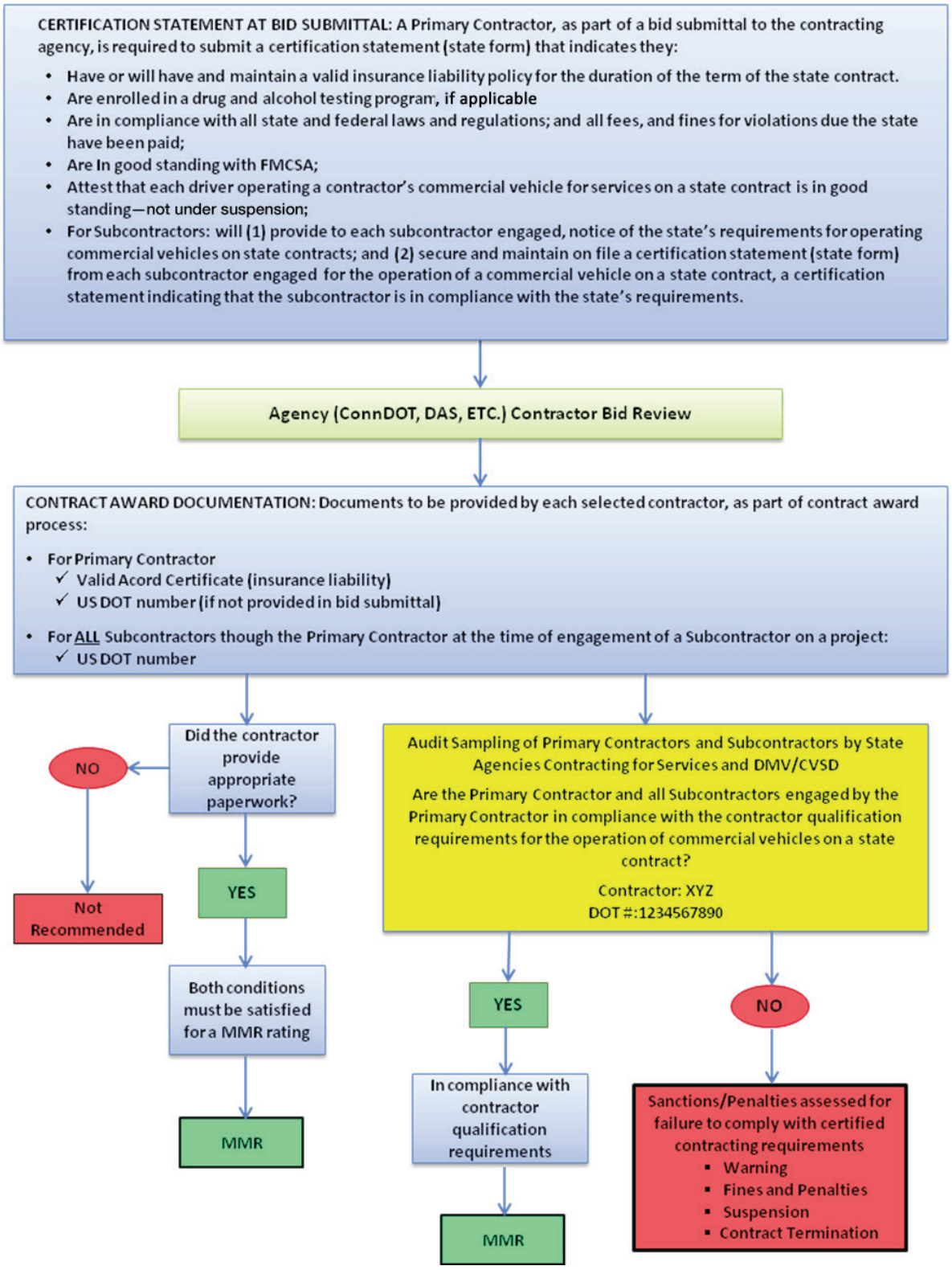

FIGURE ES-2: RECOMMENDED CONTRACTOR QUALIFICATION REVIEW PROCESS

- **Discontinued Use of Qualification Requirements Considered Not Valid for Award of State Contracts:**

    - **OOS Ratings**: The primary concern with the current contractor qualification process is the use of OOS ratings to determine contractor eligibility for state contracts. It was determined that this practice is biased by a non-random inspection process that focuses on inspecting vehicles that are most likely to have safety issues or defects, and it is not valid statistically. As a result, the state should not establish OOS rating criteria separate from those used by FMCSA/CSA for qualifying contractors. Therefore, it is recommended that OOS ratings should not be used for the purpose of qualifying contractors for use of commercial vehicles on state contracts.

      However, it is noted that the practice of focusing resources on those carriers most likely to be in violation of safety standards is an appropriate strategy for the use of resources by DMV/CVSD for the purpose of assuring the safe operation of commercial vehicles on state roads.

    - **CSA/SMS BASICs Review**: It is recommended that the state not use CSA/SMS BASICs scores to determine the safety fitness of a contractor. Contractors should be aware of their BASICs scores and it is the responsibility of FMCSA to suspend unsafe carriers from operating commercial vehicles. However, contractors operating commercial vehicles on state contracts that have BASICs scores below the thresholds for a BASIC should be placed on a priority list to be reviewed by DMV. These reviews should be conducted throughout the contract term to determine if a contractor has been issued an OOS order due to lack of compliance with interventions from FMCSA. Moreover, for contractors with commercial vehicles registered in Connecticut, the PRISM system used by DMV provides daily updates for OOS orders issued.

      If a contractor is found to be ordered OOS by FMCSA, the DMV should take action as soon as legally possible to remove tags and registrations from the contractor's vehicles. Furthermore, DMV should make DAS and ConnDOT, as applicable, aware of any contractor issued an OOS order. The contracting agency should have the authority to void any contract with any contractor ordered OOS by FMCSA, once they have legal authority to do so (following due process procedures for contractor appeals to FMCSA).

- **Contractor Qualification Requirements:** The following contractor qualification process elements were determined to be valid components of a qualification system for state contracting. They are consistent with state and federal laws for operating a commercial vehicle and with the current contractor qualification process.

    - **Insurance Certification:** A two-step process is recommended for contractors to provide proof of insurance.

        - Step 1: Bid Submittal: The contractor Certification Statement would require a contractor to attest, as part of their bid submittal, to the fact

that they have or will have the required insurance for the duration of the contract period. This would ensure that companies bidding on state contracts are aware of and in compliance with the insurance contracting requirements.

◊ Step 2: Contractor Review Process: Contractors whose bids are being considered for a contract award should be required to submit a valid Acord Certificate of Liability Insurance (insurance liability showing at least the minimum required depending on the type of commodity being transported and state requirements) that names the DMV as the certificate holder.

A contractor's failure to maintain the required insurance during a contract period should be considered as cause for contract termination. This recommendation is consistent with current practice, as reported by DAS, under which DMV is periodically requested to perform a safety fitness check on contractors during a contract period.

- **Drug and Alcohol Testing:** The contractor's Certification Statement should include a statement attesting that the contractor is enrolled in a drug and alcohol testing program, if applicable.
- **Compliance with State and Federal Laws**: The contractor's Certification Statement should include a statement attesting that the contractor is (1) in compliance with state and federal laws, and (2) current on any fines, registrations or fees owed to the state for the contractor's vehicles and business.
- **SMS Driver Records:** The new SMS/CSA system provides a more complete commercial vehicle driver safety fitness record. Whereas the SafeStat system only provided a driver's safety record for a specific employer, the new system provides a complete history of a driver's safety record that is no longer employer specific. The contractor's Certification Statement should include a statement attesting that any driver operating a contractor's commercial vehicle on a state contract is in good standing – not under suspension.
- **Subcontractor Contracting Qualification Requirements:** Subcontractors working on behalf of primary contractors should be required to adhere to the same contractor qualification requirements as primary contractors. A primary contractor's Certification Statement provided to the contracting agency at bid submittal should certify that the primary contractor will

  1. Provide "Notice" to each subcontractor to be engaged by the primary contractor of the state's contractor qualification requirements for operating commercial vehicles on state contracts.
  2. Secure a "Certification Statement" from each subcontractor attesting that the subcontractor is in compliance with all contractor qualification requirements for the operation of commercial vehicles on state contracts, including that they

- ◊ have or will have for the duration of the period of service to the primary contractor a valid insurance liability policy in compliance with state requirements;
- ◊ are enrolled in a drug and alcohol testing program, if applicable;
- ◊ are in compliance with all state and federal laws and regulations, and all fees, and fines for violations due the state have been paid;
- ◊ are in good standing with FMCSA;
- ◊ attest that each driver operating a commercial vehicle of the subcontractor for services provided on behalf of a primary contractor under a state contract is in good standing—not under suspension.

Primary contractors should maintain a record of all subcontractor Certification Statements for review and audit by state agencies. The subcontractor Certification Statements provided to primary contractors should be renewed periodically, such as annually. Each subcontractor would be required to notify any primary contractor issued a Certification Statement of any change in their compliance with the state's contractor qualification requirements.

3. Provide the contracting agency with a USDOT number for each subcontractor they engage for the operation of commercial vehicles on state contracts.

This process would provide for documented primary contractor accountability for subcontractors, while subjecting subcontractors to the same standards as primary contractors.

- **State Agency Audits of Contractors and Subcontractors:** In addition to contractors certifying that they are in compliance with the state's contracting qualification requirements, a key component of the recommended contractor qualification system involves having the contracting agency and/or DMV conduct periodic audits of contractors operating commercial vehicles on state contracts to verify contractor compliance with Certification Statements.

Contractor and subcontractor Certification Statements should acknowledge the potential sanctions/penalties that could be assessed by the state for failure to comply with certified contracting requirements. A contractor or subcontractor found to be in violation of certified contracting requirements may be subject to any of the following suggested sanctions/penalties:

- o Provided a grace period to resolve the compliance requirement
- o Assessed fines and penalties
- o Issued a suspension for the operation of commercial vehicles on state contracts and/or suspended from bidding on state contracts for a predetermined period of time
- o Issued a contract termination order

Also, maintaining an electronic database of all contractor and subcontractor US DOT numbers would allow the state to monitor all contractors' FMCSA records and to quickly take action when an OOS order is issued by FMCSA and announced through PRISM.

CONCLUDING REMARKS

Connecticut is one of the first states in the country to enact policies and practices for qualifying contractors for using commercial vehicles on state contracts. The current contractor qualification process has evolved since its implementation in 2005, as directed by then Governor M. Jodi Rell. This study's assessment of the current qualification system revealed several process strengths and weaknesses.

The study recommendations identify a revised contractor qualification process that focuses on contractor accountability and state agency review of contractor compliance with the qualification requirements.

Additionally, the proposed qualification system requires that subcontractors engaged by a primary contractor be held to the same qualification requirement standards as primary contractors, as compared to the current process, which does not include subcontractors. Further, the proposed system places responsibility on primary contractors for securing all qualification certifications from their subcontractors.

It is worthy to note that DMV's strategy of focusing its safety enforcement efforts on commercial vehicles and drivers most likely to be in violation of safety standards is a responsible practice and appropriate use of state resources for assuring to the greatest extent possible the safe operation of commercial vehicles on state roads.

Finally, it is suggested that proposed revisions to the current contractor qualification process be presented to and reviewed with industry representatives prior to implementation. Also, once finalized, the revised contractor qualification system should be communicated to the industry and potential contractors to assure a smooth transition and compliance.

1. INTRODUCTION

Route 44 over Avon Mountain has been identified as one of the most dangerous stretches of road in Connecticut. From 1995 to 2009 there have been 470 crashes on the western side of Avon Mountain and 712 on Avon Mountain in total. On July 29, 2005, a truck, operated by American Crushing and Recycling and weighing 70,000 pounds, lost its brakes on the west side of the steep downgrade on Route 44 on Avon Mountain. Traveling at 80 mph, the fully loaded truck collided with stopped traffic in the eastbound lanes at the intersection of Route 10. In total 20 vehicles were involved and four people were killed, with many more injured.

The truck and company responsible for the crash previously operated as Wilcox Trucking. Wilcox had 448 mechanical violations between 1994 and 2001. In 2001 the Connecticut Department of Motor Vehicles (DMV) suspended the registration of 16 trucks owned by the company because of a failure to comply with a number of repair orders. As a result, Wilcox ownership formed a new company, American Crushing and Recycling, and proceeded to operate using the former company's equipment and personnel. Early in 2005, American Crushing and Recycling cancelled the liability insurance on their trucks to save money. Immediately after the deadly crash, American Crushing and Recycling unsuccessfully attempted to reinstate its liability insurance retroactive to July 1, 2005.

As a result of this crash, then Governor M. Jodi Rell's office contacted the DMV, the Department of Administrative Services (DAS), and the Connecticut Department of Transportation (ConnDOT) and issued a verbal directive to institute a program to ensure the safety of commercial vehicles operated by contractors awarded state contracts. In 2005, the three agencies convened to develop a system to evaluate the safety record and fitness of contractors to determine their eligibility for contract awards to provide services to the state that involve the use of commercial vehicles. According to DMV, early versions of the evaluation system were subjective and loosely based on quantifiable metrics. The agencies have implemented revisions to the system over the last five years in an attempt to make this process more objective and quantitative, as opposed to subjective and qualitative. Throughout the revision process the agencies reported that they met with leaders of the construction and carrier industry in Connecticut to refine the program. As a result of these meetings, the current program, as described in Section 5, was developed. The results of the verbal directive from the governor's office have not been well documented and reviewed to ensure that the process is valid. Furthermore, the impacts on carrier safety, and thus public safety, have not been evaluated and quantified. This study will evaluate the current system, identify its impacts, and make recommendations for revisions to the contractor qualification system, as appropriate.

This study included several information gathering methods including a detailed literature search, interviews, focus groups and surveys, as well as identification and evaluation of case studies. Additionally, the CASE Study Committee met periodically throughout the study process to provide input on draft sections of the study report, and to provide guidance on issues identified throughout the information-gathering phase of the project. The work plan includes four main tasks: 1) Literature Review; 2) State Survey and Feedback; 3) Focus Groups and Feedback; and 4) Final Report and Study Briefing.

The objectives of this study include the following:

1. Identify how other states seek to assure the safety of vehicles utilized in state contracts.
2. Identify and summarize the purposes for which the Federal Motor Carrier Safety Administration's (FMCSA) Compliance, Safety, Accountability model (CSA)/Motor Carrier Safety Measurement System (SMS) is intended (and for which the earlier SafeStat program was intended), including benefits and weaknesses. Differences in the two systems will be provided.
3. Review Connecticut's current contractor qualification system and the use of CSA/SMS for selecting contractors.
4. Identify alternatives to utilizing CSA 2010/SMS, if appropriate, to accomplish state goals of commercial vehicle and highway safety, as well as other issues related to the state's inspection program for commercial vehicles.

2. BACKGROUND

The FMCSA was established within the US Department of Transportation (USDOT) on January 1, 2000, pursuant to the Motor Carrier Safety Improvement Act of 1999 (49 U.S.C. 113). Commercial vehicle safety was previously the responsibility of the Federal Highway Administration (FHWA). FMCSA's primary mission is to prevent commercial motor vehicle-related fatalities and injuries. To fulfill that mission, the FMCSA constantly revises and updates their safety data collection and analysis methods. Until recently, the FMCSA used an evaluation process called SafeStat. However, effective December 4, 2010, the FMCSA made significant changes to their motor carrier evaluation program. The new program developed and implemented by FMCSA is known as the CSA and includes the SMS, which was designed to replace SafeStat.

The impacts of FMCSA's replacement of SafeStat with SMS are not well known. According to ConnDOT, this change by FMCSA would have reduced the number of companies that would qualify for ConnDOT contract awards and may result in a shortage of contractors that are available to perform services such as pavement milling, and snow plowing and removal. Additionally, the possible shortage of eligible trucks to provide services may result in increased cost of services, extended timelines and an overall increase in project cost to the state.

3. REVIEW OF FMCSA, CSA AND SMS

The FMCSA's ultimate goal is to reduce the number and frequency of crashes, injuries, and fatalities attributed to commercial vehicles. The goal of CSA is to improve commercial vehicle safety through data analysis, inspections, alerts and interventions. According to the FMCSA, a commercial vehicle is defined as:

> Any self-propelled or towed motor vehicle used on a highway in interstate commerce to transport passengers or property when the vehicle:
>
> (1) Has a gross vehicle weight rating or gross combination weight rating, or gross vehicle weight or gross combination weight, of 4,536 kg (10,001 pounds) or more, whichever is greater; or
>
> (2) Is designed or used to transport more than 8 passengers (including the driver) for compensation; or
>
> (3) Is designed or used to transport more than 15 passengers, including the driver, and is not used to transport passengers for compensation; or
>
> (4) Is used in transporting material found by the Secretary of Transportation to be hazardous under 49 U.S.C. 5103 and transported in a quantity requiring placarding under regulations prescribed by the Secretary under 49 CFR, subtitle B, chapter I, subchapter C.

The CSA program introduces a new, more efficient, enforcement and compliance model to address safety problems for a larger number of carriers before crashes occur. The intent of this model is to serve as an "early warning system" to alert federal, state and local agencies to problem carriers that need intervention or subsequently, require the issuance of an Operations Out-of-Service (OOS) order. The CSA model incorporates three major phases: measurement, evaluation and intervention. CSA measures safety performance, using inspection and crash results to identify carriers whose behaviors could reasonably lead to crashes. CSA helps FMCSA and its state partners evaluate carriers and identify high-risk behavior and poor safety fitness. Then CSA guides enforcement officials on how to intervene most effectively and efficiently to improve safety. Figure 1 outlines how the CSA model is structured.

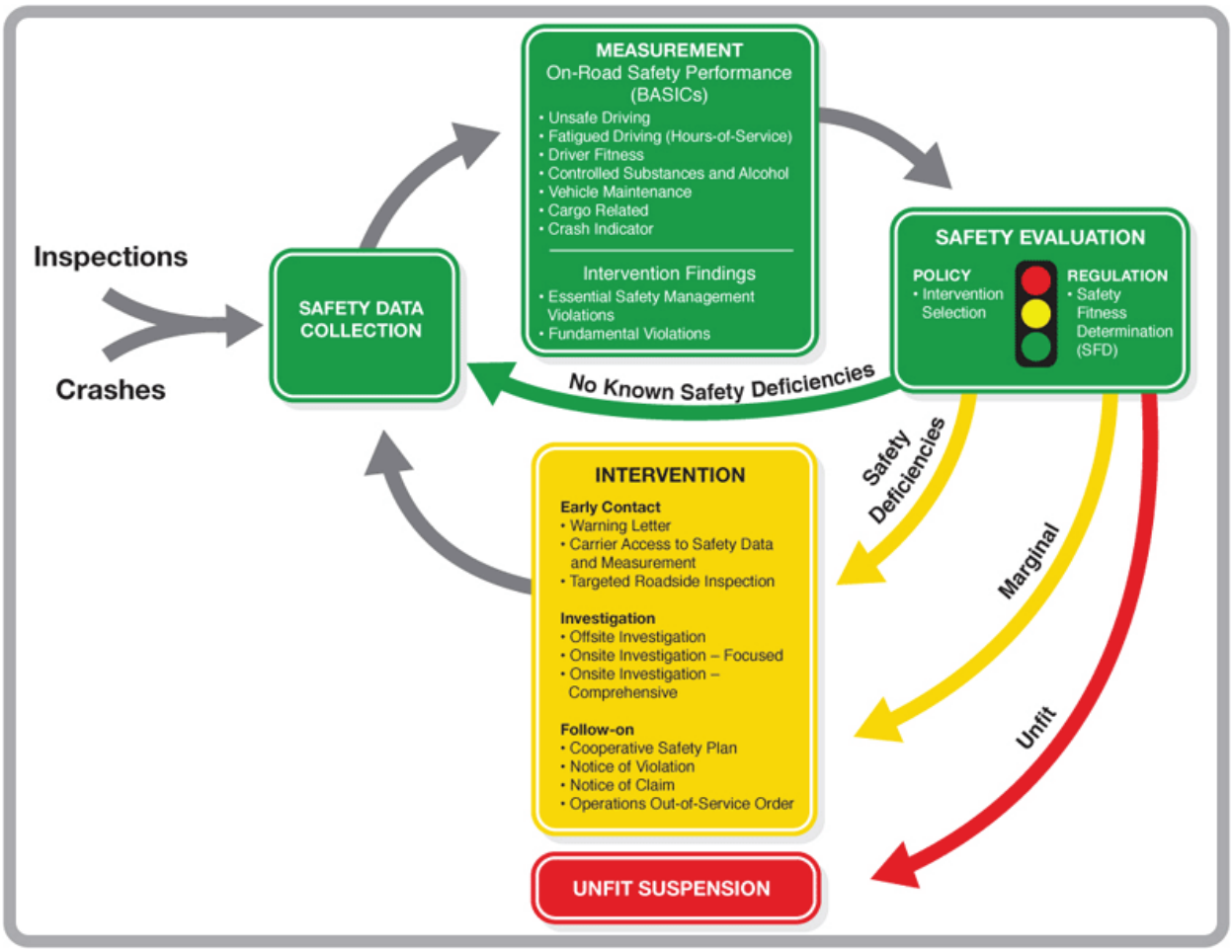

FIGURE 1: CSA FLOW CHART (SOURCE: CSA/SMS 2012)

The CSA's measurement phase includes the SMS, which is the system currently used by Connecticut to determine if a contractor is eligible for a state contract award when that contract involves the use of commercial vehicles. According to Green and Blower (2011) the intended goals of the SMS are to

1. Identify unsafe motor carriers for interventions.
2. Identify safety problems within broad areas at carriers.
3. Monitor the safety performance of carriers on a near-continuous basis.
4. Provide input safety measurements to the Safety Fitness Determination process, by which FMCSA identifies carriers that are conditional or unfit to operate.

3.1 CSA Measurement

3.1.1 SMS DATA SOURCES

The SMS of the CSA uses all roadside inspection, violation and crash data as submitted by each state's DMV and carriers. The SMS approach is a data-driven method where data specific to an individual carrier are entered from multiple sources, then compiled and aggregated into BASICs (Behavior Analysis and Safety Improvement Categories) and Crash Indicators.

The following is a description for each of the data sources used in the SMS:

Roadside Inspection Reports are examinations conducted by a Motor Carrier Safety Assistance Program (MCSAP). In Connecticut, this is the responsibility of the DMV's Commercial Vehicle Safety Division (DMV/CVSD). Trained inspectors conduct weigh station and random roadside inspections of individual commercial vehicles and their drivers to determine if they are in compliance with the Federal Motor Carrier Safety Regulations (FMCSRs) and/or Hazardous Materials Regulations (HMRs). The results of these reports are submitted to FMCSA and subsequently uploaded into the SMS.

Violations issued as a result of a moving violation or failed inspection are recorded and reported to FMCSA. If an inspection or violations result in a driver or vehicle OOS order, the violations must be corrected before the driver or vehicle is allowed to return to service. Violations reported during a traffic enforcement stop for a moving violation do not always result in the issuance of a citation to the driver. However, these stops are included in the SMS whether or not a citation is issued. The SMS assessments do not include violations that are: (1) a result of a crash or (2) assigned to another entity such as a shipper or Intermodal Equipment Provider.

State-Reported Commercial Vehicle Crash Data are submitted by the state DMV to the FMCSA. The reporting of these crashes follows the National Governors Association (NGA) standards and becomes part of the SMS evaluation.

Motor Carrier Census Data are provided to the FMCSA when a carrier obtains a USDOT number. Examples of census data include USDOT number, carrier name, number and type of Power Units (PUs), annualized vehicle miles travelled (VMT), physical location, current status, and types of cargo hauled. The SMS uses census data obtained from 1) Form MCS-150, filled out by the carrier, and 2) Form MCS-151, filled out by law enforcement officials as part of an investigation. Carriers are required to update their MCS-150 information biennially. The reported census data are used for carrier identification and normalization of safety-related data. Furthermore, these data are used to generate the peer groups and percentile ranking for carriers.

3.1.2 SMS BASICS

The SMS data received are then used to generate a score for a carrier in seven different BASICs that are defined as follows:

- **Unsafe Driving BASIC —** Operation of commercial motor vehicles (CMVs) in a dangerous or careless manner. Example violations: speeding, reckless driving, improper lane change, and inattention. (FMCSR Parts 392 and 397)
- **Fatigued Driving (Hours-of-Service) BASIC —** Operation of CMVs by drivers who are ill, fatigued, or in non-compliance with the Hours-of-Service (HOS) regulations. Example violations: exceeding HOS, maintaining an incomplete or inaccurate logbook, and operating a CMV while ill or fatigued. (FMCSR Parts 392 and 395)
- **Driver Fitness BASIC —** Operation of CMVs by drivers who are unfit to operate a CMV due to lack of training, experience, or medical qualifications. Example violations: failing to have a valid and appropriate commercial driver's license and being medically unqualified to operate a CMV. (FMCSR Parts 383 and 391)
- **Controlled Substances and Alcohol BASIC —** Operation of CMVs by drivers who are impaired due to alcohol, illegal drugs, and misuse of prescription or over-the-counter medications. Example violations: use or possession of controlled substances or alcohol. (FMCSR Parts 382 and 392)
- **Vehicle Maintenance BASIC —** Failure to properly maintain a CMV. Example violations: brakes, lights, and other mechanical defects, and failure to make required repairs. (FMCSR Parts 393 and 396)
- **Cargo-Related BASIC —** Failure to properly prevent shifting loads; spilled or dropped cargo; and unsafe handling of hazardous materials on a CMV. Example violations: improper load securement, cargo retention, and hazardous material handling. (FMCSR Parts 392, 393, 397 and applicable USDOT Hazardous Waste regulations)
- **Crash Indicator —** SMS evaluates a motor carrier's crash history. Crash history is not specifically a behavior. Rather, it is a consequence of a behavior and may indicate a problem with the carrier that warrants intervention. It is based on information from state-reported crash reports and identifies histories or patterns of high crash involvement, including frequency and severity.

A carrier's measurement for each BASIC depends on the number of adverse safety events for each BASIC category, the severity of violations or crashes, and the time period at which the adverse safety events occurred (more recent events are weighted more heavily). After this measurement, the carrier is then placed in a peer group. Peer groups are determined on a national scale based on the number of inspections that a carrier has undergone in the most recent 24-month time period. Percentiles range from 0 to 100 based on the BASIC measurements of other carriers in their peer group. A percentile of 100 indicates the worst performance. The formulas used to calculate the BASIC measurement and subsequent percentile ranking of each BASIC can be found in Appendix A. Carriers that exceed the FMCSA's threshold for a BASIC in their peer group are flagged with a symbol "⚠" and identified for possible intervention.

3.2 CSA Evaluation

The FMCSA makes a determination regarding the safety fitness of a carrier based on the result of the BASICs. The BASICs enables FMCSA to make the determination as to which carriers should be deemed "Unfit" to operate or in need of intervention, using a regulatory process called Safety Fitness Determination (SFD). FMCSA has developed an SFD methodology that

replaced the carrier evaluation process in SafeStat, which was solely dependent on the results of onsite compliance reviews. The SFD expands the use of on-road performance as calculated in the SMS and includes results of all investigations. This enables FMCSA to determine the safety fitness of a carrier based on a larger segment of the industry. SMS enables FMCSA to identify the level of intervention necessary through a process called "intervention selection."

3.3 CSA Intervention

FMCSA interventions range from warning letters to onsite comprehensive investigations. The intent of the intervention tools is to address specific safety problems identified in the SMS BASICs. The CSA system was revised from the compliance review system formerly used in the SafeStat system, which was more labor intensive and less focused. Under CSA, interventions are well defined and many of the warnings leading up to an intervention are automated. Furthermore, interventions under CSA are targeted and specific to the BASIC in which the carrier is not performing well. Interventions are categorized into early contact, investigation, and follow-on.

3.3.1 EARLY CONTACT

Early contact involves the issuance of a warning letter sent to a carrier's registered place of business that outlines the BASIC alert along with possible consequences if the BASIC percentile score does not improve. Carriers are provided details on how to access their BASIC scores and data. The hope is that carriers will monitor their data and make self-improvements within their organization to improve their safety rating. If a carrier has an alert in at least one of the BASICs, they may be targeted for roadside inspections that can take place at weigh stations or temporary sites.

3.3.2 INVESTIGATION

The FMCSA has three tiers of investigations. These investigations can be triggered by a score on any of the BASICs which exceeds the threshold set by FMCSA.

- **Offsite Investigation:** FMCSA will request basic documents that all carriers are required to keep under federal regulations. These documents are used by FMCSA, or their state partner, to evaluate safety issues identified through SMS BASICs. The goal is to identify issues responsible for a poor safety fitness rating. If other deficiencies are found, or the carrier fails to comply with this level of investigation, the carrier may be subject to an onsite investigation or have their records subpoenaed.
- **Onsite Focused Investigation:** Based on the information provided, FMCSA may require an onsite focused investigation to determine why a carrier is having issues in a defined BASIC.
- **Onsite Comprehensive Investigation:** If the carrier has a multitude of problems across multiple BASICs or recurring BASIC Alerts, an onsite comprehensive investigation will take place. The carrier will undergo a process similar to a comprehensive review to identify a wide range of issues that the carrier should correct to improve their BASICs score.

3.4 Follow-on

As a result of interventions or warning letters, a carrier may elect to develop a Cooperative Safety Plan. This plan is optional and voluntary and is the result of a collaborative effort between the carrier and FMCSA. This plan outlines how the carrier will address the underlying safety issues identified in the BASICs.

When regulatory violations are discovered that warrant action, but not civil penalty, a notice of violation is issued; this notice requires a response from the carrier. To avoid fines or further interventions the carrier must provide proof of action or successfully challenge the violation. If the violations warrant a civil penalty, the carrier is issued a notice of claim.

3.5 Unfit Suspension

If FMCSA determines that a carrier's violations are severe enough or that the carrier is not responsive to interventions, they can issue an Out-of-Service Order requiring the carrier to cease all motor vehicle operations. Carriers that are ordered OOS are entered into a national database (including CSA); and if the state is a Performance and Registration Systems Management (PRISM) state, the state DMV is notified that a carrier in their state has been declared OOS. Upon receiving an OOS order, it is the carrier's obligation to cease all operations until the FMCSA removes the OOS order. At any time if the state DMV finds a suspended carrier operating on the road, they will have the vehicle towed and the registration tags removed. The state DMV may also remove the plates and registrations from all the company's vehicles once appeals and due process are completed. This process can take up to 60 days after the OOS order is issued by FMCSA.

3.6 Use of SMS Data – FMCSA Disclaimer

On March 25th the following disclaimer was added to the CSA website and SMS reports due to litigation from three plaintiffs: the National Association of Small Trucking Companies, the Expedite Alliance of North America and the Air & Expedite Motor Carriers Association. Their suit claimed shippers and brokers were using the Safety Measurement System (SMS) data to unfairly choose carriers to truck freight. The FMCSA posts the following disclaimer on each of the SMS reports generated through the CSA website (FMCSA, 2012, TEANA, 2011):

> The data in the Safety Measurement System (SMS) is performance data used by the Agency and Enforcement Community. A ⚠ symbol, based on that data, indicates that FMCSA may prioritize a motor carrier for further monitoring.
>
> The ⚠ symbol is not intended to imply any federal safety rating of the carrier pursuant to 49 USC 31144. Readers should not draw conclusions about a carrier's overall safety condition simply based on the data displayed in this system. Unless a motor carrier in the

SMS has received an UNSATISFACTORY safety rating pursuant to 49 CFR Part 385, or has otherwise been ordered to discontinue operations by the FMCSA, it is authorized to operate on the nation's roadways.

3.7 Correcting Errors in CSA Data

If a carrier discovers what it believes to be an error in inspection reports and violations data displayed in their CSA profile, the carrier can challenge the documents and rulings through FMCSA's DataQs system: https://dataqs.fmcsa.dot.gov. Through the DataQs system, carriers can request a review and identify data concerns. The requests are automatically forwarded to the appropriate office for resolution. In Connecticut these requests are forwarded to the DMV/CVSD for review. The system also allows filers to monitor the status of each filing. FMCSA will not change state records without the state's consent, as the ruling by DMV/CVSD is considered final and cannot be challenged.

3.8 SMS vs. SafeStat

CSA was developed using a similar framework to FMCSA's SafeStat in that it uses a Safety Measurement System along with a suite of tools to evaluate carriers. The CSA changes include an enhanced compliance review and a more focused intervention approach. A review of CSA by Green and Blower (2011) indicates the following:

1. SMS better identifies motor carriers for safety interventions than the previous SafeStat system.
2. SMS is a significant improvement over the SafeStat system in identifying unsafe carriers.
3. Carriers with safety problems as identified in the SMS BASICs had higher crash rates than motor carriers not identified with safety problems in the seven BASICs.
4. Crash rates for carriers with a high Unsafe Driving BASIC in SMS were more than three times greater than the crash rate of other carriers.
5. CSA reaches more carriers to improve safety compliance.
6. CSA interventions contact approximately three times the number of motor carriers contacted using the previous model, which relied primarily on compliance reviews (CRs).
7. The most significant finding in the report is the effect of the CSA Early Contact warning letter intervention. SMS results showed that 83% of test carriers resolved identified safety problems within twelve months of receiving a warning letter.

The SMS Methodology Guide, summarized in Table 1, identifies the differences between SMS and SafeStat (Volpe, 2010).

TABLE 1: DIFFERENCES BETWEEN SMS AND SAFESTAT

SMS	SafeStat
Organized by seven Behavior Analysis and Safety Improvement Categories (BASICs)	Organized in four broad categories known as Safety Evaluation Areas (SEAs)
Identifies specific safety problems to determine who to investigate and where to focus the investigation and intervention	Identified motor carriers for a compliance review
Emphasizes on-road safety performance using all safety-based inspection violations	Originated from roadside inspections and used only out-of-service and moving violations
Violations are weighted based on relationship to crash risk	Violations not weighted based on relationship to crash risk
Evaluates drivers and carriers	Only evaluates carriers
Impacts the Safety Fitness Determination (SFD) of a carrier	Has no impact on a carrier's safety rating until a compliance review has been completed

4.0 REVIEW OF COMMERCIAL VEHICLE SAFETY IN CONNECTICUT

4.1 OVERVIEW OF THE DMV COMMERCIAL VEHICLE SAFETY DIVISION

The mission of the Connecticut DMV is to "promote and advance public Safety, Security and Service through the regulation of drivers, their motor vehicles and certain motor vehicle-related businesses." The mission of the Commercial Vehicle Safety Division is to "reduce the number and severity of accidents, fatalities, and injuries involving commercial motor vehicles and hazardous materials incidents through consistent, uniform, and effective commercial motor vehicle safety programs." CVSD uses a combination of fixed weigh station locations and mobile unit operations to inspect commercial vehicles and enforce state and federal motor carrier regulations. CVSD officers also patrol Connecticut's highways to identify unsafe commercial vehicles and commercial vehicle drivers. Mobile unit officers also have the authority to issue traffic violations to commercial vehicles. Furthermore, mobile unit and weigh station officers may subject a commercial vehicle to a level 1, 2 or 3 safety inspection if the officer has concerns about the condition of the driver, vehicle, and/or load. Appendix B contains guidelines of what is covered in each level of inspection. At the completion of an inspection, any violation(s) found will be included on the inspection report that is given to the driver. Based on the inspection and the violations found, the vehicle and/or driver may be declared OOS. An OOS order prohibits the vehicle from being driven until all of the mechanical OOS violations are fixed.

In an effort to hold carriers responsible for their safety, Connecticut is one of 25 states that is a full Level 3 member of the PRISM program. The program includes two major processes commercial vehicle registration, and enforcement.

The PRISM Commercial Vehicle Registration Process is designed to ensure that all carriers are issued a USDOT number when they register their vehicles for interstate commerce.

Furthermore, the PRISM system allows participating state DMVs to determine if a motor carrier has been issued an OOS by FMCSA and to review a motor carrier's MCSIP step(s). Carriers under suspension by the FMCSA may have their request for registration denied by the state. The ability of the state to control vehicle registrations provides an incentive to carriers to focus on their safety rating to maintain their vehicle registrations.

The PRISM Enforcement Process runs in parallel with the Commercial Vehicle Registration Process. Enforcement is designed to target carriers with a poor safety performance record and guide them on how to improve through the Motor Carrier Safety Improvement Process (MCSIP). Carriers are identified for a MCSIP through the CSA BASICs evaluation. The interventions in MCSIP mirror the CSA intervention process, as they are essentially the same process. Carriers in the MCSIP that fail to improve their safety performance face escalating penalties that may culminate in a federal OOS order. The OOS order allows the state to deny, suspend and/or

revoke vehicle registrations by the offending carrier. Once a carrier is declared OOS, the state DMV in which the carrier is registered is notified through PRISM within 24 hours.

The benefits of PRISM are documented on the FMCSA website (PRISM, 2012) and include the following:

- PRISM states show *improved safety and lower crash rates over time when* compared with non-PRISM states
- PRISM states achieve greater success in matching crash and inspection records to DOT numbers
- PRISM technologies reduce the time required to conduct a roadside inspection by about one third
- PRISM helps states and the USDOT to accurately identify and remove high-risk carriers from our nation's highways
- PRISM works to ensure motor carriers with an FMCSA OOS order do not continue to maintain interstate license plates
- With PRISM, recognized safety events are recorded nationally and can be more accurately tied back to the responsible motor carrier
- PRISM is a performance-based approach to safety management
- PRISM allows for efficient resource allocations through increased targeting of the highest-risk carriers
- PRISM results in improved data quality by using automated field data collection procedures to eliminate typing errors on critical elements on accident and inspection reports

The FMCSA has invested significant resources for the development of PRISM and CSA to intervene, rehabilitate and remove high-risk carriers from the nation's highways. Connecticut has been an early adopter of these systems and works diligently to ensure the traveling public and state's infrastructure are protected from the unsafe practices of a minority of carriers.

4.2 CURRENT CONTRACTOR QUALIFICATION REVIEW PROCESS

In an effort to increase safety on state-funded construction contracts and in response to a verbal directive from then Governor Rell's office DMV, DAS and ConnDOT established a system for qualifying contractors for state contracts based on a review performed by DMV. This section outlines the current system used by DMV/CVSD.

The DMV/CVSD is responsible for conducting a motor carrier (company) Safety Fitness Review (SFR) for each contractor that has been selected for contract award by ConnDOT and DAS. The purpose of this process is to ensure that any company selected to provide services for the state that involve the use of their commercial motor vehicles has an acceptable safety record.

Requests for a SFR can be made by any state agency by providing a contractor's name and USDOT number to the DMV/CVSD. In response, the DMV/CVSD will reply as to whether or

not the contractor meets minimum requirements (MMR) for a state contract. These reviews are restricted to primary contractors. The DMV/CVSD's review does not investigate subcontractors hired by a primary contractor. According to the DAS, DMV and ConnDOT qualifications process (2011), "each primary contractor is responsible for all of its agents and subcontractors with regard to the compliance of all applicable legal requirements."

Figure 2 provides a simplified view of the current review process conducted by the DMV/CVSD on behalf of state agencies.

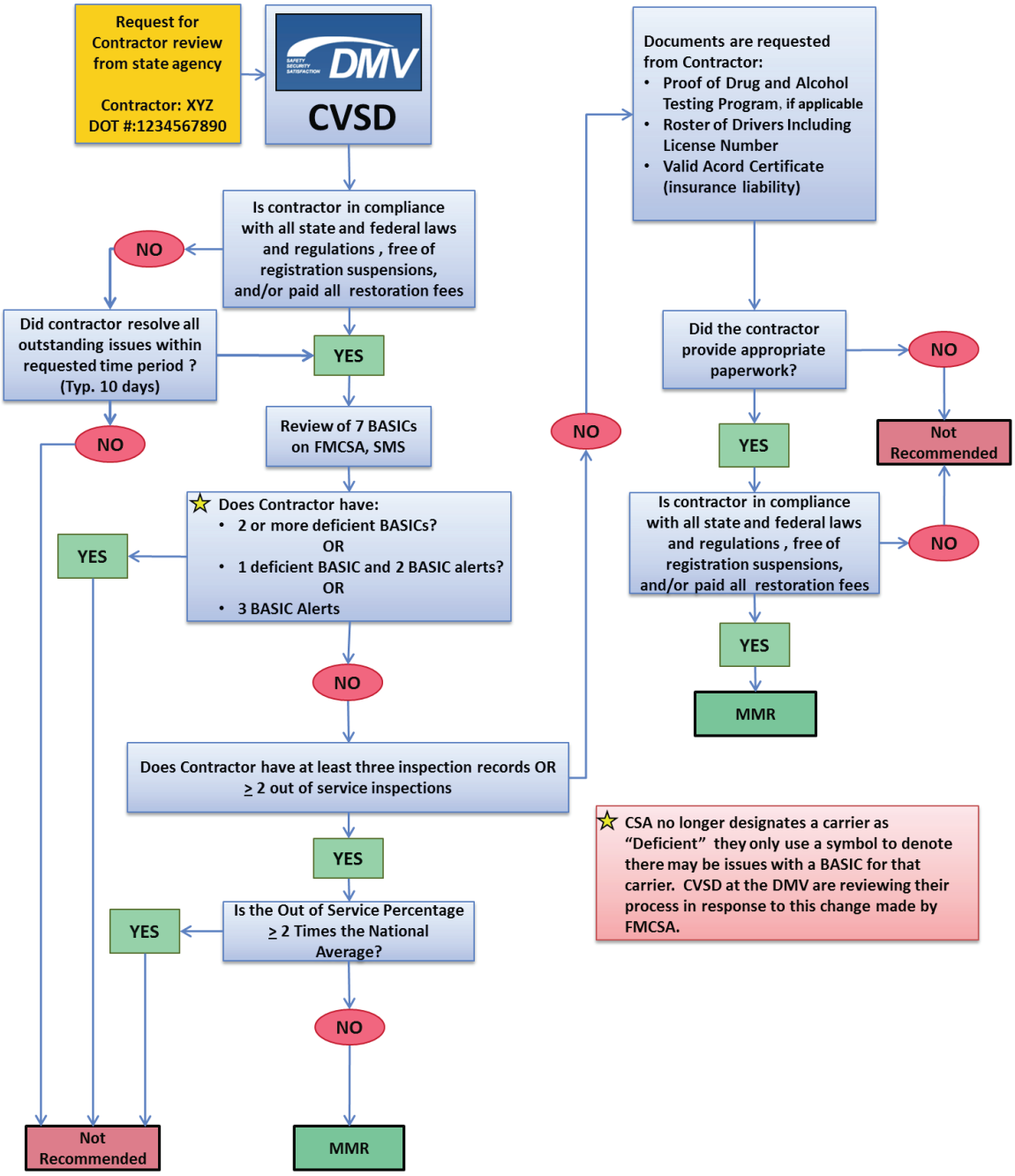

FIGURE 2: CURRENT CONTRACTOR QUALIFICATION REVIEW PROCESS

DMV/CVSD – Contractor Safety Review Process

In the first stage of the review process, DMV/CVSD reviews the contractor to ensure they are in compliance with all state and federal laws. The process includes checking the contractor for outstanding unpaid violations and current suspensions. DMV/CVSD gives the carrier a grace period of typically 10 days to correct any outstanding issues. If a contractor fails to respond or does not comply with DMV/CVSD's requests, they will be rated as "NR."

While waiting for a contractor to resolve any issues identified in the first stage, DMV/CVSD simultaneously begins the second stage of the review process: checking the contractor's FMCSA SMS record.

For **Contractors with insufficient SMS data,** the DMV/CVSD first checks the contractor's out-of service rate. If the out-of-service rating for that contractor is more than twice the national average, the contractor is not recommended. However, to be evaluated based on OOS ratings, a contractor must have more than three inspections and more than two OOS. If a contractor does not meet these requirements, a decision on their eligibility for the award of state contracts is based on their ability to provide the following documents within a specified time period, typically 10 days from the DMV/CVSD's request:

1. a valid Acord Certificate of Liability Insurance (insurance liability showing at least the minimum required depending on the type of commodity being transported and state requirements) and naming the DMV as the certificate holder;
2. a drug and alcohol certificate showing the motor carrier is enrolled in a random drug and alcohol testing program, if applicable; and
3. CDL driver roster which includes the driver's name, license number and the state that issued the license.

.

Under the current practice DMV/CSVD only requests the above documentation for contractors that do not have the minimum number of inspections and OOS ratings. This information is not requested or reviewed for contractors that have the minimum number of inspections and OOS ratings. However, insurance documentation, as noted in item 1, is required by DAS for all contractors as a condition for contract award.

Once DMV/CVSD receives the requested documents and/or restoration fees, and the contractor is confirmed to be in compliance with state and federal law by DMV/CVSD, the contractor is given a MMR rating. If the contractor fails to submit the requested documents and/or restoration fees within the 10-day response period, a NR rating is given.

For contractors with sufficient SMS data, the seven SMS BASICs are reviewed for alerts and deficiencies. As described in the DMV/CVSD current process, "Any contractor with two or more deficient BASICs, or one deficient BASIC and two BASIC alerts, or three or more BASIC alerts will receive a NR rating." However, the FMCSA no longer uses the term deficient. On March 9, 2011, the FMCSA reached a settlement agreement with three trucking associations that resulted in the following changes that were required to be made by March 25, 2011 (FMCSA, 2012):

- Replace the ALERT symbol currently displayed in orange on the SMS website with the following symbol of the exclamation mark inside a gold triangle, i.e. ⚠.
- Revise the disclaimer language on the SMS website to read:

> "The data in the Safety Measurement System (SMS) is performance data used by the Agency and enforcement community. A ⚠ symbol, based on that data, indicates that FMCSA may prioritize a motor carrier for further monitoring. The ⚠ symbol is not intended to imply any federal safety rating of the carrier pursuant to 49 USC 31144. Readers should not draw conclusions about a carrier's overall safety condition simply based on the data displayed in this system. Unless a motor carrier in the SMS has received an UNSATISFACTORY safety rating pursuant to 49 CFR Part 385, or has otherwise been ordered to discontinue operations by the FMCSA, it is authorized to operate on the nation's roadways. Motor carrier safety ratings are available at http://safer.fmcsa.dot.gov and motor carrier licensing and insurance status are available at http://li-public.fmcsa.dot.gov."

Therefore, CSA no longer uses the term "Alert" or deficiency. A ⚠ symbol is now only used to denote that there may be an issue with BASICs for a carrier.

Although DMV/CVSD has not changed their official policy, under the current system a contractor will receive a NR if they have three or more BASICs with a ⚠. DMV/CVSD is considering revising the qualification process to reflect the FMCSA changes.

In the third stage of the review process for contractors with sufficient data, the DMV/CVSD reviews a contractor's vehicle inspection records to determine the driver and vehicle out-of-service percentage. Contractors with a driver/vehicle out-of-service percentage equal to, or greater than, two times the FMCSA national OOS average receive an NR rating. Contractors that pass the three stages of review by the DMV/CVSD receive a MMR rating.

The results of the contractor review are submitted to the contracting agency. For contractor reviews that receive an NR, DMV/CVSD provides an explanation to the contracting agency of why the contractor was not recommended. The contracting agency is responsible for notifying the contractor that they were not selected as a result of the safety fitness review process.

5.0 NATIONAL COMMERCIAL VEHICLE CONTRACTING SURVEY

In an effort to understand the state of practice with regard to commercial vehicle safety and state contracts, the study management team conducted a national survey of state administrative departments, including DOTs and DMVs. The survey was a basic four-question, on-line survey (see Appendix C). Survey responses were requested from each state through listserves, direct emailing and personal phone calls to the appropriate offices in each state.

Twenty-two states responded to the survey, with only five states indicating "Yes" to the following question:

> Does your state review a contractor's commercial vehicle safety records as part of the contractor selection/award process? (i.e., FMCSA, inspection reports, crash reports, drug and alcohol testing, insurance, CSA, SafeStat)?

However, follow-up with the State of Georgia, one of the five states responding "Yes" to the survey, could not verify that they have an actual contractor safety review program for contracting in place. The contact information entered into the survey led the research team to a purchasing agent for the State of Georgia who had no knowledge of a program for commercial vehicle safety review. Follow-up calls to the Georgia DMV and DOT have been unsuccessful in determining if Georgia actually has a program for qualifying commercial vehicles for state contracts. One of the states indicated they are developing a system similar to the one that is in place in Connecticut. Analysis of the survey results indicates that Connecticut is the only state with such a rigorous contracting qualifications process. However, a few other states seem to be in the process of developing new rules and regulations to ensure that commercial vehicles operating under state contracts are safe.

TABLE 2: STATE SURVEY RESULTS

State	Agency	Program	Details
Connecticut	Department of Administrative Services	Yes	
Georgia	State Purchasing Division	Yes	
Illinois	DOT	Yes	
Kentucky	DOT	Yes	Requires insurance records
Texas	DOT	Yes	Requires substantiation of drug testing results and proof of insurance
California	Department of General Services	No	
Colorado	DOT	No	Currently in the process of preparing such a system.
Iowa	DOT	No	
Kansas	DOT	No	
Maine	DOT	No	
Massachusetts	MassDOT	No	
Minnesota	DOT	No	
Missouri	Division of Purchasing & Materials Management	No	
New Hampshire	DOT	No	
New York	DOT	No	
North Dakota	DOT	No	
Oregon	DOT	No	
Rhode Island	DOT	No	
South Dakota	DOT	No	
Vermont	DOT	No	
Washington	DOT	No	
West Virginia	Division of Highways	No	

6.0 CONTRACTOR FOCUS GROUP SESSIONS

To gain feedback from stakeholders with regard to the state's current safety fitness review process used for state contracting purposes, the study management team hosted two focus group sessions consisting of 16 contractors that do business with the state. These focus groups consisted of both contractors that have, and have not, been excluded from state contracts through the use of the current contractor qualification process. However, the contractors that had been disqualified were most vocal and critical of the system. The goal of these focus groups was to identify the issues with the current system and allow the contractors to have input into any potential changes that are made to the process. The results of the focus group sessions are provided in the findings section of this report.

7.0 STUDY FINDINGS

7.1 REVIEW OF DMV/CVSD RECORDS

The study research team asked DMV to provide a list of companies that have been reviewed through the DMV/CVSD contractor safety review process, including the resulting contractor ratings. DMV provided data that contained entries (in the form of "snapshots" for three periods) from November 16, 2005 to August 25, 2011.

- The first snapshot contains reviews conducted from 11/16/2005 to 05/01/2008.
- The second snapshot contains reviews conducted from 1/30/2008 to 10/26/2010.
- The third snapshot contains reviews conducted from 1/13/2009 to 8/25/2011.

This data provided only a snapshot in time of the current rating of a contractor. Each snapshot was created when DMV/CVSD made a change in the program's reporting structure. As a result, a new file was created and the old file was no longer updated. The third snapshot was the exception, as it consists of ratings up to 8/25/2011 (the date the file was requested from DMV by CASE and last saved by DMV/CVSD). The current DMV process involves overwriting the previous review of a contractor in the electronic Excel file. This system eliminates the ability to quickly track how a contractor has been rated in the past. However, a full review of a contractor's past reviews could be conducted using the hard (paper) copies maintained by DMV for each contractor. This would be an extremely labor-intensive process that could be eliminated if records were not overwritten with each new contractor review.

As a result of this practice, the research team did not undertake the detailed analysis of the hard copy contractor records, and, therefore was not able to determine exactly how many contractors have been given a rating of "NR" since 2005. For example if a contractor was rated "NR" in January 2010 and then reviewed again in March 2011 and given a rating of "MMR," the prior "NR" is erased from the dataset and replaced with "MMR." The following analysis is by no means a comprehensive review of the DMV process, but only an observation about the three periods in time based on the electronically maintained data provided by DMV.

- 13 contractors found in all 3 of the snapshots improved from NR to MMR
- 30 contractors found in 2 of the 3 snapshots improved from NR to MMR
- 2 contractors found in the 3 snapshots declined from a MMR to NR
- 19 contractors found in 2 of the 3 snapshots declined from a MMR to NR

Overall this may indicate that more companies are improving their safety (or recordkeeping) over time than are declining in safety. However, the data collection method has severely limited the research team's ability to analyze any trends.

Based on the ratings found in the three snapshots:

- A total of 1,490 ratings were reported that included 277 NR and 1,213 MMR (approximately 19% NR)
- Before 2009, there were 213 NR and 675 MMR (approximately 24% NR)
- Since 2009, there have been 64 NR out of 538 MMR (approximately 12% NR)
- Since 2009, 34 of the NR were due to missing paperwork (53%)
- Since 2009, 28 of the NR were due to OOS % (44%)
- Since 2009, 2 of the NR were due to BASIC status violations (3%)

Overall a little more than half of the "NR" ratings were due to paperwork deficiencies by contractors, with slightly less than half of the "NR" ratings due to OOS criteria. Only a small minority of contractors were rated "NR" due to their BASICs percentile. The pre- and post-2009 data indicates that "NR" ratings have decreased. This decrease could be

- a result of changes made in the CSA system in December 2010;
- an indicator that contractors became familiar enough with the qualification system to improve their chances of receiving a rating of "MMR"; or
- due to other factors, such as providing contractors with an opportunity to improve their safety records through DMV on-site inspections when requested by a company. This service was provided by DMV until CSA went into effect.

7.2 INDEPENDENT REVIEW OF THE CONNECTICUT CURRENT QUALIFICATIONS SYSTEM FOR STATE CONTRACTING

This section reviews the pros and cons of the current contractor safety fitness review being used by the DMV/CVSD for the purpose of qualifying companies for the use of commercial vehicles on state contracts. The following observations have been identified through the study's focus group sessions, investigation by the study research team, and study committee meeting discussions.

7.2.1 BASICs Criteria

The current process, as detailed on the DMV website, is no longer valid for the BASICs review. FMCSA revised the terms and conditions of CSA on March 25, 2011 to no longer include alerts or deficiencies. Therefore, DMV/CSVD's current process of evaluating a contractor based on the number of alerts or deficiencies or a combination thereof is not valid. While only a small percentage of contractors have been rated as "NR" under the former BASICs criteria, any unclear or invalid process that results in disqualifying even one contractor from being awarded a contract should be revised and clarified.

A second issue with the use of the BASICs is that the BASICs score is used to place a contractor into a percentile. That percentile is then used to determine if the contractor is given a ⚠ based on the threshold for that BASIC. The issue of basing eligibility decisions on the number of ⚠s is that there will always be a certain percentage of the contracting fleet that has a ⚠ regardless of how safe the entire fleet actually is. The goal of CSA is to improve safety on the roadways. The use of percentiles for this purpose is valid since there is always room for improvement and the percentile system in combination with a threshold will always identify the "worst" companies for intervention. For example, a group of students is given a test and 99 of the 100 students score above a 90 and the remaining student scores an 89. The student who scored the 89 would be in the 100th percentile using the CSA system, and therefore flagged for intervention when in reality, a score of 89 on a test is not a failing score. The student would not fail the class or be expelled from school; their score was just the "worst" out of their peer group. This system is appropriate when trying to eliminate 100% of safety issues, crashes and violations, but not for qualifying companies for safety fitness for the purpose of state contracting.

7.2.2 National Out of Service Rate Comparison

Figure 3 provides an overview of 2011 OOS rates by state, with Appendix D providing a listing of 2011 OOS rates by state sorted by percent OOS rate from highest to lowest. This list shows that according to FMCSA, the national OOS rate for 2011 was 27.6%. Connecticut is the second highest ranked state, with an OOS rate of 47.7%, or almost twice the national average. However, inspection programs across the country vary in size, scope, funding, staffing and operational procedures. Therefore, direct comparisons of OOS ratings between states are not justified. Connecticut's high OOS rating should not be viewed negatively. In fact, this implies that almost half of the vehicles or drivers that the DMV/CVSD selects for inspection are not at a safety fitness level acceptable for operation. Further, the DMV/CVSD is effective at identifying drivers or vehicles with safety-related issues and does not unnecessarily detain drivers or vehicles for unneeded inspections. In comparison, Nevada has the lowest OOS rating in 2011 (12.4%), implying that out of every 100 inspections only 12 trucks or drivers are put OOS. This would appear to be an inefficient use of state resources for vehicle inspections; however, the full details of the Nevada system have not been reviewed.

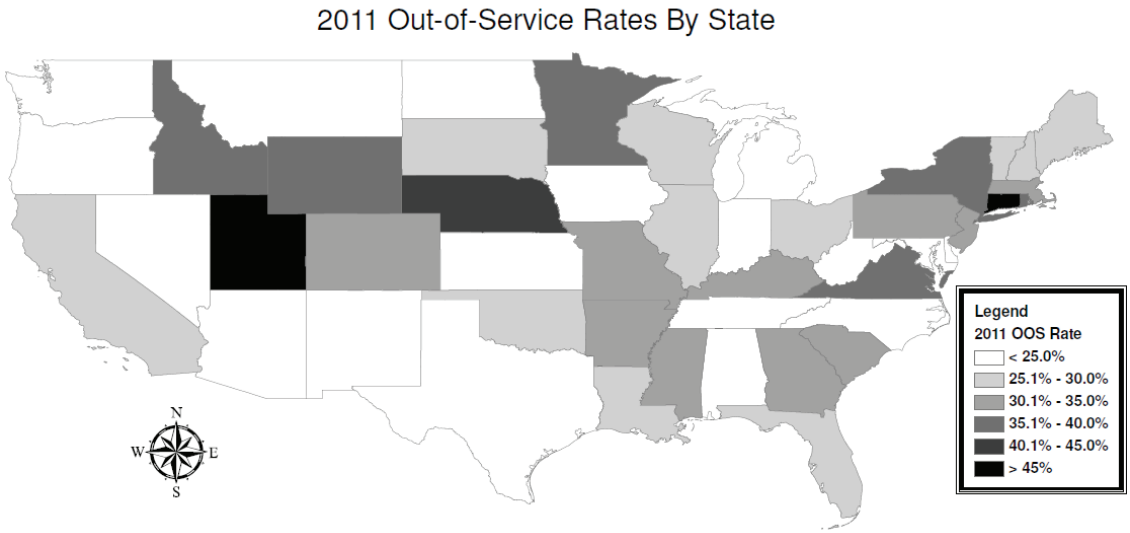

FIGURE 3: 2011 OVERVIEW OF OUT-OF-SERVICE RATINGS BY STATE

7.2.3 Connecticut's Use of OOS Criteria for Contractor Qualification for State Contracts

Currently it is the state's practice to use a company's percentage of commercial vehicle inspections that result in OOS orders as one of the criteria for determining eligibility for state contract awards. The intent of the contractor qualification process, based on Governor Rell's 2005 directive, has been to not award state contracts to companies operating commercial vehicles with safety fitness records that have been determined as not acceptable based on the state's contractor qualification system criteria. The DMV/CSVD has stated that in an effort to operate efficiently with limited resources, the department targets inspections of commercial vehicles with a high likelihood of having violations. This practice is consistent with overall DMV program inspection goals for the purpose of assuring the safe operation of vehicles within the state. The methods used by the DMV/CVSD for the purpose of putting vehicles or drivers out of service are not in question. Rather, it is the use of OOS metrics derived from roadside inspection records to evaluate the safety fitness of contractors for the award of state contracts that is the issue.

The DMV/CVSD's appropriate practice of targeting vehicles for inspection that they believe have safety issues statistically biases their ability to use the OOS rate for the purpose of determining the safety fitness of contractors for eligibility for state contract awards. Furthermore, differences in how programs are administered across the country further limits the ability to compare Connecticut's OOS rating to other states—even neighboring ones. This is of particular concern since analysis of DMV records indicates that 28 of the 64 (44%) of "NR" recommendations issued by DAS, DMV/CVSD and ConnDOT for state contracting purposes were based on a company's OOS rate.

The federal CSA process includes a program to aid companies in improving their safety record before issuance of an OOS order by FMCSA that restricts the company's ability to operate commercial vehicles. This system encourages compliance, but can result in a company's suspension if their safety record does not improve. In Connecticut if a contractor is disqualified from a state contract based on the company's vehicle inspection record, such action does not prevent the company from operating commercial vehicles when providing services for others. Therefore, eliminating a contractor from being awarded a state contract would most likely have little or no impact on assuring the safe operation of vehicles on state highways. Additionally, it is noted that loss of state projects may result in companies potentially focusing primarily on municipal or private contracts where their safety fitness may not be reviewed separately from the FMCSA system or on a per-contract basis.

In an effort to gauge contractor response to the current process, the following unintended impacts and consequences of the state's current system for qualifying companies that use commercial vehicles for state contracts were noted:

- Contractors concerned about their inspection record attempt to secure additional vehicle inspections by specifically bringing vehicles to weigh stations for the sole purpose of attempting to increase the number of passed inspections to reduce their OOS rate. However, this effort does not always result in a DMV/CVSD inspection.
- Additionally, it was reported in the focus group sessions that in the past, contractors were able to request and have DMV conduct an on-site fleet inspection, again for the

purpose of reducing the company's OOS rate. However, DMV no longer conducts this type of on-site inspection at the request of a contractor. This is primarily due to

1. Implementation of CSA and the FMCSA's request to DMV to not bias the federal reporting system with extra carrier requested inspections.
2. Limited resources at the DMV/CVSD.
3. Removal of any appearance of special treatment by DMV/CSVD for requesting contractors.

As a result, under the current qualification system, it is difficult for impacted contractors to do anything in the short term to improve their OOS rating so as to qualify for state contracts. With such a large percentage of the "NR" ratings coming from the OOS rating criteria, this is a critical point of contention for contractors.

7.2.4 Insurance and Drug and Alcohol Criteria

The consensus of the study's focus group sessions and study committee discussion was that providing proof of insurance and a drug and alcohol testing program are valid and appropriate requirements. These requirements were responsible for over half of the "NR" reported in the DMV dataset, and are also required by the federal government. If a contractor is unable to meet these requirements to operate a commercial vehicle or fleet, the state should and does have the right to make that contractor ineligible for state contracts.

7.3 NATIONAL COMMERCIAL VEHICLE CONTRACTING SURVEY

Based on the survey conducted as part of this study, Connecticut is the only state that is currently using CSA for the purpose of determining the safety fitness of contractors for state contracts. Furthermore, only two other states can be verified as using any process to disqualify carriers from state contracts. These two states, Kentucky and Texas, rely only on proof of insurance and/or proof of enrollment in a drug and alcohol testing program. While Georgia responded that they have a program in place, the CASE study committee was unable to verify that such a program actually exists.

7.4 DRIVER RECORDS IN CSA

During the review of differences between CSA/SMS and SafeStat, a significant change was noted in how driver information is stored and collected in SMS. With SafeStat, the driver files were employer specific; so if a driver changed employers, their FMCSA safety record would start anew with the new employer. Under CSA, the driver file follows the driver regardless of where they are employed. This change provides potential employers and state agencies with a more complete safety fitness record for drivers seeking employment, and potentially will have a positive impact on driver safety accountability, since a driver's safety record will potentially impact future employment opportunities. There are currently controversial efforts underway to create driver screening tools using the FMCSA driver data. It is still too early to tell if these tools will be effective for preventing unsafe drivers from operating commercial vehicles.

7.5 STATE AGENCY SUBCONTRACTOR REVIEW

The use of subcontractors and the relationship between subcontractors and contractors is complex. For certain industries, such as paving and hauling, subcontractors may work for multiple companies over a week or even the course of a day based on the demand for work. Furthermore, a contractor may not know exactly which subcontractors will be working on their projects until the day before or even the day of service. In this industry, subcontractors are often engaged by primary contractors through a broker that assigns jobs on a daily basis. Therefore, developing a system to track and qualify subcontractors on a job-by-job or day-to-day basis presents significant challenges for the industry and for timely state agency review and approval of subcontractors. For this reason subcontractors have been excluded from the current contractor qualification review process.

Under current state practices, the primary contractor is placed at a greater risk of being cited for violations of subcontractors for whom they do not have direct control over driver logs or vehicle maintenance. Further, a primary contractor's BASICs scores or OOS rate may be impacted by subcontractor violations, which then may result in the primary contractor not being eligible for state contract awards.

Additionally, the exclusion of subcontractors from the state's contracting qualification process, assuming such process was valid and remains in effect, is not consistent with the goal of assuring that commercial vehicles used on state contacts are operated in a safe manner.

7.6 CONTRACTOR FEEDBACK

The following section provides findings with regard to the current contractor qualification process that are based on a summary of the feedback from contractors who attended the focus group sessions.

7.6.1 OOS Rating Criteria

The primary source of contractor concerns centers around the use of the OOS rate to evaluate a contractor's safety fitness for providing services on a state contract. Contractors noted that they were no longer able to request supplemental vehicle inspections to aid in reducing their OOS rating. Furthermore, they noted that it was difficult to get a well maintained and operating vehicle inspected. This limited their ability to reduce their OOS rate to enable them to maintain their eligibility for state contract awards. Many contractors stated that they drove well maintained trucks they knew would pass inspections through mobile or fixed weigh stations in an effort to have these vehicles inspected. Contractors rely on these techniques to circumvent the OOS criteria by having well maintained vehicles inspected to artificially decrease their OOS rating for the purpose of qualifying for state contracts.

Companies interested in bidding on state contracts have recognized that their OOS rating can impact their ability to obtain state contracts. Several contractors mentioned that as a result of the current qualification process they have changed some of their maintenance and inspection practices. Actions instituted by companies in an effort to improve their safety, BASIC scores and OOS rates to reduce or eliminate any chance for the issuance of an OOS order included

- changing out parts on vehicles when any signs of age or creep in tolerances are identified;
- increasing vehicle inspection frequency; and
- considering a driver's failure to do a complete pre-trip check or walk-around as grounds for immediate termination.

7.6.2 Subcontractors

Several contractors that participated in the study's focus group sessions had issues with subcontractors being excluded from the state's contractor qualification system, and with the fact that primary contractors are held accountable for the actions of their subcontractors.

7.6.3 Drug and Alcohol Requirements

Contractors agreed that the requirements for insurance and enrollment in, or proof of, a drug and alcohol testing program were valid requirements and consistent with FMCSA requirements. There were no issues or concerns with this area of the current DMV/CVSD contracting qualification process.

7.6.4 Communication and Outreach

Based on comments provided by industry, when the state implemented the current system used for qualifying contractors for state contracts that utilize commercial vehicles, there was little to no information provided to contractors regarding the qualification process. When DMV/CVSD was asked what steps were taken to make contractors aware of the new practice, it was stated that the practice was posted online. Also, according to contractors, there is limited contact and explanation given to contractors when they are denied a contract award.

8.0 RECOMMENDATIONS

Based on the study findings, the CASE study committee offers the following recommendations with respect to the commercial vehicle qualification process for the award of state contracts. At the foundation of the recommended process is a requirement for contractor certification of compliance with qualification process elements through submittal of a Certification Statement at bid submittal, and state agency auditing of contractors that are awarded state contracts.

A summary of the recommendations is provided in Table 3. Figure 4 contains a revised flowchart based on the proposed changes.

TABLE 3: COMPARISON OF CURRENT AND RECOMMENDED QUALIFICATION PROCESSES

	REQUIREMENT		TIME OF REVIEW		AGENCY RESPONSIBLE		
QUALIFICATION PROCESS ELEMENTS	**CURRENT**	**REC.**	**CURRENT**	**REC.**	**CURRENT**	**REC.**	**COMMENT**
Contractor Certification Statement	NO	YES	Not Applicable	Bid Submittal	Not Applicable	Contracting Agency	Contractor provides Certification Statement attesting to compliance with contracting requirements to Contracting Agency.
Insurance Certification: Acord Certificate of Liability Insurance	YES	YES	During Contractor Review	Bid Submittal & During Contractor Review	DMV/CVSD	Contracting Agency	Require signed statement for contract bid submittal and documentation during contractor review; and renewal documentation, as applicable during a contract period. State agencies conduct contractor audits to assure compliance during contract
Drug and Alcohol Testing Program: Documentation Certifying Program Enrollment	YES	YES	During Contractor Review	Bid Submittal & At Will by Agencies	DMV/CVSD	Contracting Agency	Require signed statement for contract bid submittal, if applicable; State agencies conduct contractor audits to assure compliance during contract
Compliance with State and Federal Laws/Regulations & Contractor Payment of all Fees and Fines to DMV	YES	YES	During Contractor Review	Bid Submittal & At Will by Agencies	DMV/CVSD	Contracting Agency through DMV	Require signed statement for contract bid submittal of compliance with requirement. State agencies conduct contractor audits to assure compliance during contract
OOS Ratings: Use of OOS Rating for Contractor Qualification for State Contracts	YES	NO	During Contractor Review	Not Applicable	DMV/CVSD	Not Applicable	Use of OOS ratings for contractor qualification under the current system is not valid, and should not be used to qualify contactors for state contracts.

TABLE 3: COMPARISON OF CURRENT AND RECOMMENDED QUALIFICATION PROCESSES (CONTINUED)

Contractor's FMCSA, Safety Fitness Record (In Good Standing; Not Suspended)	YES	YES	During Contractor Review	Bid Submittal and At Will by Agencies	DMV/CVSD	Contracting Agency or DMV	Require signed statement for contract bid submittal of compliance with requirement. State agencies conduct contractor audits to assure compliance during contract period
SMS BASICs Review	YES	NO	During Contractor Review	Not Applicable	DMV/CVSD	Not Applicable	If a contractor is not removed from service by an FMCSA OOS order, they should be eligible for state contract awards.
SMS Driver Records	NO	YES	Not Applicable	Bid Submittal and At Will by Agencies	Not Applicable	Contracting Agency or DMV	Contractors submit written certification with bid submittal that any driver operating a commercial vehicle on a state project is in good standing and not suspended. State agencies conduct contractor audits to assure compliance during contract period
Subcontractor Notice and Certification Statement	NO	Meet Same Requirements as Primary Contractor	Not Applicable	At will by Agencies	Not Applicable	Certification Statement Provided to Primary Contractor	Subcontractors comply with same requirements as Primary Contractors. Primary Contractors required to provide "Notice" of contracting requirements to Subcontractors. Subcontractors provide compliance Certification Statement to Primary Contractor. Primary Contractor provides Subcontractor USDOT # to Contracting Agency at time of engagement. State agencies conduct Subcontractor audits to assure compliance during contract

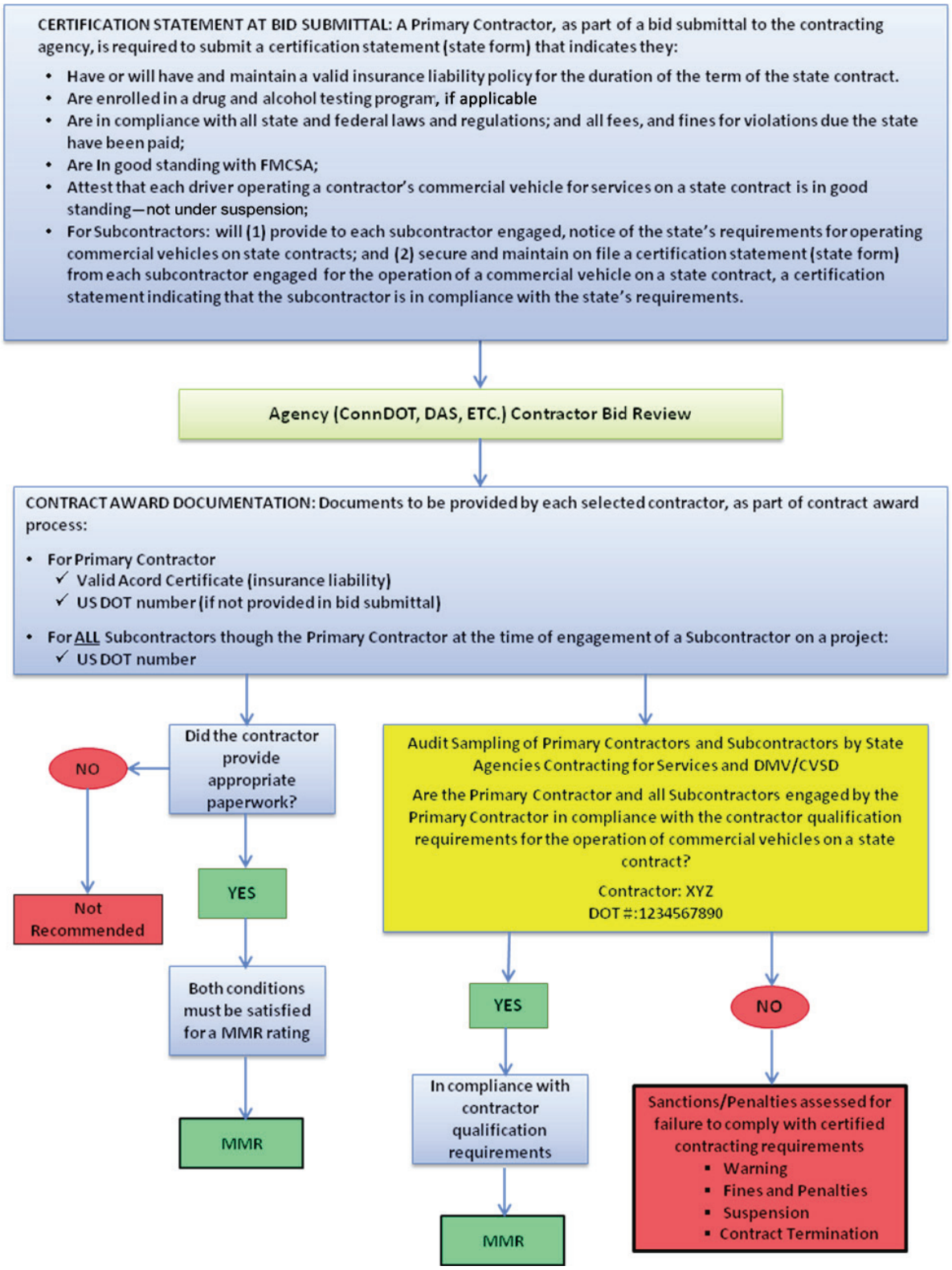

FIGURE 4: RECOMMENDED CONTRACTOR QUALIFICATION REVIEW PROCESS

8.1 DISCONTINUED USE OF QUALIFICATION REQUIREMENTS CONSIDERED NOT VALID FOR AWARD OF STATE CONTRACTS

8.1.1 OOS Ratings

The primary concern with the current contractor qualification process is the use of OOS ratings to determine contractor eligibility for state contracts. It was determined that this practice is biased by a non-random inspection process that focuses on inspecting vehicles that are most likely to have safety issues or defects, and is not valid statistically. As a result, the state should not establish OOS rating criteria separate from that used by FMCSA/CSA for qualifying contractors. Therefore, it is recommended that OOS ratings should not be used for the purpose of qualifying contractors for use of commercial vehicles on state contracts.

However, it is noted that the practice of focusing resources on those carriers most likely to be in violation of safety standards is an appropriate strategy for the use of resources by DMV/CVSD for the purpose of assuring the safe operation of commercial vehicles on state roads.

8.1.2 CSA/SMS BASICs Review

It is recommended that the state not use CSA/SMS BASICs scores to determine the safety fitness of a contractor. Contractors should be aware of their BASICs scores and it is the responsibility of FMCSA to suspend unsafe carriers from operating commercial vehicles. However, contractors operating commercial vehicles on state contracts that have BASICs scores below the thresholds for a BASIC should be placed on a priority list to be reviewed by DMV. These reviews should be conducted throughout the contract term to determine if a contractor has been issued an OOS order due to lack of compliance with interventions from FMCSA. Moreover, for contractors with commercial vehicles registered in Connecticut, the PRISM system used by DMV provides daily updates for OOS orders issued.

If a contractor is found to be ordered OOS by FMCSA, the DMV should take action as soon as legally possible to remove tags and registrations from the contractor's vehicles. Furthermore, DMV should make DAS and ConnDOT, as applicable, aware of any contractor issued an OOS order. The contracting agency should have the authority to void any contract with any contractor ordered OOS by FMCSA, once they have legal authority to do so (following due process procedures for contractor appeals to FMCSA).

8.2 CONTRACTOR QUALIFICATION REQUIREMENTS

The following contractor qualification process elements were determined to be valid components of a qualification system for state contracting and are consistent with state and federal laws for operating a commercial vehicle and with the current contractor qualification process.

8.2.1 Insurance Certification

A two-step process is recommended for contractors to provide proof of insurance.

- Step 1: Bid Submittal: The contractor Certification Statement would require a contractor to attest, with their bid submittal, to the fact that they have or will have the required insurance for the duration of the contract period This would ensure that companies bidding on state contracts are aware of and in compliance with the insurance contracting requirements.
- Step 2: Contractor Review Process: Contractors whose bids are being considered for a contract award, should be required to submit a valid Acord Certificate of Liability Insurance (insurance liability showing at least the minimum required depending on the type of commodity being transported and state requirements) that names the DMV as the certificate holder.

A contractor's failure to maintain the required insurance during a contract period should be considered as cause for contract termination. This recommendation is consistent with current practice, as reported by DAS, that DMV is periodically requested to perform a safety fitness check on contractors during a contract period.

8.2.2 Drug and Alcohol Testing

The contractor's Certification Statement should include a statement attesting that the contractor is enrolled in a drug and alcohol testing program, if applicable.

8.2.3 Compliance with State and Federal Laws

The contractor's Certification Statement should include a statement attesting that the contractor is (1) in compliance with state and federal laws, and (2) current on any fines, registrations or fees owed to the state for their vehicles and business.

8.2.4 SMS Driver Records

The new SMS/CSA system provides more complete information about a commercial vehicle driver's safety fitness record. Whereas the SafeStat system only provided a driver's safety record for a specific employer, the new system provides a complete history of a driver's safety record that is no longer employer specific. The contractor's Certification Statement should include a statement attesting that any driver operating a contractor's commercial vehicle on a state contract is in good standing (specifically, not under suspension).

8.2.5 Subcontractor Contracting Qualification Requirements

Subcontractors working on behalf of primary contractors should be required to adhere to the same contractor qualification requirements as primary contractors. A primary contractor's Certification Statement provided to the contracting agency at bid submittal should certify that the primary contractor will

1. Provide "Notice" to each subcontractor to be engaged by the primary contractor of the state's contractor qualification requirements for operating commercial vehicles on state contracts.

2. Secure a "Certification Statement" from each subcontractor attesting that the subcontractor is in compliance with all contractor qualification requirements for the operation of commercial vehicles on state contracts, including the following:

    - o they have or will have for the duration of the period of service to the primary contractor a valid insurance liability policy in compliance with state requirements;
    - o they are enrolled in a drug and alcohol testing program, if applicable;
    - o they are in compliance with all state and federal laws and regulations; and all fees, and fines for violations due the state have been paid;
    - o they are in good standing with FMCSA; and
    - o they attest that each driver operating a commercial vehicle of the subcontractor for services provided on behalf of a primary contractor under a state contract is in good standing—not under suspension.

      Primary contractors should maintain a record of all subcontractor Certification Statements for review and audit by state agencies. The subcontractor Certification Statements provided to primary contractors should be renewed periodically, e.g., annually. Each subcontractor would be required to notify any primary contractor issued a Certification Statement of any change in their compliance with the state's contractor qualification requirements.

3. Provide the contracting agency with a USDOT number for each subcontractor they engage for the operation of commercial vehicles on state contracts.

This process would provide for documented primary contractor accountability for subcontractors, while subjecting subcontractors to the same standards as primary contractors.

8.3 STATE AGENCY AUDITS OF CONTRACTORS AND SUBCONTRACTORS

In addition to contractors certifying that they are in compliance with the state's contracting qualification requirements, a key component of the recommended contractor qualification system involves having the contracting agency and/or DMV conduct periodic audits of contractors operating commercial vehicles on state contracts to verify contractor compliance with Certification Statements.

Contractor and subcontractor Certification Statements should acknowledge the potential sanctions/penalties that could be assessed by the state for failure to comply with certified contracting requirements. A contractor or subcontractor found to be in violation of certified contracting requirements may be subject to any of the following suggested sanctions/penalties:

- Provided a grace period to resolve the compliance requirement
- Assessed fines and penalties

- Issued a suspension for the operation of commercial vehicles on state contracts and/or suspended from bidding on state contracts for a predetermined period of time
- Issued a contract termination order

Maintaining an electronic database of all contractor and subcontractor US DOT numbers also would allow the state to monitor all contractors FMCSA records and to quickly take action when an OOS order is issued by FMCSA and announced through PRISM.

9.0 CONCLUDING REMARKS

Connecticut is one of the first states in the country to enact policies and practices for qualifying contractors for using commercial vehicles on state contracts. The current contractor qualification process has evolved since implementation in 2005, as directed by then Governor M. Jodi Rell. This study's assessment of the current qualification system revealed several process strengths and weaknesses.

The study recommendations identify a revised contractor qualification process that focuses on contractor accountability and state agency review of contractor compliance with the qualification requirements.

Additionally, the proposed qualification system requires that subcontractors engaged by a primary contractor be held to the same qualification requirement standards as primary contractors; the current process does not include subcontractors. Further, the proposed system places responsibility on primary contractors for securing all qualification certifications from their subcontractors.

It is worthy to note that DMV's strategy of focusing its safety enforcement efforts on commercial vehicles and drivers most likely to be in violation of safety standards is a responsible practice and an appropriate use of state resources for assuring to the greatest extent possible the safe operation of commercial vehicles on state roads.

Finally, it is suggested that proposed revisions to the current contractor qualification process be presented to and reviewed with industry representatives prior to implementation. Also, once finalized, the revised contractor qualification system should be communicated to the industry and potential contractors to assure a smooth transition and compliance.

REFERENCES

CSA/SMS. 2012. CSA Model Flowchart. FMCSA. Accessed on January 30, 2012. http://csa.fmcsa.dot.gov/images/Model_FullSize.gif

DMV/CVSD. 2011. Motor Carrier Review for State Contract Awards Process and Qualifying Requirements. **Accessed January 19, 2012. Last updated on** April 26 2011 8:44:32 AM. http://www.ct.gov/dmv/cwp/view.asp?a=798&q=413212

FMCSA, 2012. **FMCSA Reaches Settlement Agreement in National Association of Small Trucking Companies Litigation on the Compliance Safety Accountability Program.** http://www.fmcsa.dot.gov/about/news/news-releases/2011/CSA-NASTC.aspx

Green, Paul, Daniel Blower. 2011. Evaluation of the CSA 2010 Operational Model Test. University of Michigan, Ann Arbor, Transportation Research Institute. Ann Arbor, Michigan. FMCSA-RRA-11-019

John A. Volpe National Transportation Systems Center. 2010. Safety Measurement System (SMS) Methodology. Version 2.1. December 2010. Cambridge, MA 02142

PRISM. 2012. Performance and Registration Information Systems Management (PRISM) – Benefits. Accessed on Feb. 14. 2012. http://www.fmcsa.dot.gov/safety-security/prism/benefits.aspx

TEANA. 2011. Headline: FMCSA and Three Trade Associations Agree to Settlement on CSA. PRESS RELEASE – March 9, 2011. http://teana.org/pdf/2011/Press_Release_with_attachments-Final.pdf

APPENDIX A:
BASICS CALCULATION METHODOLOGY

SAFETY MEASUREMENT SYSTEM (SMS) METHODOLOGY

Version 2.1

December 2010

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3. CSMS Methodology

The following sections describe the CSMS methodology used to calculate the measurement and percentile of each BASIC and the Crash Indicator for individual motor carriers.

3.1 Unsafe Driving BASIC Assessment

This section describes the calculation of carrier measures and percentile ranks in the Unsafe Driving BASIC. This BASIC is defined as:

> Operating CMVs in a dangerous or careless manner. Example violations: speeding, reckless driving, improper lane change, and inattention. See Appendix A for a complete list of roadside inspection violations used in the CSMS.

The CSMS assesses the Unsafe Driving BASIC using relevant violations of FMCSRs recorded during roadside inspections and reported in MCMIS. Individual carriers' BASIC measures also incorporate carrier size in terms of PUs and annual VMT. These measures are used to generate percentile ranks that reflect each carrier's driver safety posture relative to carriers in the same segment with similar numbers of inspections with violations.

3.1.1 Calculation of BASIC Measure

The BASIC measures for the Unsafe Driving BASIC are calculated as the sum of severity and time weighted applicable violations divided by carrier average PUs multiplied by a Utilization Factor, as follows:

$$BASIC\ Measure = \frac{Total\ of\ time\ and\ severity\ weighted\ applicable\ violations}{Average\ PUs\ x\ Utilization\ Factor}$$

Equation 3-1

In this equation, the terms are defined as follows:

> An Applicable Violation is defined as any violation recorded in any level roadside inspection that matches the FMCSR and HMR cites listed for Unsafe Driving (Table 1, Appendix A) and during the past 24 months. In cases of multiple counts of the same violation, the CSMS only uses each violation cite once per inspection.
>
> *Note:* Some roadside inspections are performed following a traffic enforcement stop for a moving violation. Violations reported during such stops do not always result in the issuance of a citation/ticket to the driver, but are used in the CSMS whether or not a citation/ticket is issued.
>
> A Severity Weight from 1 (less severe) to 10 (most severe) is assigned to each applicable violation. See the Unsafe Driving Table (Table 1, Appendix A) for the severity weights corresponding to each violation. The severity weighting of each

violation cite accounts for the level of crash risk relative to the other violation cites used in the BASIC measurement. The sum of all violation severity weights for any one inspection in any one BASIC is capped at a maximum of 30. This cap of 30 is applied *before* the severity weights are multiplied by the time weight.

Note: The severity weights of violations outside of the BASIC being calculated **do not** count towards the violation cap.

A Time Weight of 1, 2, or 3 is assigned to each applicable violation based on how long ago it was recorded. Violations recorded in the past 6 months receive a time weight of 3. Violations recorded between 6 and 12 months ago receive a time weight of 2. All violations recorded earlier (older than 12 months but within the past 24 months) receive a time weight of 1. This time weighting places more emphasis on recent violations relative to older violations.

A Time and Severity Weighted Violation is a violation's severity weight multiplied by its time weight.

Average Power Units (PUs) are used in part to account for each carrier's level of exposure when calculating the BASIC measure. The number of owned, term-leased, and trip-leased PUs (trucks, tractors, hazardous material tank trucks, motor coaches, and school buses) contained in the Census data are used to calculate the PU totals. The average PUs for each carrier is calculated using (i) the carrier's current number of PUs, (ii) the number of PUs the carrier had 6 months ago, and (iii) the number of PUs the carrier had 18 months ago. The average PU calculation is shown below:

$$AveragePU = \frac{PU_{Current} + PU_{6Months} + PU_{18Months}}{3}$$

Equation 3-2

The Utilization Factor is a multiplier that adjusts the average PU values based on the utilization in terms of VMT per average PU where VMT data in the past 24 months are available. The primary sources of VMT information in the Census are: (1) Form MCS-150, filled out by the carrier, and (2) Form MCS-151, filled out by law enforcement as part of an investigation. Carriers are required to update their MCS-150 information biennially. In cases where the VMT data has been obtained multiple times over the past 24 months for the same carrier, the most current positive VMT figure is used. The Utilization Factor is calculated by the following three steps:

(i) Carrier Segment

There are two segments into which each motor carrier can be categorized:

- "Combo" – combination trucks/motor coach buses constituting 70% or more of the total PU

- "Straight" – straight trucks/other vehicles constituting more than 30% of the total PU

(ii) VMT per Average PU

The VMT per average PU is derived by taking most recent positive VMT data and dividing it by the average PUs (defined above).

(iii) Utilization Factor

Given the information in (i) and (ii), the Utilization Factor is determined from the following tables:

Combo Segment	
VMT per Average PU	**Utilization Factor**
< 80,000	1
80,000 - 160,000	1+0.6[(VMT per PU-80,000) / 80,000]
160,000 - 200,000	1.6
> 200,000	1
No Recent VMT Information	1

Table 3-1. VMT per PU for Combo Segment

Straight Segment	
VMT per Average PU	**Utilization Factor**
< 20,000	1
20,000 - 60,000	VMT per PU / 20,000
60,000 - 200,000	3
> 200,000	1
No Recent VMT Information	1

Table 3-2. VMT per Average PU for Straight Segment

3.1.2 Calculation of BASIC Percentile Rank

Based on the BASIC measures, the CSMS applies data sufficiency standards and safety event grouping to assign a percentile rank to carriers that can then potentially receive a CSA intervention or detrimental SFD. The calculation is as follows:

A. Determine the carrier‘s segment:

- "Combo" – combination trucks/motor coach buses constituting 70% or more of the total PU
- "Straight" – straight trucks/other vehicles constituting more than 30% of the total PU

B. Determine the number of inspections with at least one BASIC violation and remove carriers with less than three such inspections. For the remaining carriers, place each carrier into one of ten groups based on the carrier segment and the number of inspections with an Unsafe Driving violation:

Unsafe Driving BASIC: *Combo* Segment	
Safety Event Group	**Number of Inspections with Unsafe Driving Violations**
Combo 1	3-8
Combo 2	9-21
Combo 3	22-57
Combo 4	58-149
Combo 5	150+

Table 3-3. Safety Event Groups for Unsafe Driving BASIC: Combo Segment

Unsafe Driving BASIC: *Straight* Segment	
Safety Event Group	**Number of Inspections with Unsafe Driving Violations**
Straight 1	3-4
Straight 2	5-8
Straight 3	9-18
Straight 4	19-49
Straight 5	50+

Table 3-4. Safety Event Groups for Unsafe Driving BASIC: Straight Segment

C. Within each group, rank all the carriers‘ BASIC measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest

BASIC measure) to 100 (representing the highest BASIC measure). Eliminate carriers whose violations in the BASIC are all older than twelve months. Carriers that remain retain the previously calculated percentile.

3.2 Fatigued Driving (Hours-of-Service (HOS) BASIC Assessment

This section describes the calculation of carrier measures and percentile ranks in the Fatigued Driving (HOS) BASIC. This BASIC is defined as:

> Operation of CMVs by drivers who are ill, fatigued, or in noncompliance with the HOS regulations. This BASIC includes violations of regulations surrounding the complete and accurate recording of logbooks as they relate to HOS requirements and the management of CMV driver fatigue. Instances related to the Fatigued Driving (HOS) BASIC are distinguished from incidents where unconsciousness or an inability to react is brought about by the use of alcohol, drugs, or other controlled substances. Example violations include: HOS, logbook, and operating a CMV while ill or fatigued. See Appendix A for a complete list of roadside inspection violations used in the CSMS.

The CSMS assesses the Fatigued Driving (HOS) BASIC using relevant violations recorded during roadside inspections to calculate a measure for motor carriers. These measures are used to generate percentile ranks that reflect each carrier's safety posture relative to carriers with similar numbers of relevant inspections.

3.2.1 Calculation of BASIC Measure

The equation used for calculating Fatigued Driving (HOS) BASIC measures is as follows:

$$BASIC\,Measure = \frac{Total\,of\ time\,and\,severity\,weighted\,applicable\,violations}{Total\ time\ \ weight\,of\,relevant\,inspections}$$

Equation 3-3

In this equation, the terms are defined as follows:

> An Applicable Violation is any violation recorded in any level roadside inspection that matches the FMCSRs listed for Fatigued Driving (HOS) (Table 2, Appendix A) during the past 24 months. The CSMS only uses each violation cite once per inspection in cases of multiple counts of the same violation.
>
> A Relevant Inspection is any Driver Inspection (Level 1, 2, 3, or 6), including those that do **not** result in a violation in the BASIC, or any other inspection resulting in an applicable BASIC violation.
>
> A Severity Weight is assigned to each applicable violation, with a value dependent on two parts: (i) the level of crash risk relative to the other violations comprising the BASIC measurement, and (ii) whether or not the violation resulted in an OOS condition.

(i) The level of crash risk is assigned to each applicable violation ranging from 1 (less severe) to 10 (most severe); see the Fatigued Driving (HOS) table (Table 2, Appendix A) for the violations' corresponding severity weights.

(ii) An OOS weight of 2 is then added to the severity weight of OOS violations. In cases of multiple counts of the same violation, the OOS weight of 2 applies if any of the counts of the violation are OOS.

The sum of all violation severity weights for any one inspection in any one BASIC is capped at a maximum of 30. This cap of 30 is applied *before* the severity weights are multiplied by the time weight.

Note: The severity weights of violations outside of the BASIC being calculated **do not** count towards the violation cap.

A Time Weight of 1, 2, or 3 is assigned to each applicable violation and each relevant inspection based on its age. Violations/inspections recorded in the past 6 months receive a time weight of 3. Violations/inspections recorded between 6 and 12 months ago receive a time weight of 2. All violations/inspections recorded earlier (older than 12 months but within the past 24 months) receive a time weight of 1. This time weighting places more emphasis on results of recent inspections relative to older inspections.

Note: The time weight is applied to all relevant inspections, including those that do **not** result in a violation in the BASIC.

A Time and Severity Weighted Violation is a violation's severity weight multiplied by its time weight.

3.2.2 Calculation of BASIC Percentile Rank

Based on the BASIC measures, the CSMS applies data sufficiency standards and safety event grouping to assign a percentile rank to carriers that can then potentially receive a CSA intervention or detrimental SFD. The calculation is as follows:

A. Determine the number of relevant inspections and the number of inspections with at least one BASIC violation. For the Fatigued Driving (HOS) BASIC, remove carriers with (1) less than three relevant driver inspections or (2) no inspections resulting in at least one BASIC violation. For the remaining carriers, place each carrier into one of five groups based on the number of relevant inspections:

Safety Event Group	Number of Relevant Inspections
1	3-10
2	11-20

3	21-100
4	101-500
5	501+

Table 3-5. Safety Event Groups for the Fatigued Driving (HOS) BASIC

B. Within each group, rank all the carriers' BASIC measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest BASIC measure) to 100 (representing the highest BASIC measure). Eliminate carriers that meet both of the following criteria: (1) no violation was recorded in the BASIC during the previous twelve months, and (2) no violation in the BASIC was recorded during the latest relevant inspection. For the remaining carriers with three or more relevant inspections resulting in a Fatigued Driving (HOS) BASIC violation, assign the percentile values to each carrier's BASIC.

3.3 Driver Fitness BASIC Assessment

This section describes the calculation of carrier measures and percentile ranks in the Driver Fitness BASIC. This BASIC is defined as:

> Operation of CMVs by drivers who are unfit to operate a CMV due to lack of training, experience, or medical qualifications. Example violations: failing to have a valid and appropriate CDL and being medically unqualified to operate a CMV. See Appendix A for a complete list of roadside inspection violations used in the CSMS.

The CSMS assesses the Driver Fitness BASIC using relevant violations recorded during roadside inspections to calculate a measure for individual motor carriers. These measures are used to generate percentile ranks that reflect each carrier's driver safety posture relative to carriers with similar numbers of relevant inspections.

3.3.1 Calculation of BASIC Measure

The equation used for calculating the BASIC measure for Driver Fitness is as follows:

$$BASIC\,Measure = \frac{Total\,of\ time\,and\,severity\,weighted\,applicable\,violations}{Total\ time\ \ weight\,of\,relevant\,inspections}$$

Equation 3-4

In this equation, the terms are defined as follows:

> An Applicable Violation is any violation recorded in any level roadside inspection that matches the FMCSRs and HMRs listed for Driver Fitness (Table 3, Appendix

A) during the past 24 months. The CSMS only uses each violation cite once per inspection in cases of multiple counts of the same violation.

A Relevant Inspection is any Driver Inspection (Level 1, 2, 3, or 6), including those that do **not** result in a violation in the BASIC, or any other inspection resulting in applicable BASIC violation.

A Severity Weight is assigned to each applicable violation, with a value dependent on two parts: (i) the level of crash risk relative to the other violations comprising the BASIC measurement, and (ii) whether or not the violation resulted in an OOS condition.

(i) The level of crash risk is assigned to each applicable violation ranging from 1 (less severe) to 10 (most severe); see the Driver Fitness table (Table 3, Appendix A) for the violations' corresponding severity weights.

(ii) An OOS weight of 2 is then added to the severity weight of OOS violations. In cases of multiple counts of the same violation, the OOS weight of 2 applies if any of the counts of the violation are OOS.

The sum of all violation severity weights for any one inspection in any one BASIC is capped at a maximum of 30. This cap of 30 is applied *before* the severity weights are multiplied by the time weight.

Note: The severity weights of violations outside of the BASIC being calculated **do not** count towards the violation cap.

A Time Weight of 1, 2, or 3 is assigned to each applicable violation and each relevant inspection based on its age. Violations/inspections recorded in the past 6 months receive a time weight of 3. Violations/inspections recorded between 6 and 12 months ago receive a time weight of 2. All violations/inspections recorded earlier (older than 12 months but within the past 24 months) receive a time weight of 1. This time weighting places more emphasis on results of recent inspections relative to older inspections.

Note: The time weight is applied to all relevant inspections, including those that do **not** result in a violation in the BASIC.

A Time and Severity Weighted Violation is a violation's severity weight multiplied by its time weight.

3.3.2 Calculation of BASIC Percentile Rank

Based on the BASIC measures, the CSMS applies data sufficiency standards and safety event grouping to assign a percentile rank to carriers that can then potentially receive a CSA intervention or detrimental SFD. The calculation is as follows:

A. Determine the number of relevant inspections and the number of inspections with at least one BASIC violation. For the Driver Fitness BASIC, remove carriers with (1) less than five relevant driver inspections or (2) no inspections resulting in at least one BASIC violation. For the remaining carriers, place each carrier into one of five groups based on the number of relevant inspections:

Safety Event Group	Number of Relevant Inspections
1	5-10
2	11-20
3	21-100
4	101-500
5	501+

Table 3-6. Safety Event Groups for the Driver Fitness BASIC

B. Within each group, rank all the carriers' BASIC measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest BASIC measure) to 100 (representing the highest BASIC measure). Eliminate carriers that meet both of the following criteria: (1) no violation was recorded in the BASIC during the previous twelve months, and (2) no violation in the BASIC was recorded during the latest relevant inspection. For the remaining carriers with five or more relevant inspections resulting in a Driver Fitness BASIC violation, assign the percentile values to each carrier's BASIC.

3.4 Controlled Substances/Alcohol BASIC

This section describes the calculation of carrier measures and percentile ranks in the Controlled Substances/Alcohol BASIC. The definition of this BASIC is as follows:

> Operation of CMVs by drivers cited in roadside inspections for impairment due to alcohol, illegal drugs, and misuse of prescription or over-the-counter medications. Example violations: use or possession of controlled substances or alcohol. See Appendix A for a complete list of roadside inspection violations used in the CSMS.

The CSMS assesses the Controlled Substances/Alcohol BASIC using relevant violations of FMCSRs recorded during roadside inspections and reported in MCMIS. Individual carriers' BASIC measures also incorporate quantity of relevant roadside inspections. These measures are used to generate percentile ranks that reflect each carrier's driver safety posture relative to carriers with similar numbers of inspections with violations.

3.4.1 Calculation of BASIC Measure

The BASIC measures for the Controlled Substances/Alcohol BASIC are calculated as the sum of severity and time weighted applicable violations divided by time weighted relevant inspections, as follows:

$$BASIC\ Measure = \frac{Total\ of\ time\ and\ severity\ weighted\ applicable\ violations}{Total\ time\ weight\ of\ relevant\ inspections}$$

Equation 3-5

In this equation, the terms are defined as follows:

An Applicable Violation is defined as any violation recorded in any level roadside inspection that matches the FMCSR cites listed for Controlled Substances/Alcohol (Table 4, Appendix A) and during the past 24 months. In cases of multiple counts of the same violation, the CSMS only uses each violation cite once per inspection.

Note: Some roadside inspections are performed following a traffic enforcement stop for a moving violation. Violations reported during such stops do not always result in the issuance of a citation/ticket to the driver, but are used in the CSMS whether or not a citation/ticket is issued.

A Relevant Inspection is any Driver Inspection (Level 1, 2, 3, or 6), including those that do **not** result in a violation in the BASIC, or any other inspection resulting in an applicable BASIC violation.

A Severity Weight from 1 (less severe) to 10 (most severe) is assigned to each applicable violation. See the Controlled Substances/Alcohol Table (Table 4, Appendix A) for the severity weights corresponding to each violation. The severity weighting of each violation cite accounts for the level of crash risk relative to the other violation cites used in the BASIC measurement. The sum of all violation severity weights for any one inspection in any one BASIC is capped at a maximum of 30. This cap of 30 is applied *before* the severity weights are multiplied by the time weight.

Note: The severity weights of violations outside of the BASIC being calculated **do not** count towards the violation cap.

A Time Weight of 1, 2, or 3 is assigned to each applicable violation and each relevant inspection based on its age. Violations/inspections recorded in the past 6 months receive a time weight of 3. Violations/inspections recorded between 6 and 12 months ago receive a time weight of 2. All violations/inspections recorded earlier (older than 12 months but within the past 24 months) receive a time weight of 1. This time weighting places more emphasis on results of recent inspections relative to older inspections.

Note: The time weight is applied to all relevant inspections, including those that do **not** result in a violation in the BASIC.

A Time and Severity Weighted Violation is a violation's severity weight multiplied by its time weight.

3.4.2 Calculation of BASIC Percentile Rank

Based on the BASIC measures, the CSMS applies data sufficiency standards and safety event grouping to assign a percentile rank to carriers that can then potentially receive a CSA intervention. The calculation is as follows:

A. Remove carriers with no violations in this BASIC. For the remaining carriers, place each carrier into one of four groups based on the number of carrier inspections with applicable violations:

Safety Event Group	Number of Inspections with Controlled Substance/Alcohol Violations
1	1
2	2
3	3
4	4+

Table 3-7. Safety Event Groups for Controlled Substances/Alcohol BASIC

B. Within each group, rank all the carriers' BASIC measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest BASIC measure) to 100 (representing the highest BASIC measure). Eliminate carriers whose violations in the BASIC are all older than twelve months. Carriers that remain retain the previously calculated percentile.

3.5 Vehicle Maintenance BASIC Assessment

This section describes the calculation of carrier measures and percentile ranks in the Vehicle Maintenance BASIC. This BASIC is defined as:

> Failure to properly maintain a CMV. Example violations: brakes, lights, and other mechanical defects, and failure to make required repairs. See Appendix A for a complete list of roadside inspection violations used in the CSMS.

The CSMS assesses the Vehicle Maintenance BASIC using relevant violations recorded during roadside inspections to calculate a measure of each BASIC for individual motor carriers. These measures are used to generate percentile ranks that reflect each carrier's safety posture relative to carriers with similar numbers of relevant inspections.

3.5.1 Calculation of BASIC Measure

The equation used for calculating Vehicle Maintenance BASIC measures is as follows:

$$BASIC\,Measure = \frac{Total\ of\ time\ and\ severity\ weighted\ applicable\ violations}{Total\ time\ \ weight\ of\ relevant\ inspections}$$

Equation 3-6

In this equation, the terms are defined as follows:

An Applicable Violation is defined as any violation recorded in any level roadside inspection that matches the FMCSR cites listed for Vehicle Maintenance (Table 5, Appendix A) during the past 24 months. In cases of multiple counts of the same violation, the CSMS only uses each violation cite once per inspection.

A Relevant Inspection is any Vehicle Inspection (Level 1, 2, 5, or 6), including those that do **not** result in a violation in the BASIC, or any other inspection resulting in applicable BASIC violation.

A Severity Weight is assigned to each applicable violation with a value dependent on two parts: (i) the level of crash risk relative to the other violation cites used in the BASIC measurement, and (ii) whether or not the violation resulted in an OOS condition.

(i) The level of crash risk is assigned to each applicable violation ranging from 1 (less severe) to 10 (most severe); see the Vehicle Maintenance table (Table 5, Appendix A) for the corresponding severity weights of each violation cite.

(ii) An OOS weight of 2 is then added to the severity weight of OOS violations. In cases of multiple counts of the same violation, the OOS weight of 2 applies if any of the counts of the violation are OOS.

The sum of all violation severity weights for any one inspection in any one BASIC is capped at a maximum of 30. This cap of 30 is applied *before* the severity weights are multiplied by the time weight.

Note: The severity weights of violations outside of the BASIC being calculated **do not** count towards the violation cap.

A Time Weight of 1, 2, or 3 is assigned to each applicable violation and each relevant inspection based on its age. Violations/inspections recorded in the past 6 months receive a time weight of 3. Violations/inspections recorded between 6 and 12 months ago receive a time weight of 2. All violations/inspections recorded earlier (older than 12 months but within the past 24 months) receive a time weight of 1. This time weighting places more emphasis on results of recent inspections relative to older inspections.

Note: The time weight is applied to all relevant inspections, including those that do **not** result in a violation in the BASIC.

A Time and Severity Weighted Violation is a violation's severity weight multiplied by its time weight.

3.5.2 Calculation of BASIC Percentile Rank

Based on the BASIC measures, the CSMS applies data sufficiency standards and safety event grouping to assign a percentile rank to carriers that can then potentially receive a CSA intervention or detrimental SFD. The calculation is as follows:

A. Determine the number of relevant vehicle inspections and the number of inspections with at least one BASIC violation. Remove carriers with (1) less than five relevant inspections or (2) no inspections resulting in at least one BASIC violation. For the remaining carriers, place each carrier into one of five groups based on the number of relevant inspections:

Safety Event Group	Number of Relevant Inspections
1	5-10
2	11-20
3	21-100
4	101-500
5	501+

Table 3-8. Safety Event Groups for the Vehicle Maintenance BASIC

B. Within each group, rank all the carriers' BASIC measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest BASIC measure) to 100 (representing the highest BASIC measure). Eliminate carriers that meet both of the following criteria: (1) no violation was recorded in the BASIC during the previous twelve months, and (2) no violation in the BASIC was recorded during the latest relevant inspection. For the remaining carriers with five or more relevant inspections resulting in a Vehicle Maintenance BASIC violation, assign the percentile values to each carrier's BASIC.

3.6 Cargo-Related BASIC Assessment

This section describes the calculation of carrier measures and percentile ranks in the Cargo-Related BASIC. This BASIC is defined as:

Failure to properly prevent shifting loads, spilled or dropped cargo, and unsafe handling of hazmat on a CMV. Example violations: improper load securement, cargo retention, and hazmat handling. See Appendix A for a complete list of roadside inspection violations used in the CSMS.

The CSMS assesses the Cargo-Related BASIC using relevant violations recorded during roadside inspections to calculate a measure of each BASIC for individual motor carriers. These measures are used to generate percentile ranks that reflect each carrier's safety posture relative to carriers with similar numbers of relevant inspections.

3.6.1 Calculation of BASIC Measure

The equation used for calculating Cargo-Related BASIC measures is as follows:

$$BASIC\,Measure = \frac{Total\ of\ time\ and\ severity\ weighted\ applicable\ violations}{Total\ time\ \ weight\ of\ relevant\ inspections}$$

Equation 3-7

In this equation, the terms are defined as follows:

An Applicable Violation is defined as any violation recorded in any level roadside inspection that matches the FMCSR and HMR cites listed in the Cargo-Related BASIC (Table 6, Appendix A) during the past 24 months. In cases of multiple counts of the same violation, the CSMS only uses each violation cite once per inspection.

A Relevant Inspection is any Vehicle Inspection (Level 1, 2, 5, or 6), including those that do **not** result in a violation in the BASIC, or any other inspection resulting in applicable BASIC violation.

A Severity Weight is assigned to each applicable violation with a value dependent on two parts: (i) the level of crash risk relative to the other violation cites used in the BASIC measurement, and (ii) whether or not the violation resulted in an OOS condition.

(i) The level of crash risk is assigned to each applicable violation ranging from 1 (less severe) to 10 (most severe); see the Cargo-Related table (Table 6, Appendix A) for the corresponding severity weights of each violation cite.

(ii) An OOS weight of 2 is then added to the severity weight of OOS violations. In cases of multiple counts of the same violation, the OOS weight of 2 applies if any of the counts of the violation are OOS.

The sum of all violation severity weights for any one inspection in any one BASIC is capped at a maximum of 30. This cap of 30 is applied *before* the severity weights are multiplied by the time weight.

Note: The severity weights of violations outside of the BASIC being calculated **do not** count towards the violation cap.

A Time Weight of 1, 2, or 3 is assigned to each applicable violation and each relevant inspection based on its age. Violations/inspections recorded in the past 6 months receive a time weight of 3. Violations/inspections recorded between 6 and 12 months ago receive a time weight of 2. All violations/inspections recorded earlier (older than 12 months but within the past 24 months) receive a time weight of 1. This time weighting places more emphasis on results of recent inspections relative to older inspections.

Note: The time weight is applied to all relevant inspections, including those that do **not** result in a violation in the BASIC.

A Time and Severity Weighted Violation is a violation's severity weight multiplied by its time weight.

3.6.2 Calculation of BASIC Percentile Rank

Based on the BASIC measures, the CSMS applies data sufficiency standards and safety event grouping to assign a percentile rank to carriers that can then potentially receive a CSA intervention or detrimental SFD. The calculation is as follows:

A. Determine the number of relevant vehicle inspections and the number of inspections with at least one BASIC violation. Remove carriers with (1) less than five relevant inspections or (2) no inspections resulting in at least one BASIC violation. For the remaining carriers, place each carrier into one of five groups based on the number of relevant inspections:

Safety Event Group	Number of Relevant Inspections
1	5-10
2	11-20
3	21-100
4	101-500
5	501+

Table 3-9. Safety Event Groups for the Cargo-Related BASIC

B. Within each group, rank all the carriers' BASIC measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest BASIC measure) to 100 (representing the highest BASIC measure). Eliminate carriers that meet both of the following criteria: (1) no violation was recorded in the BASIC during the previous twelve months, and (2) no

violation in the BASIC was recorded during the latest relevant inspection. For the remaining carriers with five or more relevant inspections resulting in a Cargo-Related BASIC violation, assign the percentile values to each carrier's BASIC.

3.7 Crash Indicator Assessment

This section describes the calculation of carrier measures and percentile ranks for the Crash Indicator. The Crash Indicator is defined as:

> Histories or patterns of high crash involvement, including frequency and severity, based on information from state-reported crash reports.

The crash history used by the Crash Indicator is not specifically a behavior; rather, it is the consequence of behavior and may indicate a problem that warrants attention.

The CSMS assesses the Crash Indicator using relevant state-reported crash data reported in MCMIS. Individual carriers' Crash Indicator measures also incorporate carrier size in terms of PUs and annual VMT. These measures are used to generate percentile ranks that reflect each carrier's safety posture relative to carriers in the same segment with similar numbers of crashes.

3.7.1 Calculation of Crash Indicator Measure

The Crash Indicator measure is calculated as the sum of severity and time weighted crashes divided by carrier average PUs multiplied by a Utilization Factor, as follows:

$$Crash\,Indicator\,Measure = \frac{Total\ of\ time\ and\ severity\ weighted\ applicable\ crashes}{Average\ PUs\ x\ Utilization\ Factor}$$

Equation 3-8

In this equation, the terms are defined as follows:

> An Applicable Crash is a state-reported crash that meets the reportable crash standard during the past 24 months. A reportable crash is one that results in at least one fatality; one injury where the injured person is taken to a medical facility for immediate medical attention; or, one vehicle having been towed from the scene as a result of disabling damage caused by the crash (i.e., tow-away).
>
> A Crash Severity Weight places more weight on crashes with more severe consequences. For example, a crash involving an injury or fatality is weighted more heavily than a crash where only a tow-away occurred. A hazmat release also increases the weighting of a crash, as shown in Table 3-9.

Crash Type	Crash Severity Weight
Involves tow-away but no injury or fatality	1

Involves injury or fatality	2
Involves a hazmat release	Crash Severity Weight (from above) + 1

Table 3-10. Crash Severity Weights for Crash Indicator

A Time Weight of 1, 2, or 3 is assigned to each applicable crash based on the time elapsed since the crash occurred. Crashes that occurred within 6 months of the measurement date receive a time weight of 3. Crashes that occurred between 6 and 12 months prior to the measurement date receive a time weight of 2. All crashes that happened later (older than 12 months but within the past 24 months of the measurement date) receive a time weight of 1. This time weighting places more emphasis on recent crashes relative to older crashes.

A Time and Severity Weighted Crash is a crash's severity weight multiplied by its time weight.

Average Power Units (PUs) are used in part to account for each carrier's level of exposure when calculating the BASIC measure. The number of owned, term-leased, and trip-leased PUs (trucks, tractors, hazardous material tank trucks, motor coaches, and school buses) contained in the Census data are used to calculate the PU totals. The average PUs for each carrier is calculated using (i) the carrier's current number of PUs, (ii) the number of PUs the carrier had 6 months ago, and (iii) the number of PUs the carrier had 18 months ago. The average PU calculation is shown below:

$$AveragePU = \frac{PU_{Current} + PU_{6Months} + PU_{18Months}}{3}$$

Equation 3-9

The Utilization Factor is a multiplier that adjusts the average PU values based on the utilization in terms of VMT per average PU where VMT data in the past 24 months are available. The primary sources of VMT information in the Census are: (1) Form MCS-150, filled out by the carrier, and (2) Form MCS-151, filled out by law enforcement as part of an investigation. Carriers are required to update their MCS-150 information biennially. In cases where the VMT data has been obtained multiple times over the past 24 months for the same carrier, the most current positive VMT figure is used. The Utilization Factor is calculated by the following three steps:

(i) Carrier Segment

There are two segments into which each motor carrier is categorized:

- "Combo" – combination trucks/motor coach buses constituting 70% or more of the total PU

- "Straight" – straight trucks/other vehicles constituting more than 30% of the total PU

(ii) VMT per Average PU
The VMT per average PU is derived by taking the most recent positive VMT data and dividing it by the average PUs (defined above).

(iii) Utilization Factor
Given the information in (i) and (ii), the Utilization Factor is determined from the following tables:

Combo Segment	
VMT per Average PU	**Utilization Factor**
< 80,000	1
80,000 - 160,000	1+0.6[(VMT per PU-80,000) / 80,000]
160,000 - 200,000	1.6
> 200,000	1
No Recent VMT Information	1

Table 3-11. VMT per PU for Combo Segment

Straight Segment	
VMT per Average PU	**Utilization Factor**
< 20,000	1
20,000 - 60,000	VMT per PU / 20,000
60,000 - 200,000	3
> 200,000	1
No Recent VMT Information	1

Table 3-12. VMT per Average PU for Straight Segment

3.7.2 Calculation of Crash Indicator Percentile Rank

Based on the Crash Indicator measures, the CSMS applies data sufficiency standards and Safety Event Grouping to assign a percentile rank to carriers that can potentially receive a CSA intervention. The calculation is as follows:

A. Determine the carrier‘s segment:
- "Combo" – combination trucks/motor coach buses constituting 70% or more of the total PU.

- "Straight" – straight trucks/other vehicles constituting more than 30% of the total PU.

B. For carriers with two or more applicable crashes, place each carrier into one of ten groups based on the carrier segment and number of crashes:

Crash Indicator: Combo Segment	
Safety Event Group	**Number of Crashes**
Combo 1	2-3
Combo 2	4-6
Combo 3	7-16
Combo 4	17-45
Combo 5	46+

Table 3-13. Safety Event Groups for Crash Indicator: Combo Segment

Crash Indicator: Straight Segment	
Safety Event Group	**Number of Crashes**
Straight 1	2
Straight 2	3-4
Straight 3	5-8
Straight 4	9-26
Straight 5	27+

Table 3-14. Safety Event Groups for Crash Indicator: Straight Segment

C. Within each group, rank all the carriers‘ Crash Indicator measures in ascending order. Transform the ranked values into percentiles from 0 (representing the lowest indicator measure) to 100 (representing the highest indicator measure). Remove carriers that did not have a crash recorded in the previous twelve months. Carriers that remain retain the previously calculated percentile.

4. DSMS Methodology

The DSMS is the other major component of the SMS, along with the CSMS. Law enforcement officials use the DSMS results to examine the safety performance of individual CMV drivers when conducting CSA investigations. Currently, the DSMS results are being used strictly as an investigative tool for law enforcement and are not available to carriers, drivers, or the public. However, the raw safety information from roadside inspections and crashes that feeds the DSMS is compiled by the same system that provides CMV driver-based data to FMCSA's Driver Pre-Employment Screening Program (PSP). This new program allows motor carriers to access driver inspection and crash records electronically as a part of the hiring process.[4]

This section describes the algorithms used in the DSMS methodology and the computational logic used to calculate the driver measures and percentiles for each BASIC and the Crash Indicator for individual CMV drivers. BASICs that are evaluated similarly are described together.

- Unsafe Driving BASIC and Controlled Substances/Alcohol BASIC
- Fatigued Driving (HOS) BASIC and Driver Fitness BASIC
- Vehicle Maintenance BASIC and Cargo-Related BASIC
- Crash Indicator

4.1 Unsafe Driving BASIC and Controlled Substances/Alcohol BASIC Assessment

This section describes the measurement of the Unsafe Driving BASIC and the Controlled Substances/Alcohol BASIC. The definition of each BASIC is as follows:

- Unsafe Driving BASIC—Operation of CMVs in a dangerous or careless manner. Example violations: speeding, reckless driving, improper lane change, and inattention.
- Controlled Substances/Alcohol BASIC—Operation of CMVs by drivers who are impaired due to alcohol, illegal drugs, and misuse of prescription or over-the-counter medications. Example violations: use or possession of controlled substances or alcohol.

The DSMS assesses both the Unsafe Driving BASIC and Controlled Substances/Alcohol BASIC by using applicable violations recorded during roadside inspections to calculate a measure in each BASIC for individual drivers. These measures are used to generate percentile ranks that reflect drivers' safety postures relative to drivers with applicable violations.

[4] More information about the PSP program can be found on FMCSA's PSP website at http://www.psp.fmcsa.dot.gov/.

APPENDIX B: CVSD INSPECTION GUIDELINE

Obtained from: http://www.cvsa.org/programs/nas_levels.php

Commercial Vehicle Safety Alliance
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Phone: 301-830-6143; Fax: 301-830-6144
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LEVEL I

North American Standard Inspection – An inspection that includes examination of driver's license; medical examiner's certificate and Skill Performance Evaluation (SPE) Certificate (if applicable); alcohol and drugs; driver's record of duty status as required; hours of service; seat belt; vehicle inspection report(s) (if applicable); brake systems; coupling devices; exhaust systems; frames; fuel systems; lighting devices (headlamps, tail lamps, stop lamps, turn signals and lamps/flags on projecting loads); securement of cargo; steering mechanisms; suspensions; tires; van and open-top trailer bodies; wheels, rims and hubs; windshield wipers; emergency exits and/or electrical cables and systems in engine and battery compartments (buses), and HM/DG requirements as applicable. HM/DG required inspection items will be inspected by certified HM/DG inspectors.

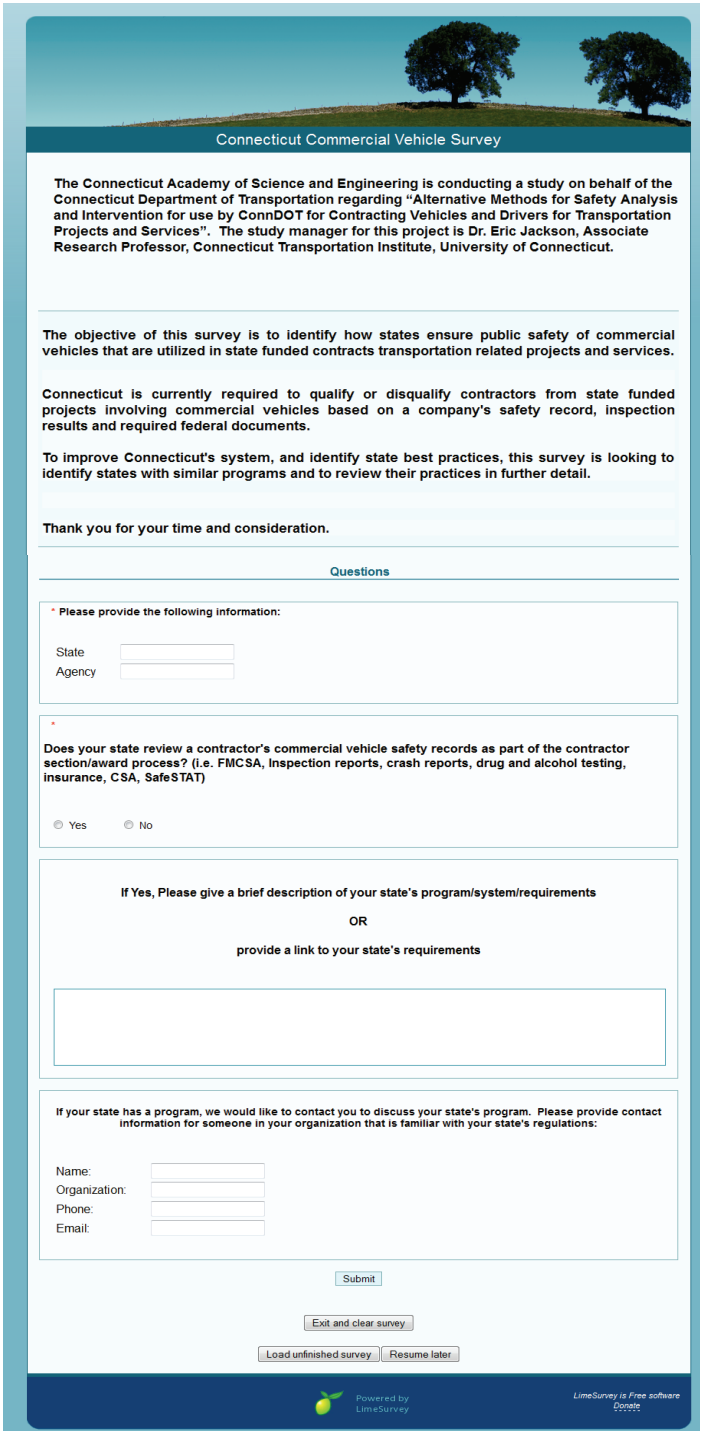
LEVEL II

Walk-Around Driver/Vehicle Inspection – An examination that includes each of the items specified under the North American Standard Level II Walk-Around Driver/Vehicle Inspection Procedure. As a minimum, Level II inspections must include examination of: driver's license; medical examiner's certificate and Skill Performance Evaluation (SPE) Certificate (if applicable); alcohol and drugs; driver's record of duty status as required; hours of service; seat belt; vehicle inspection report(s) (if applicable); brake systems; coupling devices; exhaust systems; frames; fuel systems; lighting devices (headlamps, tail lamps, stop lamps, turn signals and lamps/flags on projecting loads); securement of cargo; steering mechanisms; suspensions; tires; van and open-top trailer bodies; wheels, rims and hubs; windshield wipers; emergency exits and/or electrical cables and systems in engine and battery compartments (buses), and HM/DG requirements as applicable. HM/DG required inspection items will be inspected by certified HM/DG inspectors. It is contemplated that the walk-around driver/vehicle inspection will include only those items that can be inspected without physically getting under the vehicle.

LEVEL III

Driver/Credential Inspection – An examination that includes those items specified under the North American Standard Level III Driver/Credential Inspection Procedure. As a minimum, Level III inspections must include, where required and/or applicable, examination of the driver's license; medical examiner's certificate and Skill Performance Evaluation (SPE) Certificate; driver's record of duty status; hours of service; seat belt; vehicle inspection report(s); and HM/DG requirements. Those items not indicated in the North American Standard Level III Driver/Credential Inspection Procedure shall not be included on a Level III inspection.

APPENDIX C:
NATIONAL COMMERCIAL VEHICLE CONTRACTING SURVEY



Connecticut Commercial Vehicle Survey

The Connecticut Academy of Science and Engineering is conducting a study on behalf of the Connecticut Department of Transportation regarding "Alternative Methods for Safety Analysis and Intervention for use by ConnDOT for Contracting Vehicles and Drivers for Transportation Projects and Services". The study manager for this project is Dr. Eric Jackson, Associate Research Professor, Connecticut Transportation Institute, University of Connecticut.

The objective of this survey is to identify how states ensure public safety of commercial vehicles that are utilized in state funded contracts transportation related projects and services.

Connecticut is currently required to qualify or disqualify contractors from state funded projects involving commercial vehicles based on a company's safety record, inspection results and required federal documents.

To improve Connecticut's system, and identify state best practices, this survey is looking to identify states with similar programs and to review their practices in further detail.

Thank you for your time and consideration.

Questions

* **Please provide the following information:**

State
Agency

*

Does your state review a contractor's commercial vehicle safety records as part of the contractor section/award process? (i.e. FMCSA, Inspection reports, crash reports, drug and alcohol testing, insurance, CSA, SafeSTAT)

Yes No

If Yes, Please give a brief description of your state's program/system/requirements

OR

provide a link to your state's requirements

If your state has a program, we would like to contact you to discuss your state's program. Please provide contact information for someone in your organization that is familiar with your state's regulations:

Name:
Organization:
Phone:
Email:

Submit

Exit and clear survey

Load unfinished survey Resume later

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APPENDIX D:
2011 PERCENT OUT-OF-SERVICE RATE BY STATE

State	OOS Rate
Utah	50.30
Connecticut	47.71
Nebraska	43.64
Rhode Island	39.75
Idaho	39.34
Minnesota	38.44
New York	37.21
Virginia	36.61
Alaska	36.57
Wyoming	35.11
Kentucky	34.22
Missouri	33.32
Pennsylvania	32.93
Mississippi	32.37
Massachusetts	32.19
Colorado	31.91
South Carolina	31.79
New Jersey	31.64
Arkansas	31.33
Georgia	30.23
Maine	29.85
Oklahoma	29.03
Florida	28.86
New Hampshire	28.49
South Dakota	28.18
Ohio	28.11

State	OOS Rate
Louisiana	27.76
Wisconsin	27.73
California	27.6
Illinois	26.23
Vermont	25.79
DC	24.61
Washington	24.18
Iowa	23.91
North Carolina	23.00
New Mexico	22.80
Maryland	22.58
Alabama	22.56
Montana	22.51
Indiana	22.09
Tennessee	21.86
Arizona	20.72
Hawaii	20.26
Texas	19.95
Kansas	19.56
Michigan	19.25
Delaware	17.81
West Virginia	17.58
Oregon	16.92
North Dakota	15.87
Nevada	12.40

MAJOR STUDIES OF THE ACADEMY

2011

- Advances in Nuclear Power Technology
- Guidelines for the Development of a Strategic Plan for Accessibility to and Adoption of Broadband Services in Connecticut

2010

- Environmental Mitigation Alternatives for Transportation Projects in Conecticut
- The Design-Build Contracting Methodology for Transportation Projects: A Review of Practice and Evaluation for Connecticut Applications
- Peer Review of an Evaluation of the Health and Environmental Impacts Associated with Synthetic Turf Playing Fields

2009

- A Study of the Feasibility of Utilizing Waste Heat from Central Electric Power Generating Stations and Potential Applications
- Independent Monitor Report: Implementation of the UCHC Study Recommendations

2008

- Preparing for Connecticut's Energy Future
- Applying Transportation Asset Management in Connecticut
- A Study of Weigh and Inspection Station Technologies
- A Needs-Based Analysis of the University of Connecticut Health Center Facilities Plan

2007

- A Study of the Feasibility of Utilizing Fuel Cells to Generate Power for the New Haven Rail Line
- Guidelines for Developing a Strategic Plan for Connecticut's Stem Cell Research Program

2006

- Energy Alternatives and Conservation
- Evaluating the Impact of Supplementary Science, Technology, Engineering and Mathematics Educational Programs
- Advanced Communications Technologies
- Preparing for the Hydrogen Economy: Transportation
- Improving Winter Highway Maintenance: Case Studies for Connecticut's Consideration
- Information Technology Systems for Use in Incident Management and Work Zones
- An Evaluation of the Geotechnical Engineering and Limited Environmental Assessment of the Beverly Hills Development, New Haven, Connecticut

2005

- Assessment of a Connecticut Technology Seed Capital Fund/Program
- Demonstration and Evaluation of Hybrid Diesel-Electric Transit Buses
- An Evaluation of Asbestos Exposures in Occupied Spaces

2004

- Long Island Sound Symposium: A Study of Benthic Habitats
- A Study of Railcar Lavatories and Waste Management Systems

2003

- An Analysis of Energy Available from Agricultural Byproducts, Phase II: Assessing the Energy Production Processes
- Study Update: Bus Propulsion Technologies Available in Connecticut

2002

- A Study of Fuel Cell Systems
- Transportation Investment Evaluation Methods and Tools

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web: www.ctcase.org

Connecticut Academy of Science and Engineering

The Connecticut Academy is a non-profit institution patterned after the National Academy of Sciences to identify and study issues and technological advancements that are or should be of concern to the state of Connecticut. It was founded in 1976 by Special Act of the Connecticut General Assembly.

Vision

The Connecticut Academy will foster an environment in Connecticut where scientific and technological creativity can thrive and contribute to Connecticut becoming a leading place in the country to live, work and produce for all its citizens, who will continue to enjoy economic well- being and a high quality of life.

Mission Statement

The Connecticut Academy will provide expert guidance on science and technology to the people and to the State of Connecticut, and promote its application to human welfare and economic well-being.

Goals

- Provide information and advice on science and technology to the government, industry and people of Connecticut.
- Initiate activities that foster science and engineering education of the highest quality, and promote interest in science and engineering on the part of the public, especially young people.
- Provide opportunities for both specialized and interdisciplinary discourse among its own members, members of the broader technical community, and the community at large.

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