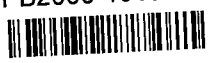

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MAKING ITS/CVO HAPPEN: PENNSYLVANIA'S ITS/CVO BUSINESS PLAN

Prepared for

Commonwealth of Pennsylvania
Department of Transportation and
the Mid-Atlantic Universities Transportation Center

by

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PTI 9923

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The ITS/CVO Business Plan was developed in three phases: Phase I, where a Steering Committee was established to develop a strategic view for the ITS/CVO Business Plan; Phase II, where input from state motor carrier agencies and the motor carrier industry was solicited to identify problems in current CVO processes and potential solutions; and Phase III, which utilized the results of Phase II to develop the Draft ITS/CVO Business Plan in partnership with key ITS/CVO stakeholder groups.

This business plan will be used to coordinate the deployment of CVO technologies in Pennsylvania. It provides a "roadmap" for Pennsylvania's ITS/CVO program by defining broad goals and objectives, as well as specific projects, milestones, responsibilities, and funding levels. The objectives of the ITS/CVO business plan are to provide a framework for identifying problems in current CVO processes and opportunities for applying ITS to address these problems; achieve consensus on the ITS/CVO projects and policies among state agencies and the motor carrier industry; ensure that all ITS/CVO projects are developed and deployed in a coordinated manner; and serve as a concise program summary for distribution to state agencies, legislators, the general public, and other states.

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Pennsylvania Department of Transportation
Pennsylvania State Police
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Pennsylvania Public Utility Commission
Pennsylvania Department of Revenue
Federal Highway Administration
Pennsylvania Motor Truck Association
Pennsylvania Bus Association
American Automobile Association
and
The Pennsylvania State University

ACKNOWLEDGMENT

A key aspect of Pennsylvania's ITS/CVO Business Plan is that it is truly a joint effort of government, industry, and academia focusing on improving highway safety and motor carrier productivity through the use of technology. Each of these partners brought along a unique and valuable viewpoint on ITS that served to strengthen the overall program. The partners were:

- Pennsylvania Department of Transportation (PennDOT),
- Pennsylvania State Police,
- Pennsylvania Turnpike Commission,
- Pennsylvania Public Utility Commission (PUC),
- Pennsylvania Department of Revenue,
- Federal Highway Administration,
- Pennsylvania Motor Truck Association (PMTA),
- American Automobile Association,
- Pennsylvania Bus Association, and
- The Pennsylvania State University.

The authors of this report extend their sincere thanks to the members of the above organizations who participated in the various aspects of this study.

TABLE OF CONTENTS

LIST OF EXHIBITS

EXECUTIVE SUMMARY

This ITS/CVO[1] business plan was organized and developed as a partnership of the Pennsylvania Department of Transportation, Pennsylvania State Police, Pennsylvania Turnpike Commission, Pennsylvania Public Utility Commission, Pennsylvania Department of Revenue, Federal Highway Administration, Pennsylvania Motor Truck Association, American Automobile Association, Pennsylvania Bus Association, and The Pennsylvania State University.

The ITS/CVO Business Plan was developed in three phases, as follows:

- Phase I, where a Steering Committee was established to develop a strategic view for the ITS/CVO Business Plan;
- Phase II, where input from the state motor carrier agencies and the motor carrier industry was solicited to identify problems in current CVO processes and potential solutions; and
- Phase III, which utilized the results of Phase II to develop the Draft ITS/CVO Business Plan during a workshop where representatives of key ITS/CVO stakeholder groups met to jointly develop the plan's goals and objectives. The Steering Committee finalized the Business Plan, which was reviewed by the involved stakeholder groups in a consensus building effort.

The following mission statement was developed by the Business Plan Steering Committee to define the overall, long-range direction for the Commonwealth's ITS/CVO program.

Pennsylvania's ITS/CVO Mission Statement
The Commonwealth, together with its partners, will utilize appropriate intelligent transportation systems, technologies, and strategies to enhance the safety, efficiency, and management of commercial vehicle operations.

ITS/CVO BUSINESS PLAN GOALS AND OBJECTIVES

Goals and objectives for the ITS/CVO Business Plan were developed for each of five broad program areas. The program areas and their associated goals are:

[1]Definitions for the acronyms used and other important terms are provided in the glossary to this document.

- **Safety Goals**
  - Develop a system to obtain and disseminate accurate, pertinent motor carrier safety data.
  - Increase overall quality and efficiency of the inspection process.
  - Establish adequate rest/safety areas.

- **Administration Goals**
  - Pursue innovative and creative means to increase efficiency in the administrative aspects of a commercial vehicle operations system by eliminating redundant functions, sharing information, and incorporating the appropriate technologies.

- **Incident Management Goals**
  - Develop and deploy ITS/CVO communication techniques.
  - Target high-incident areas/locations.
  - Ensure appropriate incident responses.
  - Improve real-time traveler information/detours.
  - Improve education, training, and outreach related to incident management.

- **Motor Carrier Management Goals**
  - Develop a secure system to disseminate information to only the specific motor carrier and the administering state and federal agencies.
  - Deploy technology to benefit both carriers and regulatory agencies.
  - Utilize field data to augment existing data to enhance carrier operations.

- **Education, Outreach, and Research Goals**
  - Provide government agency personnel with background knowledge concerning key issues.
  - Provide elected officials with knowledge of the benefits of ITS/CVO deployment.
  - Provide local municipal personnel with the knowledge and skills necessary to support ITS/CVO deployment.
  - Increase industry and general public awareness of ITS/CVO.
  - Fully describe the potential risks, benefits, and costs posed by ITS/CVO.
  - Develop ITS/CVO training materials that meet state needs.
  - Develop an ITS/CVO research program to close critical gaps.

INTRODUCTION

The productivity of Pennsylvania's trucking industry and the efficiency of the state agencies that administer the motor carrier industry are of vital concern to both the government and citizens of the Commonwealth. The various state agencies responsible for administering this important industry are searching for new and innovative ways to enhance the efficiency of their operations and the trucking business while reducing the administrative burden on motor carriers.

Currently, the Pennsylvania Department of Transportation is deploying many new transportation-related technologies called intelligent transportation systems (ITS). ITS provides an additional mechanism for improving the state's roadways while minimizing many of the adverse impacts of auto and truck travel.

ITS involves the application of advanced information, electronic, communications, and other technologies to solve surface transportation problems. ITS technologies have been grouped into the following seven "User Service" bundles:

- Travel and Transportation Management.
- Travel Demand Management.
- Public Transportation Operations.
- Electronic Payment.
- Commercial Vehicle Operations.
- Emergency Management.
- Advanced Vehicle Control and Safety Systems.

THE BENEFITS OF ITS DEPLOYMENT

The U.S. Department of Transportation has stated that intelligent transportation systems deployment will help to:

- Improve roadway safety;
- Reduce congestion;
- Enhance mobility;
- Minimize transportation's environmental impacts;
- Save energy;
- Promote economic productivity; and
- Develop a viable U.S. ITS industry.

The Pennsylvania Department of Transportation is undertaking specific actions to exploit all these potential benefits while, at the same time, meeting the commonwealth's strategic planning goals.

PENNSYLVANIA'S ITS STRATEGIC PLAN

Pennsylvania has developed a Statewide ITS Strategic Plan to guide ITS deployment in the Commonwealth. The strategic plan sets forth the following vision statement for ITS in the state:

> To better serve our customers, PennDOT will, together with its partners, develop and deploy appropriate intelligent transportation strategies to enhance the safety, efficiency, and management of the Commonwealth's transportation system.

The Statewide ITS Strategic Plan has six goals supporting the state's ITS vision. These goals address the various implementation issues related to ITS deployment. The goals are:

Goal 1: Improve transportation safety, efficiency, and reliability using Intelligent Transportation Systems strategies.

Goal 2: Establish a broad-based, multidisciplinary organizational structure to facilitate the planning, design, deployment, operations, and maintenance of Intelligent Transportation Systems services.

Goal 3: Foster and encourage public, private, and academic partnerships to implement Intelligent Transportation Systems applications.

Goal 4: Allocate appropriate funding commensurate with program commitments and seek alternative financial mechanisms to manage and implement Pennsylvania's Intelligent Transportation Systems Program.

Goal 5: Address key legislative, regulatory and policy issues to expedite Intelligent Transportation Systems service delivery.

Goal 6: Heighten awareness of Intelligent Transportation Systems among customers and stakeholders.

Pennsylvania's ITS/CVO Business Plan (this document) has been developed to support the above goals for the national and state ITS programs.

COMMERCIAL VEHICLE OPERATIONS

One component of ITS, called commercial vehicle operations (CVO), is of particular interest to the trucking industry. The ITS/CVO user services will benefit both the government and the motor carrier industry by improving the efficiency and safety of commercial vehicle operations. These services can be further divided into those that benefit carriers through increased productivity and those that benefit government agencies through streamlined

administrative functions. The sharing of information between the different users forms the basis of these technologies. ITS/CVO technologies will contribute to the following goals of the national ITS program:

- Reducing energy and environmental impacts by reducing the number of times and the length of time that commercial vehicles have to stop for inspections, weighing, or toll payment.
- Improving safety by improving and automating the inspection process.
- Enhancing productivity through reduced travel times, improved fleet management, and reduced administrative costs.
- Enhanced mobility through electronic clearance and improved fleet management.
- Increasing efficiency by improving highway capacity and reducing the impacts of hazardous material incidents.

ITS/CVO services and technologies include the following six ITS technology groups:

- Commercial Vehicle Electronic Clearance can allow transponder-equipped vehicles with proper clearance to pass inspection and weigh sites without stopping.
- Automated Roadside Safety Inspections allow roadside access to carrier, vehicle, and driver safety performance records. It will also automate some parts of the roadside inspection process through the use of advanced sensors and diagnostics.
- On-Board Safety Monitoring senses the safety status of the vehicle, cargo, and driver and warns the driver of any unsafe conditions.
- Commercial Vehicle Administrative Processes reduce carrier and administrative paperwork by allowing for electronic purchasing of credentials and automated reporting of mileage and fuel use.
- Hazardous Material Incident Response facilitates the response to hazardous material incidents by making data on cargo contents available to response teams.
- Commercial Fleet Management services allow dispatchers to communicate with drivers and intermodal service providers so that the reliability of pickups and deliveries can be improved.

DEVELOPING PENNSYLVANIA'S ITS/CVO BUSINESS PLAN

This business plan will be used to coordinate the deployment of CVO technologies in Pennsylvania. It provides a "roadmap" for Pennsylvania's ITS/CVO program by defining broad goals and objectives, as well as specific projects, milestones, responsibilities, and funding levels. The objectives of the ITS/CVO business plan are to:

- Provide a framework for identifying problems in current CVO processes and opportunities for applying ITS to address these problems;
- Achieve consensus on the ITS/CVO projects and policies among state agencies and the motor carrier industry;
- Ensure that all ITS/CVO projects are developed and deployed in a coordinated manner; and
- Serve as a concise program summary for distribution to state agencies, legislators, the general public, and other states.

A PUBLIC-PRIVATE PARTNERSHIP

Pennsylvania's ITS/CVO Business Plan is a joint effort of government, industry, and academia focused on improving highway safety and motor carrier productivity through the use of technology. Each of these partners has a unique and valuable viewpoint on ITS that will strengthen the overall program. The partners are:

- Pennsylvania Department of Transportation,
- Pennsylvania State Police,
- Pennsylvania Turnpike Commission,
- Pennsylvania Public Utility Commission,
- Pennsylvania Department of Revenue,
- Federal Highway Administration,
- Pennsylvania Motor Truck Association,
- American Automobile Association,
- Pennsylvania Bus Association, and
- The Pennsylvania State University.

MOTOR CARRIER INVOLVEMENT

The inclusion of motor carrier representatives in the ITS/CVO business planning process was critical to its success. Representatives from several motor carriers and the Pennsylvania Motor Truck Association are active members of the overall Steering Committee. In addition, approximately 40 motor carrier representatives participated in a two-day planning workshop, where they worked closely with government representatives to develop the actual ITS/CVO Business Plan. Finally, motor carrier representatives participated in a consensus-building process to finalize the business plan, and they are expected to participate in all subsequent phases of the ITS/CVO vision described in this document.

IMPLEMENTATION STEPS

For each of the goals defined in this business plan, there are specific implementation steps that will be defined in more detail in the near future. However, the business plan has defined the principles that will guide the following activities:

- Statewide and Region-Wide Early Deployment Plans,
- Interstate ITS Coordinating Efforts and Coalitions,
- Federal Legislative and Administrative Initiatives that Focus on Pennsylvania,
- ITS Public/Private Partnerships that are based in the Commonwealth, and
- Current ITS Implementation and Deployment Initiatives.

PROJECT FUNDING

The development of this business plan was supported by a grant from the Federal Highway Administration's ITS/CVO Mainstreaming funds and matching funds from the Pennsylvania Department of Transportation, the Mid-Atlantic Universities Transportation Center at the Pennsylvania Transportation Institute, and the Center for Intelligent Transportation Systems (CITranS) of the College of Engineering, The Pennsylvania State University.

OVERVIEW OF THE BUSINESS PLANNING PROCESS

Pennsylvania's ITS/CVO Business Plan was developed in three phases as shown in exhibit 1 and described in the following:

- Phase I established a Steering Committee to develop a strategic view for the ITS/CVO Business Plan. The Steering Committee included representatives from all of the state agencies having CVO responsibilities, the motor carrier industry, the Federal Highway Administration (FHWA), and The Pennsylvania State University.

- Phase II solicited input from the state motor carrier agencies and the motor carrier industry to identify problems in current CVO processes and potential solutions. During this phase, an outreach program was conducted to inform the motor carrier industry about ITS/CVO and the business planning process.

- Phase III utilized the results of Phase II to develop the *Draft ITS/CVO Business Plan* during a workshop where representatives of key ITS/CVO stakeholder groups met to jointly develop the plan's goals and objectives. The Steering Committee finalized the business plan, which was reviewed by the involved stakeholder groups in a consensus-building effort.

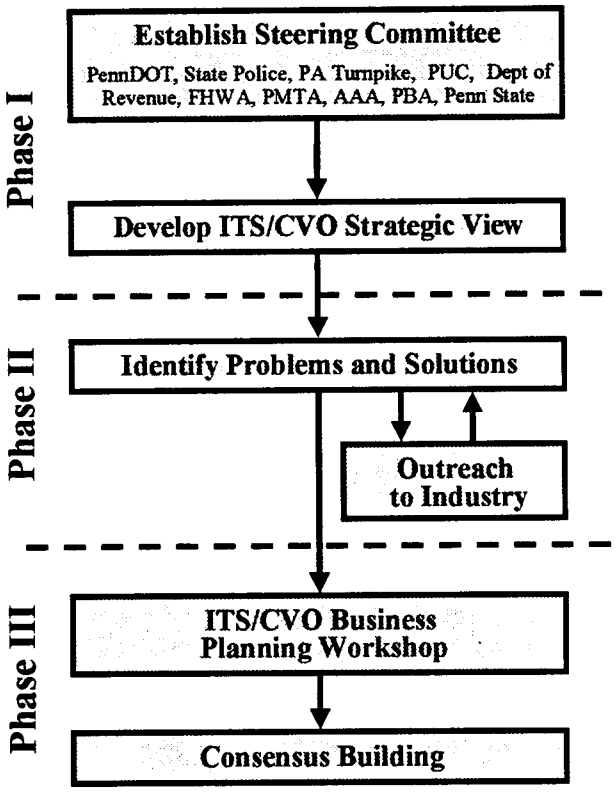

Exhibit 1. Business Planning Process.

COMMERCIAL VEHICLE OPERATIONS IN PENNSYLVANIA

OVERVIEW

Pennsylvania is centrally located in the mid-Atlantic region of the United States and has more that 1,700 miles of Interstate highways and nearly 4,000 miles of other major roadways included in the National Highway System. Because of its location and dense road network, the Commonwealth experiences a high level of through truck traffic in addition to that generated within the state.

Truck Travel in Pennsylvania

Statewide, commercial vehicles travel more than 7.1 trillion miles annually. Overall, trucks account for more than 10 percent of all vehicle miles on Pennsylvania's major roadways and on the rural Interstates the truck mileage exceeds 25 percent.[1] Pennsylvania ranks third in the nation in the value of truck shipments in and through the Commonwealth ($668 trillion annually), of which 88 percent are interstate shipments. Total truck ton-miles of travel in Pennsylvania is 43 trillion annually, which ranks fifth nationally, with 81 percent involving interstate shipments.[2]

Motor Carrier Safety in Pennsylvania

In 1997, 7,530 crashes involving large trucks occurred in Pennsylvania. Of these crashes, 188 involved fatalities and 4,198 involved non-fatal injuries.[3] Pennsylvania enforcement personnel conduct approximately 50,000 safety inspections and weigh more than 400,000 vehicles annually.

Pennsylvania's CVO Administrative Activities

Currently, there are more than 90,000 commercial trucks (tractors and multi-axle trucks) and 125,000 commercial trailers registered in Pennsylvania.[4] These vehicles are owned and

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[1]Estimated from: U.S. Department of Transportation, *Annual Vehicle Miles of Travel and Related Data*, FHWA-PL-96-024, June 1996.

[2]U.S. DOT, Bureau of Transportation Statistics, *TranStats*, BTS/97-TS/1, May 1997.

[3]Pennsylvania Department of Transportation, Bureau of Highway Safety and Traffic Engineering, *1997 Pennsylvania Crash Facts & Statistics*, 1998.

[4]U.S. DOT, Federal Highway Administration, *1996 Highway Statistics*, Tables MV-9 and MV-11, 1996.

operated by more than 4,000 firms.[1] More than 350,000 Commercial Driver Licenses (CDL) are currently in force in the state. Additionally, Pennsylvania also has more than 100 intercity bus companies operating approximately 9,000 buses.

Regional Organizations

Pennsylvania is an active participant in the CVO activities of the I-95 Corridor Coalition and has previously been the lead state for the Eastern States Consortium.

PENNSYLVANIA'S CURRENT CVO PROGRAMS

Motor Carrier Agency Responsibility in Pennsylvania

Currently, five state agencies have responsibility for some aspect of CVO administration. In several cases, multiple agencies share responsibility for a particular activity. The five agencies are:

- Pennsylvania Department of Transportation (PennDOT)
  - Bureau of Motor Vehicles (BMV)
  - Bureau of Driver Licensing (BDL)
  - Motor Carrier Division
  - Deputate for Planning
- Pennsylvania State Police
- Pennsylvania Turnpike Commission (PTC)
- Pennsylvania Public Utility Commission (PUC)
- Pennsylvania Department of Revenue, Bureau of Motor Fuels Taxes

Following is a brief discussion of each agency's CVO responsibilities. Exhibit 2 presents the same information as a matrix.

Pennsylvania Department of Transportation

PennDOT has responsibility for a wide variety of CVO activities, including vehicle registration, driver licensing, safety inspections, weight enforcement, and planning.

The BMV maintains in excess of 2,000,000 commercial vehicle registrations and processes more than 500,000 CVO registration-related transactions per year. The Bureau is responsible for providing the appropriate credentials to motor carriers as well as collecting the necessary registration and title fees. The BMV also issues USDOT numbers to new Pennsylvania-based carriers.

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[1]U.S. DOT, Bureau of Transportation Statistics, *Freight Transportation in Pennsylvania*, October 1996.

The BDL manages all aspects of issuing CDL's in the state, including driver testing. Currently, there are more than 350,000 CDL's in force in Pennsylvania. The BDL processes more than 100,000 CDL-related transactions per year.

The Motor Carrier Division is the lead agency for Pennsylvania's Motor Carrier Safety Assistance Program (MCSAP) activities. In addition to maintaining the state's MCSAP files, PennDOT inspectors conduct approximately 15,000 roadside inspections per year. PennDOT is also responsible for conducting the Commonwealth's weight enforcement activities, weighing more than 350,000 commercial vehicles each year. PennDOT also issues approximately 305,000 over-size/over-weight permits annually.

Pennsylvania State Police

State Police troopers conduct approximately 25,000 MCSAP roadside inspections per year. The PSP also has responsibility for conducting weight enforcement activities in conjunction with PennDOT. The joint weight-enforcement efforts result in approximately 350,000 commercial vehicle weighings per year. PSP troopers also provide escorts for approximately 1,200 permitted special loads annually. The State Police also has responsibility for enforcing commercial vehicle registration, CDL and fuel tax provisions as well as the enforcement of all other traffic laws pertaining to commercial vehicles and drivers.

Pennsylvania Department of Revenue

The Department's Bureau of Motor Fuels Taxes is responsible for all aspects of Pennsylvania's fuels tax activities. The Bureau provides tax credentials, collects taxes, audits accounts and conducts tax-related enforcement activities as appropriate. The Bureau maintains more than 75,000 active motor carrier accounts and conducts more than 25,000 CVO-related transactions per year.

Pennsylvania Turnpike Commission

The Turnpike Commission is responsible for issuing oversize, overweight, and hazardous materials permits to trucks traveling on the roadways it operates. The Commission is planning to implement an electronic toll collection system (EZ-Pass) by the year 2000 in the eastern portion of the state. EZ-Pass will be available statewide by the year 2002. There are plans to coordinate the Turnpike's current credit card system with the electronic toll collection system.

Pennsylvania Public Utility Commission

The Motor Carrier Services Enforcement Division of the PUC is involved in all areas of motor carrier transportation regulation. Personnel from the PUC perform more than 20,000 MCSAP roadside safety inspections annually. In addition, the Commission's inspectors also perform MCSAP safety audits. Staff from this division also ensure that all motor carriers operating in Pennsylvania maintain appropriate insurance and process motor carrier applications and tariff filings.

Exhibit 2. CVO responsibility in Pennsylvania

CVO Activities	CVO Agencies				
	PennDOT	State Police	Dept. of Revenue	PUC	Turnpike Commission
Operating Authority & Financial Responsibility	✔			✔	
Vehicle Registration	✔				
Fuels Tax Administration			✔		
Oversize & Overweight Permits	✔				✔
Commercial Driver Licensing	✔				
Hazardous Materials Registration & Permitting					✔
Toll Collection					✔
Size & Weight Enforcement	✔	✔			✔
Safety Inspections	✔	✔		✔	
Compliance Reviews				✔	

OTHER ISSUES

Following is a list of other issues and ITS/CVO systems and programs considered during the development of the Business Plan.

Single State Registration System

Effective in 1994 under ISTEA, the Single State Registration System (SSRS) provides a mechanism for interstate carriers to utilize a single state to register authority, collect identification fees and evidence of insurance, and notify the other participating jurisdictions in which the carrier's fleet accrues mileage. This "single state" may be the carrier's state of license registration or the registration system participant state in which it operates most interstate fleet mileage. Thirty-eight states nationwide currently participate in the SSRS.

International Registration Plan

The International Registration Plan (IRP) is the agreement in nearly universal use in the United States and portions of Canada for proportional registration of commercial motor vehicles, which operate in multiple jurisdictions. Under the IRP proportional registration, registration fees are collected from a motor carrier by a single jurisdiction and then apportioned and remitted to all other jurisdictions in which the carrier's fleet operates.

International Fuel Tax Agreement

Motor fuel taxes are collected in virtually every state and are the dominant source of revenue from motor carriers. Motor carriers must file mileage reports and tax payments for each individual state. The International Fuel Tax Agreement (IFTA) was established in 1982 by Arizona, Iowa, and Washington to encourage uniform administration of motor carrier fuel taxation laws, and to establish a base state arrangement for collecting and administrating fuel use taxes. ISTEA mandated that all states join IFTA by September 1996. Under IFTA, states administer fuel tax credentials and reporting only for their "base state" interstate carriers.

Commercial Driver Licensing

The national Commercial Driver's License (CDL) program was created by the Commercial Motor Vehicle Safety Act of 1986, which requires that every driver (whether intrastate or interstate) has only one commercial license and is actually qualified to operate heavy-duty vehicles. Commercial drivers must also have a valid medical certificate (renewed every two years). Commercial driver licensing, medical certification, operating hours, and log requirements are spelled out in Federal Motor Carrier Safety Regulations.

Size and Weight Restrictions and Permitting

Each state has statutes that govern the size and weight of vehicles using roads and highways in the state. In addition to regulating the size and weight of commercial vehicles on state roads, states are responsible for enforcement of federal weight and dimension statutes. The Surface Transportation Assistance Act of 1982 and the Tandem Truck Safety Act of 1984 established a national network of highways, as a designated large truck network. An "Interstate Standard" truck (a truck measuring up to 102-in wide and 13-ft 6-in high) can travel unimpeded on the network and can petition for reasonable access over local roads to terminals and other freight conditions. The legal federal weight limits are 20,000 lb on a single axle, 34,000 lb on tandem axles, and 80,000 lb gross vehicle weight. Enforcement of size and weight regulations is a state responsibility carried out at fixed weigh stations and using portable roadside equipment for selective enforcement (i.e., Automatic Vehicle Location and WIM sensors).

Vehicle Safety Inspections and Reviews

Federal motor carrier safety regulations set standards for the safe operation of commercial vehicles by qualified drivers. Motor carriers are subject to more than 200 individual safety regulations, which are published in Title 49 of the Code of Federal Regulations (49 CFR). The goal of these regulations is to improve the safety of commercial vehicle operations by reducing the incidence of mechanical defects and unqualified drivers, both of which contribute to the number and severity of accidents. The enforcement of safety regulations is assisted by federal funding under the Motor Carrier Safety Assistance Program. Inspections performed under the MCSAP are conducted in accordance with standards developed by the Commercial Vehicle Safety Alliance (CVSA). The CVSA, in cooperation with FHWA, developed five levels of inspection under MSCAP: the North American Standard, the Walk Around Driver/Vehicle Inspection, the Driver Only Inspection, the Special Inspection, and the Terminal Inspection.

Carrier Reviews

The carrier Compliance Review (CR) program is an essential element of the FHWA's motor carrier safety program. The CR process is an on-site assessment. One of the assessment goals is to determine whether a motor carrier has adequate safety management controls in place. In addition, the CR process involves examining carrier records to ensure that the carrier meets all safety-related regulations and has no unsafe operating practices. Currently, each carrier receives a rating of satisfactory, conditional, or unsatisfactory based upon the results of the CR.

Safety and Fitness Electronic Record

A major component of the national CVO initiatives was the development of the Safety and Fitness Electronic Record (SAFER) software program. SAFER is a software program that enables the enforcement community to transmit and receive data on CVO safety, credentials, and inspections to and from the roadside. The SAFER Data Mailbox was designed as an electronic mailbox that would store "real time" information on a particular vehicle during that vehicle's current trip. For example, if a vehicle traveling from New Jersey to Virginia was inspected in Delaware, the results of this inspection would be electronically sent to the SAFER Data Mailbox, and would be available to the enforcement community in Maryland and Virginia.

Commercial Vehicle Information Systems and Networks Project

In early 1996, the FHWA invited Maryland and Virginia to become prototype states for the Commercial Vehicle Information Systems and Networks Project (CVISN). CVISN was designed as a national architecture for application of ITS/CVO to promote the seamless and safe movement of goods, services, and people. The CVISN architecture defined specific standards for electronic transmission of CVO-related data, the EDI X-12 transmission set, and specified the development of a standard for short-range communication, the Dedicated Short-Range Communication Standard (DSRC).

PRISM

The Performance and Registration Information Systems Management (PRISM) program, formerly referred to as the Commercial Vehicle Information System (CVIS), began as a mandate by Congress to explore the potential of linking the commercial vehicle registration process to motor carrier safety. The PRISM program includes two major processes — the Commercial Vehicle Registration Process, and the Motor Carrier Safety Improvement Process (MCSIP) that work in parallel to identify motor carriers and hold them responsible for the safety of their operation. The performance of unsafe carriers is improved through a comprehensive system of identification, education, awareness, safety monitoring, and treatment.

The commercial vehicle registration process of the states provides the framework for the PRISM program. It serves two vital functions. First, it establishes a system of accountability by ensuring that no vehicle is plated without identifying the carrier responsible for the safety of the vehicle during the registration year. Second, the use of registration sanctions (denial, suspension and revocation) serves as a powerful incentive for unsafe carriers to improve their safety performance.

On the other hand, MCSIP is the means by which carrier safety is systematically tracked and improved. The process is designed to improve a carrier's safety performance. Carriers who have demonstrated poor safety performance will be handled via appropriate administrative or criminal enforcement procedures.

The results of the PRISM program far exceeded FHWA's expectations in terms of benefits, cost effectiveness, and operational feasibility and produced major safety, economic, and productivity benefits, including: accountability, performance-based approach to safety management, development of the Motor Carrier Safety Status (SafeStat) prioritization methodology, and improvement of data quality.

CURRENT ITS ACTIVITIES IN PENNSYLVANIA

Following is a list of many of the planned and current ITS projects and programs in Pennsylvania.

- **Commercial Vehicle Operations Support Equipment**—This equipment (notebook computers and associated peripheral equipment) will support Pennsylvania's roadside commercial vehicle inspection activities.

- **Statewide Operations Center**—This project involves the installation of variable message signs (VMS) and dynamic highway advisory radios (HAR) at key decision points along the Interstate highway system in Pennsylvania. These systems will be controlled by a Statewide Operations Center located in the Harrisburg area.

- **Interstate Highway Rollover Project**—This project involves the installation of a permanent variable message sign system on I-80 that will provide travel advisories to reduce the number of accidents occurring on the roadway segment. Weather and other information could also be provided by the VMS.

- **Freeway Surveillance and Control System (FSCS) in District 11-0**—This project involves the installation of six closed-circuit television (CCTV) cameras, six microwave detectors, three miles of fiber optic cable, two VMSs, and one highway advisory radio (HAR) connected to the Pittsburgh Traffic Management Center.

- **Traffic and Incident Management System (TIMS) Improvements in District 6-0**—This project involves the deployment of 15 CCTV cameras on I-95 and I-472.

- **Cresson Mountain ITS Incident Management Control System**—This system will be interfaced with the existing weather monitoring system to provide real-time weather and incident information along this stretch of U.S. Route 22.

- **Motorist-Aid Call Box System**—The call boxes would be installed on a portion of I-80 at approximately 1-mile intervals. The call boxes will be connected to the nearest Pennsylvania State Police facility and allow motorists to request emergency assistance as required.

- **CVO Credential Administration**—This is a system to facilitate the electronic filing of IRP information via the Internet.

- **I-80 Traveler's Information Message Signs**—These dynamic information signs will provide travelers with information on traffic conditions, accidents, road closures, detours, and other emergency information.

- **Variable Message Signs for I-376 and I-279**—This project involves the installation of six VMSs, associated structures, and the necessary software modifications of the VMS subsystem to support the Pittsburgh Traffic Control System.

- **"Wizard" Work Zone Alert Radio**—The "Wizard" Work Zone Alert Radio will be used to augment existing work-zone traffic control measures by alerting truck drivers to work zone conditions. This radio system is also known as the Citizen's Band (CB) Traffic Alert Radio.

- **Weather Monitoring Stations with Variable Message Signs**—This project will be used to install weather monitoring stations and variable message signs at critical locations on Interstate 80.

- **Advanced Traveler Information System on the PA Turnpike**—This ATIS will include permanent variable message signs, highway advisory radio transmitters, CCTV cameras, weather sensors, a truck rollover alert system, and an over-height detection system.

- **Traveler/Tourist Information Systems**—Tourist/traveler information systems are under development in Districts 1-0 (Erie), 4-0 (Scranton/Wilkes-Barre), 5-0 (Poconos), and 8-0 (Harrisburg).

- **Electronic Toll Collection (E-Z Pass)**—The Pennsylvania Turnpike Commission has contracted with Mark IV Industries of Amherst, New York, to supply tags and readers for this electronic toll collection system. The E-Z Pass system is designed to increase customer convenience and decrease toll congestion by using a one-tag electronic toll collection system in New York, New Jersey, and Pennsylvania.

- **Traffic Management Center in the District 6-0 Office**—12 CCTV cameras and 4 VMSs along I-95, and Satellite Communications Feasibility Two-Year Operational Test with mobile satellite unit.

- **I-376 Freeway Surveillance Project**—A project that is under construction this Spring of 1999, and a Traffic Management Center, which has been constructed (computer equipment and furniture not implemented yet) at the District 11-0 office. Freeway Service Patrols currently operate on the I-279/376 Parkway East and West, and PennDOT is taking steps to automate the operations of the bi-directional high-occupancy vehicle (HOV) lane on I-279 north of downtown. Ramp metering is not included. This system will be tied into the TMC and operated by PennDOT.

- **Photo Imagery**—The Delaware Valley Regional Planning Commission (DVRPC), the metropolitan planning organization (MPO) for the Philadelphia region — which encompasses nine counties including parts of New Jersey — is developing up-to-date techniques to use photo imagery in its planning efforts. The aerial photographs/photo atlas sheets allow planners to document evolving patterns of growth and development in the region. The aerial photos have been converted to digital images in order to serve as a photo base for the DVRPC's map products.

- **Tri-Party Toll Agreement**—Coordination has taken place among FHWA, PennDOT, and PTC to finalize a tri-party toll agreement that is necessary for the completion of a system that will include elements such as HAR, VMS, CCTV surveillance, and upgrades to the PTC's central communications center in Highspire, PA.

- **STAR Facility**—On the Pennsylvania Turnpike is the Safety Testing And Research (STAR) Facility. It consists of a controlled access, an 11-mile, four-lane divided highway (24' roadway in each direction, 10' median, 3% maximum grade), with two tunnels (one lane in each direction), which is available for authorized use.

- **Automatic Vehicle Location (AVL)**—The Beaver County Transit Authority operates 36 vehicles with Loran C technology.

- **Tranzit Xpress**—The Tranzit Xpress project seeks to enhance the response to hazardous material incidents. In particular, the project is demonstrating the use of multiple advanced technologies and computerized emergency response information to provide hazardous material information to emergency response units.

- **Priority Corridor**—Pennsylvania is a member of the I-95 Northeast Coalition, made up of transportation agencies from Virginia to Maine and pursuing a coordinated ITS program along the I-95 corridor. This unique combination of state, toll, transit, and other transportation agencies will enable the testing and evaluation of a wide range of ITS services, especially projects dealing with multimodal intercity traveler information needs and jurisdictional coordination.

- **Advanced Metropolitan Travel Management Systems Advanced Traffic Management Systems (ATMS)**—This project will evaluate the use of the VSAT (very small aperture terminal) satellite as the communications medium for four stationary CCTV cameras and a mobile CCTV camera and communication platform. It is located on I-95 in Philadelphia.

- **Delaware County Ridetracking**—This project will develop and evaluate an automated identification and billing system for paratransit service, using advanced technology for the identification of passengers, the accounting and billing data collected on each passenger trip, the reporting required for coordination with various transportation suppliers, and internal performance monitoring.

- **ITS Early Deployment Studies**—Deployment studies have been completed for the following major metropolitan areas in Pennsylvania:
  - Scranton, Wilkes-Barre
  - Allentown, Bethlehem, Easton
  - Harrisburg, Lebanon, Carlisle
  - Philadelphia, Wilmington, Trenton
  - Pittsburgh, Beaver Valley

ITS/CVO OPPORTUNITIES IN PENNSYLVANIA

Opportunities for improving motor carrier administration and operation in Pennsylvania are available in the following five areas:

- Safety;
- Administration;
- Incident Management;

- Motor Carrier Management; and
- Education, Outreach, and Research.

Safety

Improving safety is a key goal of Pennsylvania's overall and ITS programs. ITS/CVO technologies can provide significant safety improvements for the motor carrier industry. For example, ITS/CVO services may enable enforcement personnel to check and monitor commercial vehicles for safety compliance at mainline speeds. Communications and computer technologies also allow inspectors to access current vehicle and driver inspection records in real-time. Similarly, enforcement personnel will have the ability to monitor hazardous material transportation more efficiently through the use of ITS/CVO. As a result, these technologies will help to increase the overall efficiency of commercial vehicle operations both for the administering agencies and the industry.

Administration

One of the primary objectives of the ITS/CVO program is to create a "paperless," "one-stop-shopping" environment for as many CVO administrative processes as possible. The incorporation of a timely, up-to-date, and accurate electronic information exchange while maintaining security and privacy will allow administrators to efficiently process commercial motor carriers throughout Pennsylvania.

Incident Management

Incidents are a major contributor to highway congestion because of the bottlenecks they create in the flow of traffic. Congestion ties up significant numbers of trucks and delays the delivery of the cargos they are carrying, adversely affecting the economic and organizational aspects of motor carrier operations. Well-designed incident management programs can provide mechanisms to reduce the impact of incidents and provide highway users with useful information to plan their travel through the affected areas.

Motor Carrier Management

A key objective of Pennsylvania's ITS/CVO Program is to improve the productivity of the motor carrier industry. One way the productivity can be improved is by reducing the administrative costs incurred by truck and bus fleet operators. This can be accomplished by the expanded use of information systems that enable motor carriers to exchange data electronically with administering agencies.

Education, Outreach, and Research

ITS/CVO are relatively new areas and as such, general knowledge about them is somewhat limited. It is critical that the CVO administering agencies have the necessary knowledge and skills to deploy, operate, and maintain these highly complex technologies. It is also important that other government bodies, elected officials, and the public are informed about the various beneficial aspects of ITS/CVO application.

STRATEGIC OVERVIEW

At the beginning of the business planning process, the Steering Committee developed a vision and overall direction for Pennsylvania's ITS/CVO business planning efforts. It includes the Commonwealth's ITS/CVO Mission Statement and the guiding principles used during the business planning process.

When developing the Strategic Overview, the Steering Committee was highly cognizant that ITS/CVO technology deployment must be cost effective not only for large carriers that are already using much of the technology, but also for small carriers with limited access to capital. These technologies should be attractive to the small carriers and show bonafide benefits from its use. Additionally, the administering agencies should design their systems in a way that the new systems are compatible with existing technology and allow carriers to participate in an incremental manner. Finally, and perhaps most importantly, the final business plan will allow participation in specific ITS/CVO systems and programs to be entirely voluntary.

PENNSYLVANIA'S ITS/CVO MISSION STATEMENT

The following mission statement was developed by the Business Plan Steering Committee to define the overall, long-range direction for the Commonwealth's ITS/CVO program.

Pennsylvania's ITS/CVO Mission Statement

The Commonwealth, together with its partners, will utilize appropriate intelligent transportation systems, technologies, and strategies to enhance the safety, efficiency, and management of commercial vehicle operations.

Mission Statement Definitions

Following are definitions of the various terms used in the ITS/CVO Mission Statement.

The Commonwealth. The State of Pennsylvania and its departments and agencies of government, especially those involved with motor carrier safety, administration, and revenue collection.

Partners. Those organizations, stakeholder groups and individuals assisting the Commonwealth in the implementation of ITS/CVO.

Intelligent Transportation Systems (ITS). ITS integrate and apply and integrate advanced and emerging technologies in fields such as information processing, communications, and electronics to address surface transportation needs.

Intelligent Transportation Technologies. The various component technologies of ITS (e.g., vehicle detectors, traveler information systems, traffic management systems, global positioning systems, and weather information systems).

Intelligent Transportation Strategies. Methods to apply ITS to various commercial vehicle-related activities (e.g., commercial vehicle operations, travel demand management, and traffic and transit management).

Safety. Efforts to reduce the frequency and severity of commercial vehicle incidents (e.g., crashes and hazardous material incidents).

Efficiency. Efforts to increase the economic competitiveness of motor carriers and the efficiency of government agencies by reducing the time and money costs of roadway congestion and safety and administrative requirements.

Management. The various government and private administrative activities related to motor carrier operations (e.g., registration, licensing, permitting, taxation, and safety compliance).

Commercial Vehicle Operations (CVO). CVO involve the areas of interaction between government agencies and motor carriers (i.e., trucking and inter-city bus companies). CVO include all of the operations associated with moving goods and passengers via commercial vehicles over the North American highway system and the activities necessary to regulate the carriers, drivers, and vehicles involved in these operations.

Motor Carriers. An entity that is responsible for the administration (e.g., registration and tax/fees payment) and safety fitness of a commercial vehicle engaged in moving goods and passengers on roads and highways.

GUIDING PRINCIPLES FOR PENNSYLVANIA'S ITS/CVO BUSINESS PLAN

To facilitate the development of appropriate goals and objectives, the Steering Committee developed a series of guiding principles as outlined in the following:

Pennsylvania's ITS/CVO Business Plan should:

- Be adaptable to new technologies and changing needs.
- Enhance highway safety.

- Provide seamless communication among state and federal agencies and their partners.
- Encompass both intrastate and interstate CVO.
- Promote fairness and uniformity in CVO.
- Increase government and motor carrier efficiency and reduce administrative and operating costs.
- Increase the economic competitiveness of the Commonwealth.
- Promote ITS/CVO to government agencies and motor carriers.
- Provide a forum for continuous feedback, review, and evaluation of ITS/CVO activities.
- Be environmentally sensitive.
- Promote partnerships in ITS/CVO activities.
- Be interoperable and harmonious with regional and national programs.

ITS/CVO BUSINESS PLAN PROGRAM AREAS

The following five broad program areas were defined for Pennsylvania's ITS/CVO Business Plan:

- Safety,
- Administration,
- Incident Management,
- Motor Carrier Management, and
- Education, Outreach, and Research.

The goals and objective developed for each of the program areas are presented in the following sections.

SAFETY

Overview

Improving safety is a key goal of Pennsylvania's ITS program. ITS/CVO technologies can provide significant safety improvements for the motor carrier industry. For example, ITS/CVO services may enable enforcement personnel to check and monitor commercial vehicles for safety compliance at mainline speeds. Communications and computer technologies also allow inspectors to access current vehicle and driver inspection records in real-time. Similarly,

enforcement personnel will have the ability to monitor hazardous material transportation more efficiently through the use of ITS/CVO. As a result, these technologies will help to increase the overall efficiency of commercial vehicle operations both for the administering agencies and the industry.

Goals and Objectives

Goal: *Develop a system to obtain and disseminate accurate, pertinent safety data.*

A database of accurate, timely safety data is critical to improving overall motor carrier safety. It is important that this database contain relevant information that can be easily collected and disseminated. It is also important that both industry and government are in concord on what data are maintained and how they are collected. Steps should be taken to ensure that the data collected by CVO agencies are used for their designated purposes and that the data are not readily available to competing companies.

Objective: Set up a government/industry partnership for oversight of data collection, maintenance, and dissemination.

Objective: Ensure the appropriate use and provide for the security of sensitive information collected, maintained and distributed under ITS/CVO.

Objective: Ensure that all commercial vehicles are properly marked with an applicable motor carrier identification number before the year 2001.

Objective: Establish a system to provide accurate, pertinent inspection data to enforcement agencies and the motor carrier industry within 24 hours or less.

Goal: *Increase overall quality and efficiency of the inspection process.*

ITS/CVO technologies can provide substantial efficiencies to the roadside inspection process. For example, laptop computer systems used by inspectors can be used to access timely inspection data that can help them target vehicles and drivers for inspection more effectively. More efficient inspection processes will improve the productivity of motor carriers by minimizing the time required for inspections as well as eliminating duplicate inspections of the same vehicle. To realize these efficiencies, it is important that the inspecting agencies have a communications system that covers the entire state.

Objective: Fully equip all inspectors with up-to-date portable computer systems and provide for continued maintenance and upgrade of the system.

Objective: Establish an integrated statewide communications system by the year 2005.

Objective: Using crash and other safety data, determine areas where additional inspection locations are needed.

Objective: Seek the establishment of a nationwide acceptance of a standard electronic identification system (i.e., transponders, bar coding) for Commercial Vehicle Safety Alliance (CVSA) decals, hazardous materials, etc. within five years.

Goal: *Establish adequate rest/safety areas.*

An important component of all motor-carrier-based safety programs is to ensure that drivers are well rested and that they do not violate hours-of-service regulations. Roadside rest areas can provide safe locations for commercial drivers to rest when required. These rest areas can also assist CVO administering agencies to improve motor carrier safety by providing safe locations for the staging of incident-response equipment and for conducting safety inspections.

Objective: Encourage the use of safety/rest areas for safety inspections as well as incident-response staging and management.

ADMINISTRATION

Overview

The ITS/CVO administration program is a voluntary effort involving government and industry partnerships. One of the primary objectives of the ITS/CVO program is to create a "paperless" environment for as many CVO administrative processes as possible. The incorporation of a timely, up-to-date, and accurate electronic information exchange while maintaining security and privacy will allow administrators to efficiently process commercial motor carriers through-out Pennsylvania. The Commonwealth will pursue innovative and creative means to increase efficiency in the administrative aspects of a commercial vehicle operations system by eliminating redundant functions, sharing information, and incorporating the appropriate technologies.

Goals And Objectives

Goal: *Pursue innovative and creative means to increase efficiency in the administrative aspects of a commercial vehicle operations system by eliminating redundant functions, sharing information, and deploying appropriate technologies.*

The success of the ITS/CVO program relies on the cooperation and interaction of many diverse participants in both the government and industry sectors. One of the major goals of the program is to allow both regulatory agencies and motor carriers the ability to work in a paperless environment. This will eliminate redundant administrative functions and permit greater efficiency and productivity for all participants. In Pennsylvania, most CVO administrative processes are currently accomplished via the submission of paper documents to the agencies that are, in turn, manually entered into the appropriate databases. Additionally, much duplicate information is collected by the various administering agencies. Efficiency can be improved by conducting CVO administrative activities electronically. Conducting these activities electronically will also help eliminate the unnecessary duplication of efforts between the various administering agencies. The provision of an electronic funds transfer capability may also help to improve the efficacy of CVO administrative activities.

Objective: Provide incentives that maximize motor carrier participation by implementing programs that contain options for both small and large firms..

Objective: Consider privacy issues in the development of all programs.

Objective: Establish a "One-Stop-Shopping" system for all CVO administrative processes in Pennsylvania (e. g., registration, fuel tax, and permitting).

Objective: Develop an on-line interactive registration and fuel tax process in Pennsylvania.

Objective: Provide for electronic transfer of funds.

Objective: Provide a single on-line permit system for PennDOT/Pennsylvania Turnpike Commission oversize/overweight vehicle permits.

Objective: Utilize one on-vehicle transponder to cover all vehicle functions.

Objective: Share data among agencies and streamline the auditing process to avoid duplicate efforts between agencies.

Objective: Combine the IRP and IFTA audits into one audit.

Objective: Review permit restrictions to eliminate unnecessary burdens on the carrier while still maintaining safe operations.

Objective: Enable easy access to the U.S. DOT number by PennDOT providing it.

Objective: Eliminate administrative paper verification on the heavy vehicle use tax.

INCIDENT MANAGEMENT

Overview

Incidents are a major contributor to highway congestion because of the bottlenecks they create in the flow of traffic. Congestion ties up significant numbers of trucks and delays the delivery of the cargos they are carrying, adversely affecting the economic and organizational aspects of motor carrier operations. The monetary and delay costs associated with the clean-up of hazardous materials incidents also have a significant impact on carrier operations. The clean-up costs for these incidents also impact on CVO agency budgets. Well designed incident management programs can provide mechanisms to reduce the impact of incidents and provide highway users with useful information to plan their travel through the affected areas.

Goals and Objectives

Goal: *Develop and deploy ITS/CVO communication techniques.*

It is critical that timely information is collected on incidents as they occur. This information is most useful when consolidated into a central location where it can be disseminated to the responding incident response personnel and the traveling public.

Objective: Encourage the utilization of Citizens Band Radio and cellular telephone communication systems for incident reporting and receiving information.

Goal: *Target high incident areas/locations.*

Since highway incidents often occur without advanced warning, ITS/CVO technologies may be used to verify the location, characteristics, and potential impact of the incident. Predictable incidents, on the other hand, can be anticipated so that actions can be taken in advance to minimize the incidents' impacts. In either case, every attempt should be made to identify those areas where incidents are likely to occur and install appropriate detection and warning devices.

Objective: Identify high incident areas and deploy the appropriate technologies (e.g., expand pavement/video sensor systems and unmanned vehicle video-surveillance systems).

Goal: *Ensure appropriate incident responses.*

Roadway incidents vary widely in causes and impacts (e.g., multi-vehicle crashes, fires, multiple lane blockages, and hazardous materials). The effect of incident response can be enhanced by establishing standardized procedures for assessing incident types and impacts coupled with a set of prescribed responses for each incident type.

Objective: Identify and develop a standard for incident level identification and response.

Objective: Establish uniform incident training requirements that educate response teams on the proper procedures necessary for mitigation of CVO incidents.

Objective: Involve shippers and manufacturers in the identification of hazardous cargo.

Goal: *Improve real-time traveler information/detours.*

When an incident does occur, motor carriers should have access to real-time travel information so that congestion is kept to a minimum. Providing trucking companies with alternative travel routes will result in less impact to the traffic flow.

Objective: Market existing sources of traveler information.

Objective: Place monitors/kiosks in rest areas for motor carriers to view real-time traffic conditions and provide traffic information on the world-wide web.

Objective: Place additional highway advisory radio and variable message signs in strategic locations on transportation facilities.

Objective: Expand pre-established detours and accurate signing statewide.

Objective: Improve early notification to government agencies at all levels and the business community of incident locations.

Goal: *Improve education, training, and outreach related to incident management.*

Educational programs should be developed to provide responding agencies and jurisdictions with the necessary knowledge regarding the deployment of incident management systems. Additionally, communications and command training should be conducted to ensure that agencies responding to incidents can work together in a coordinated, cooperative manner.

Objective: Establish a proactive two-way feedback process for the Pennsylvania Department of Transportation to learn about operational issues and high-incident locations and educate carriers about the locations.

Objective: Expand the Unified Command/Incident Command System training to include the trucking, bus, and towing industries.

Objective: Educate motor carriers on the importance of reporting incident locations and the proper methods for doing so.

MOTOR CARRIER MANAGEMENT

Overview

A key objective of Pennsylvania's ITS/CVO Program is to improve the productivity of the motor carrier industry. One way the productivity can be improved is by reducing the administrative costs incurred by truck and bus fleet operators. This can be accomplished by the expanded use of information systems that enable motor carriers to exchange data electronically with administering agencies.

Goals And Objectives

Goal: *Develop a secure system to outlet information to only the specific motor carrier and the administering state and federal agencies.*

The dramatic expansion of information technologies and access over the past few years has led to concerns regarding information confidentiality among the motor carrier industry. Motor carriers, for the most part, are willing to provide information electronically to agencies, especially if it will ease paperwork burdens and speed up administrative processes. The industry does not, however, see a need for the information maintained by the administering agencies to be available to other government entities or the public.

Objective: Establish access or identification codes for each carrier that limit access to a carrier's own specific data.

Objective: Specifically define who has access to what data.

Objective: Limit public access to safety ratings only.

Objective: Identify the controlling agency of each data set and the individual who will maintain the data.

Goal: *Deploy technology to benefit both carriers and regulatory agencies.*

The technology required of motor carriers for CVO data acquisition and management systems must be affordable and easily incorporated into routine equipment upgrades. Additionally, the equipment must be economical and easily maintained. Equipment manufacturers should also be involved from the beginning to ensure uniform availability across the industry consistent with the national ITS architecture and standards.

Objective: Ensure that future systems and technologies have a standardized interface and be uniform across the industry.

Objective: Provide information on equipment available to the ITS/CVO motor carrier industry.

Objective: Design data acquisition systems around passive devices (transponders) to assist the industry in tracking equipment.

Goal: *Utilize captured data to augment existing data to enhance carrier operations.*

Much of the data to be collected and maintained by ITS/CVO applications can significantly enhance motor carrier operations. For example, one of the greatest problems in the motor carrier industry is driver retention. Carriers could address this issue by having access to existing driver records. Enhanced access to safety inspection reports, both for vehicles and drivers, could also significantly improve the industry's safety record.

Objective: Provide access to real-time driver profiles (citations and hours of service) for carrier management.

Objective: Provide carriers with access to driver histories and other information to help increase driver retention.

Objective: Allow carrier management and operations staff access to roadside safety inspection reports in real-time.

EDUCATION, OUTREACH, AND RESEARCH

Overview

ITS/CVO are relatively new areas and as such, general knowledge about them is somewhat limited. It is critical that the CVO administering agencies have the necessary knowledge and skills to deploy, operate, and maintain these highly complex technologies. It is

also important that other government bodies at all levels understand the costs and benefits of ITS/CVO utilization. This is especially important for elected officials. The public should also be informed about the various aspects of ITS/CVO application. Finally, a relevant research program should be developed to fill in any gaps in the existing ITS/CVO knowledge base.

Goals And Objectives

Goal: *Provide government agency personnel with background knowledge concerning key issues.*

CVO administering agencies often lack the technical expertise required to operate and maintain ITS/CVO technologies. For the successful deployment of ITS/CVO, personnel in these agencies should be provided with the training necessary to perform their specific ITS/CVO tasks. The agencies and their staff will also benefit from understanding the basics of the overall ITS/CVO program. Knowledge gaps in ITS/CVO exist, and they can be filled by properly defined research and development.

Objective: Utilize ITS/CVO to address the need for consistency in enforcement policies across states.

Objective: Provide hands-on skills training to agency personnel that will enable them to understand the various ITS/CVO technologies.

Objective: The ITS/CVO education program should support the expansion of ITS/CVO to rural as well as urban areas.

Objective: Institutional success stories and lessons learned should be shared among agencies.

Goal: *Provide elected officials with knowledge of the benefits of ITS/CVO deployment.*

Elected officials have control over the financial resources necessary for ITS/CVO deployment. Additionally, these officials can enact legislation that could positively or negatively impact ITS/CVO. Making elected officials aware of the cost-sharing opportunities associated with deployment can erase many doubts about ITS/CVO. Elected officials should also be informed about other benefits associated with ITS/CVO, such as enhanced motor carrier safety, increased carrier efficiency, and improved economic welfare for the state.

Objective: Develop a program to educate elected officials about ITS/CVO.

Objective: Utilize existing research and information (e.g., the recent National Governors' Association report on ITS/CVO funding[1]) to educate elected officials.

Goal: *Provide local municipal personnel with the knowledge and skills necessary to support ITS/CVO deployment.*

ITS/CVO deployment decisions and activities involve agencies from all levels of government and from many diverse locations. When local governments have the prerequisite knowledge and skills to guide decision-making, they will be able to better contribute to the deployment of ITS/CVO technologies. Additionally, if the various governments can be shown the potential benefits of the program, they will be more apt to participate.

Objective: Provide hands-on skills training to local governments that will enable their personnel to understand the various ITS/CVO technologies.

Objective: Share institutional success stories and lessons learned.

Goal: *Increase industry and general public awareness of ITS/CVO.*

Outreach activities are required to disseminate information as ITS/CVO requirements evolve. In addition, the motor carrier industry must be made aware of the costs associated with ITS/CVO implementation. Also, if the public is positively informed of the safety and productivity benefits associated with ITS/CVO development, it is are more likely to support such deployment.

Objective: Provide information on ITS/CVO attributes and benefits.

Objective: Emphasize the importance and opportunities for evolutionary deployment and incremental system acquisition for firms.

Objective: Enhance public understanding of ITS/CVO capabilities.

Goal: *Fully describe the potential risks, benefits, and costs posed by ITS/CVO.*

ITS/CVO systems are highly technical, require a high fixed-cost investment, and follow fast, upwardly-migrating technology paths. Due to these factors the risks posed by the ITS/CVO technology development are high. Additionally, the sources of ITS/CVO deployment funding

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[1]Apogee Research Inc. *Budgetary Implications of ITS/CVO for State Agencies.* Washington, DC: National Governors' Association, 1998.

will vary according to the government and industry levels of involvement and will affect how the deployment costs are distributed. The industry should also be made aware that ITS/CVO deployment will most likely evolve incrementally, and the cost of ITS/CVO technology acquisition will be spread over a long period of time.

Objective: Coordinate efforts with other states and all levels of government to ensure the interoperability and compatibility of ITS/CVO applications.

Objective: Promote cooperation of CVO users to leverage scarce resources to obtain equipment savings (i.e., shared equipment purchases).

Goal: *Develop ITS/CVO training materials that meet state needs.*

It is critical that ITS/CVO administering agencies acquire and maintain the knowledge necessary for operating these highly technical systems. It is equally important that these agencies also possess the skills necessary to partner with private industry. Well designed training programs will effectively reduce the barriers associated with government/industry partnerships and enable state agencies to better communicate to the public the benefits of ITS/CVO deployment.

Objective: Take advantage of the Federal Highway Administration's ITS/CVO courses.

Objective: Develop tiered training that consistently integrates material for employees at different levels within an agency or firm.

Objective: Emphasize the team approach to ITS/CVO problem solving.

Goal: *Develop an ITS/CVO research program to close critical gaps.*

Several areas exist where the level of knowledge concerning ITS/CVO needs to be expanded. A well designed research program can provide the information necessary to fill in these gaps.

Objective: Develop a clear understanding of the ITS/CVO market and how to promote the products and services.

Objective: Develop an ITS/CVO academic research program to address and resolve issues in driver training, driver retention, driver behavioral aspects of advanced technology use, ITS/CVO technology acceptance and use, marketing aspects of ITS/CVO, economic and operational benefits of ITS/CVO, and next-generation communication and information technologies for ITS/CVO.

PROGRAM SUMMARY

BUSINESS PLAN STRUCTURE

The ITS/CVO projects included in this Business Plan are categorized into five program areas: safety; administration; incident management; motor carrier management; and education, outreach, and research. The projects will meet the goals of this business plan as outlined in exhibit 3.

Exhibit 3. Business Plan Components

ITS/CVO Goals by Program Area	ITS/CVO Projects to Meet the Goals
Safety	
• Develop a system to obtain and disseminate accurate, pertinent safety data	Projects 1, 2
• Increase overall quality and efficiency of the inspection process	Projects 1, 2, 3
• Establish adequate rest/safety areas	Project 17
Administration	
• Pursue innovative and creative means to increase efficiency in the administration aspects of a commercial vehicle operations system by eliminating redundant functions, sharing information, and deploying appropriate technologies	Projects 4, 5, 10, 11
Incident Management	
• Develop and deploy ITS/CVO communications techniques	Project 12
• Target high incident areas/locations	Projects 7, 8
• Ensure appropriate incident responses	Project 6
• Improve real-time traveler information/detours	Project 12
• Improve education, training, and outreach related to incident management	Project 14
Motor Carrier Management	
• Develop a secure system to outlet information to only the specific motor carrier and the administering state and federal agencies	Projects 4, 5
• Deploy technology to benefit both carriers and regulatory agencies	Projects 9, 10, 11, 12
• Utilize captured data to augment existing data to enhance carrier operations	Projects 1, 4
Education, Outreach, and Research	
• Provide government agency personnel with background knowledge concerning key issues	Project 13
• Provide elected officials with knowledge of the benefits of ITS/CVO deployment	Project 15
• Provide local municipal personnel with the knowledge and skills necessary to support ITS/CVO deployment	Project 15
• Increase industry and general public awareness of ITS/CVO	Projects 14, 15
• Fully describe the potential risks, benefits, and costs posed by ITS/CVO	Project 16
• Develop ITS/CVO training materials that meet state needs	Projects 13, 14, 15
• Develop an ITS/CVO research program to close critical gaps	Project 15

PROJECT DESCRIPTIONS

Project 1:	***Commercial Vehicle Electronic Clearance***
Objective:	Improve the efficiency and effectiveness of motor carrier enforcement programs while also improving the efficiency of motor carrier operations by pre-clearing eligible vehicles at inspection sites.
Outcome:	Better utilization of existing enforcement resources and reduced delay to motor carriers at inspection sites.
Lead Agency:	PennDOT (Motor Carrier Division)
Participating Partners:	State Police, PUC, Motor Carriers
Market:	Motor carriers and CVO enforcement agencies
Summary:	Project will involve the development and deployment of an electronic pre-clearance system to include participation criteria, vehicle identification technology and computer information systems at inspection sites.
Key Issues:	• Establishing criteria for motor carrier participation • Use of equipment in mobile enforcement setting
Products:	Pre-clearance of safe vehicles
Schedule:	Ongoing. Expected completion in 2001
Estimated Cost:	Deployment: $500,000 Operation & Maintenance: $50,000 annually
Estimated Management Requirements:	One-quarter full-time equivalent

Project 2:	*Automated Roadside Safety Inspections*
Objective:	Fully equip all inspectors with up-to-date portable computer/communications systems and provide for continued maintenance and upgrade of the systems
Outcome:	Each safety inspector will be equipped with a computer/communications systems capable of accessing the SAFER system to facilitate automated roadside safety inspections
Lead Agency:	PennDOT (Motor Carrier Division)
Participating Partners:	State Police, PUC, Motor Carriers
Market:	CVO enforcement agencies
Summary:	• This project is nearing completion. The majority of Pennsylvania's CVO inspectors have been equipped with laptop computers and communications equipment. • Additional equipment for the remaining inspectors will be purchased during the 1998-99 fiscal year.
Key Issues:	Communications between remote inspection sites and the central database
Products:	N/A
Schedule:	Ongoing. Expected completion in 1999.
Estimated Cost:	Deployment: $550,000 Operation & Maintenance: $35,000 annually
Estimated Management Requirements:	One-quarter full-time equivalent per agency to manage the program

Project 3:	***On-Board Safety Monitoring***
Objective:	Development and implementation of a vehicle monitoring system that will provide information on the safety status of selected vehicle components.
Outcome:	The ability for motor carrier and enforcement personnel to determine unsafe vehicle components via the use of ITS technologies.
Lead Agency:	PennDOT (Motor Carrier Division)
Participating Partners:	State Police, PUC, Motor Carriers
Market:	Motor carriers
Summary:	The project will involve the development of technology solutions to provide continual monitoring of the safety status of selected vehicle components. The system will allow both vehicle operators and enforcement personnel to determine when a component's safety status is being reduced.
Key Issues:	• System development • Costs to equip vehicles
Products:	• Identification of components to be monitored • Development of systems requirements and design
Schedule:	2001-2003
Estimated Cost:	Deployment: $500,000 Operation & Maintenance: $20,000 annually
Estimated Management Requirements:	One-quarter full-time equivalent

Project 4:	*Electronic Credentialing*
Objective:	The objective of this project is to improve the efficiency, accuracy, and accessibility of commercial vehicle credentialing. PennDOT will use this project to develop and implement a system to facilitate electronic IRP filing via the Internet. Motor carriers will also be able to print out IRP credentials at their offices.
Outcome:	PennDOT will benefit from a reduction in the time required for manual entry of IRP data. Motor carriers utilizing the on-line credentialing system will be able to print out the credentials immediately after entering the data via the Internet. This will reduce the vehicle downtime they experience while waiting to receive the credentials via mail. The carriers will also realize a reduction in postage and other costs associated with the current credentialing system.
Lead Agency:	PennDOT (Bureau of Motor Vehicles)
Participating Partners:	Dept. of Revenue, Motor Carriers
Market:	Motor carriers
Summary:	This project will involve the development and deployment of the software necessary to facilitate electronic IRP filing via the Internet.
Key Issues:	• Data security • Data accuracy
Products:	Real-time provision of credentials via the Internet
Schedule:	2001-2004
Estimated Cost:	Deployment: $340,000 Operation & Maintenance: $17,000 per year
Estimated Management Requirements:	One-quarter full-time equivalent

Project 5:	***PRISM Implementation***
Objective:	The objective of this project is to link motor carrier safety information sources with PennDOT's motor vehicle registration and commercial driver licensing systems.
Outcome:	• Determine the safety fitness of motor carriers prior to issuing vehicle registrations. • Cause carriers to improve their safety performance through a safety improvement process.
Lead Agency:	PennDOT (Bureau of Motor Vehicles)
Participating Partners:	PennDOT (Motor Carrier Division)
Market:	CVO enforcement agencies
Summary:	This project will involve a coordinated effort between the PennDOT motor carrier and motor vehicle divisions to jointly develop a system to extract the required safety information at the roadside and central office.
Key Issues:	None.
Products:	Provision of the most current carrier safety fitness information at the roadside.
Schedule:	Ongoing. Expected completion in 2000.
Estimated Cost:	Deployment: $300,000 Operation & Maintenance: $30,000 annually
Estimated Management Requirements:	One-quarter full-time equivalent

Project 6:	***Hazardous Materials Cargo Monitoring***
Objective:	Improved identification of hazardous materials cargo and provision of better information to emergency response personnel.
Outcome:	Better identification of hazardous materials shipments.
Lead Agency:	PennDOT (Motor Carrier Division)
Participating Partners:	State Police, PUC, PA Emergency Management Agency, and Motor Carriers
Market:	• Motor carriers • Enforcement personnel • Emergency responders
Summary:	This project will include the development and deployment of electronic hazardous materials identification tags and a centralized repository of information on hazardous materials shipments.
Key Issues:	• Cargo tag development • Industry participation
Products:	Cargo tags and readers
Schedule:	2001-2003
Estimated Cost:	Deployment: $250,000 Operation & Maintenance: $50,000 annually
Estimated Management Requirements:	One-quarter full-time equivalent

Project 7:	***Advanced Truck Warning Systems—Width & Height***
Objective:	Install and operate to detect vehicles exceeding width and height limitations and provide appropriate warnings.
Outcome:	Reduce the number and severity of crashes and infrastructure damage caused by vehicles exceeding width and height limits.
Lead Agency:	PennDOT (ITS Division) and Turnpike
Participating Partners:	N/A
Market:	Motor carriers
Summary:	This project will involve the deployment of vehicle-size detectors and warning signs at sites with high levels of truck crashes and infrastructure damage caused by oversize vehicles.
Key Issues:	N/A
Products:	Advisories to warn vehicles when they exceed width and height limits.
Schedule:	2001-2005
Estimated Cost:	Deployment: $100,000 per site Operation & Maintenance: $10,000 annually per site
Estimated Management Requirements:	One-tenth full-time equivalent per agency

Project 8:	***Advanced Truck Warning Systems—Rollover***
Objective:	Install and operate advanced truck warning systems at sites with a large number of truck rollover crashes.
Outcome:	Reduce the number and severity of truck rollover crashes.
Lead Agency:	PennDOT (ITS Division) and Turnpike
Participating Partners:	N/A
Market:	Motor carriers
Summary:	This project will involve the deployment of speed-measuring sensors and warning signs at sites with high levels of truck rollover crashes.
Key Issues:	N/A
Products:	Advisories to warn trucks of excess speed at sites with a history of truck rollover crashes.
Schedule:	1999-2003
Estimated Cost:	Deployment: $100,000 per site Operation & Maintenance: $10,000 annually per site
Estimated Management Requirements:	One-tenth full-time equivalent

Project 9:	***Electronic Toll Collection***
Objective:	Install electronic toll collection equipment at all interchanges along the Pennsylvania Turnpike.
Outcome:	Increased efficiency of toll collection and a reduction in delays to motor carriers.
Lead Agency:	Turnpike Commission
Participating Partners:	Motor Carriers, other regional toll authorities
Market:	Motor carriers and other Turnpike users
Summary:	This project is currently in the design phase. Initial deployment is scheduled to begin in eastern Pennsylvania in 2000. Statewide deployment is scheduled for completion in 2002.
Key Issues:	Coordination with motor carriers for transponder deployment and payment processes.
Products:	• Increased efficiency of toll collection operations • Increased efficiency of motor carrier operations
Schedule:	2001-2002
Estimated Cost:	Deployment: $200 million statewide Operation & Maintenance: $6 million annually
Estimated Management Requirements:	Full-time dedicated management staff at the Turnpike Commission

Project 10:	***Automated Permitting: Size and Hazardous Materials***
Objective:	The objective of this project is to automate the permitting process for oversize vehicles and hazardous materials shipments. PennDOT and the Turnpike Commission will use this project to develop and implement a system to facilitate issuance of these permits via the Internet. Motor carriers will also be able to print out the necessary permits at their offices.
Outcome:	The state agencies will benefit from a reduction in the time required to manually issues the permits. Motor carriers utilizing the on-line permitting system will be able to print out the permits immediately after entering the required data via the Internet. This will reduce the vehicle downtime they experience while waiting to receive the permits via other means.
Lead Agency:	PennDOT (Motor Carrier Division) and Turnpike
Participating Partners:	Motor Carriers
Market:	Motor carriers and others making these types of shipments
Summary:	This project will involve the development and deployment of the software necessary to facilitate electronic issuance of permits via the Internet.
Key Issues:	• Data security • Data accuracy
Products:	Real-time provision of oversize and hazardous materials permits via the Internet.
Schedule:	Ongoing. Expected completion in 1999.
Estimated Cost:	Deployment: $1.5 million Operation & Maintenance: $150,000 annually
Estimated Management Requirements:	One-quarter full-time equivalent

Project 11:	***Electronic Data Interchange for Toll Billing***
Objective:	Provide a seamless link for electronic payment services and transaction records.
Outcome:	• Reduced time and personnel requirements for toll administration. • Expedited return of toll transactions, billing, and payment services.
Lead Agency:	Turnpike
Participating Partners:	Motor Carriers
Market:	Motor carriers
Summary:	This project will allow the provision of payment data and account information for the electronic payment of tolls and other permits and services.
Key Issues:	Interagency coordination.
Products:	• Increased efficiency • Expedited access to records of financial transactions
Schedule:	1999-2005
Estimated Cost:	Deployment: $300,000 Operation & Maintenance: $100,000 annually
Estimated Management Requirements:	Dedicated staff from the PTC Fare Collection Department

Project 12:	***Traveler Information Systems***
Objective:	To develop an integrated system to provide timely travel information to motor carriers and other travelers.
Outcome:	A traveler information system providing accurate timely information in multiple locations via a wide variety of media.
Lead Agency:	PennDOT (ITS Division)
Participating Partners:	Other regional transportation agencies
Market:	Motor carriers and other travelers
Summary:	The program will collect traveler information about roadways (e.g., construction, congestion) and weather, etc. and disseminate it via appropriate media through multiple outlets. Sources of information and outlets include: Welcome Centers, SmartRoutes, traffic management centers, highway advisory radio, variable message signs, and WWW pages.
Key Issues:	N/A
Products:	Dissemination of traveler information through various media at multiple locations.
Schedule:	Ongoing. Will be continuous for foreseeable future.
Estimated Cost:	Deployment: $3.0 million statewide Operation & Maintenance: $300,000 annually statewide
Estimated Management Requirements:	One-half full-time equivalent

Project 13:	***Education & Training Program for State Agency ITS/CVO Personnel***
Objective:	Develop and implement an education & training program for state agency ITS/CVO personnel.
Outcome:	A uniform statewide ITS/CVO education and training program for agency personnel.
Lead Agency:	PennDOT
Participating Partners:	State Police, Turnpike, Revenue, PUC, and Penn State
Market:	State CVO agencies
Summary:	• Survey state agencies with CVO responsibilities to determine training needs. • Develop a multi-tiered ITS/CVO education and training program based on the identified needs and incorporating applicable components of the National ITS Professional Capacity Building program. • Schedule and conduct education and training classes on a regular basis.
Key Issues:	N/A
Products:	A statewide ITS/CVO education and training program
Schedule:	1999-2001
Estimated Cost:	Development: $100,000 Operation: $25,000 annually
Estimated Management Requirements:	One-tenth full-time equivalent

Project 14:	***ITS/CVO Education for Motor Carriers***
Objective:	Develop and implement an ITS/CVO education program for motor carriers operating in Pennsylvania.
Outcome:	A uniform statewide ITS/CVO education program for motor carriers in Pennsylvania.
Lead Agency:	PennDOT
Participating Partners:	State Police, Turnpike, Revenue, PMTA, Motor Carriers, and Penn State
Market:	Motor carriers
Summary:	• Survey motor carriers and state agencies to determine education needs. • Develop a comprehensive education program based on the identified needs of all types and sizes of carriers. • Schedule and conduct motor carrier education classes on a regular basis.
Key Issues:	N/A
Products:	A statewide ITS/CVO education training program for motor carriers operating in Pennsylvania.
Schedule:	1999-2001
Estimated Cost:	Development: $100,000 Operation: $25,000 annually
Estimated Management Requirements:	One-tenth full-time equivalent

Project 15:	***ITS/CVO Education Program for Government and Elected Officials and the General Public***
Objective:	Develop and implement an education program to inform elected and other government officials and the general public about beneficial ITS/CVO activities in Pennsylvania.
Outcome:	A statewide program to inform government officials and the general public about ITS/CVO activities in Pennsylvania.
Lead Agency:	PennDOT
Participating Partners:	State Police, Turnpike, Revenue, PUC, Motor Carriers, and Penn State
Market:	Government officials and general public
Summary:	• Determine education needs by target audience. • Develop appropriate education programs, techniques, and media based on the determined needs and incorporating applicable components of the National ITS Professional Capacity Building program. • Conduct the education program utilizing the appropriate media and techniques based on the targeted audiences.
Key Issues:	N/A
Products:	A statewide ITS/CVO education to inform government officials and the general public about ITS/CVO activities in Pennsylvania.
Schedule:	2000-2001
Estimated Cost:	Development: $100,000 Operation: $10,000 annually
Estimated Management Requirements:	One-tenth full-time equivalent

Project 16:	*Establish an ITS/CVO Research Program*
Objective:	Develop an ITS/CVO academic research program to address and resolve issues in driver training, driver retention, driver behavioral aspects of advanced technology use, ITS/CVO technology acceptance and use, marketing aspects of ITS/CVO, economic and operational benefits of ITS/CVO, and next-generation communication and information technologies for ITS/CVO.
Outcome:	A comprehensive research program to support Pennsylvania's multi-faceted ITS/CVO activities and meet future needs.
Lead Agency:	PennDOT
Participating Partners:	Penn State and other academic institutions
Market:	N/A
Summary:	• Survey Pennsylvania's CVO agencies and motor carriers to identify areas requiring further research. • Outline a coordinated research agenda to meet the identified research needs. • Conduct research to fill identified needs.
Key Issues:	N/A
Products:	A comprehensive ITS/CVO research program
Schedule:	1999-2000
Estimated Cost:	$100,000
Estimated Management Requirements:	One-tenth full-time equivalent

Project 17:	***Upgrade Roadside Rest Sites to Enhance to Support Roadside Inspection and Incident Management and Other CVO Safety Activities***
Objective:	Upgrade existing roadside rest sites to better facilitate CVO safety enforcement activities, incident management staging and to provide safe locations for commercial drivers to rest when required and possibly develop new ones.
Outcome:	Upgraded roadside rest sites
Lead Agency:	PennDOT (Motor Carrier Division)
Participating Partners:	State Police, Turnpike, Motor Carriers
Market:	CVO enforcement agencies, incident management teams, motor carriers, and traveling public.
Summary:	• Review existing rest sites to determine which are optimally located to meet the objectives of this project. • Determine the improvements necessary at the selected sites. • Deploy the equipment required to support CVO safety enforcement and incident management activities. • Make improvements necessary to ensure the safety of commercial vehicles and other rest area users.
Key Issues:	• Communications requirements to support safety enforcement and incident management activities. • Safety of site users.
Products:	N/A
Schedule:	1999-2002
Estimated Cost:	Deployment: $200,000 per site Operation & Maintenance: $10,000 annually per site
Estimated Management Requirements:	One-tenth full-time equivalent

RANKING OF PROJECTS

The ITS/CVO Steering Committee has prioritized the projects outlined in this document as shown in exhibit 4.

Exhibit 4. Project prioritization

Priority	Projects
1	Project 2: Automated Roadside Safety Inspections
2	Project 10: Automated Permitting: Size & HazMat
3	Project 4: Electronic Credentialing
4	Project 5: *PRISM* Implementation
5	Project 6: Hazardous Materials Cargo Monitoring
6	Project 13: Education & Training for State ITS/CVO Personnel
7	Project 14: ITS/CVO Education for Motor Carriers
8	Project 12: Traveler Information Systems
9	Project 1: Commercial Vehicle Electronic Clearance
10	Project 3: On-Board Safety Monitoring
11	Project 7: Advanced Truck Warning Systems—Width & Height
12	Project 8: Advanced Truck Warning Systems—Rollover
13	Project 9: Electronic Toll Collection
14	Project 11: Electronic Data Interchange for Toll Billing
15	Project 15: ITS/CVO Education Program for Government Officials & General Public
16	Project 16: Establish an ITS/CVO Research Program
17	Project 17: Upgrade Roadside Rest Sites

ORGANIZATION AND MANAGEMENT APPROACH

PROGRAM MANAGEMENT

ITS/CVO Steering Committee

The implementation of Pennsylvania's ITS/CVO Business Plan will continue to be a joint effort of government, industry, and academia. An ITS/CVO Program Steering Committee will be established with, at a minimum, the following participants:

- Pennsylvania Department of Transportation,
- Pennsylvania State Police,
- Pennsylvania Turnpike Commission,
- Pennsylvania Public Utility Commission,
- Pennsylvania Department of Revenue,
- Federal Highway Administration,
- Pennsylvania Motor Truck Association,
- Pennsylvania Bus Association,
- American Automobile Association, and
- The Pennsylvania State University.

The Steering Committee will oversee the ITS/CVO Business Plan and conduct periodic updates of the plan as necessary.

ITS/CVO Program Coordinating Group

To coordinate the scheduling and funding of ITS/CVO projects, a Program Coordinating Group will be established with members representing the various state agencies responsible for CVO administration and enforcement. At a minimum the following agencies will be included:

- Pennsylvania Department of Transportation
  - Bureau of Motor Vehicles
  - Bureau of Driver Licensing
  - Motor Carrier Division
  - Deputate for Planning
- Pennsylvania State Police
- Pennsylvania Turnpike Commission
- Pennsylvania Public Utility Commission
- Pennsylvania Department of Revenue, Bureau of Motor Fuels Taxes

The Program Coordinating Group will be responsible for selecting ITS/CVO projects and assigning appropriate lead agencies. This group will also designate funding sources and amounts for selected projects.

Lead Agencies

The lead agencies will be responsible for project management, financial reporting, coordination with other agencies, and management of outside contractors. The lead agencies for Pennsylvania's current ITS/CVO projects are shown in exhibit 5.

Exhibit 5. ITS/CVO project lead agencies

Projects	Lead Agencies
Project 1: Commercial Vehicle Electronic Clearance	PennDOT (CVO)
Project 2: Automated Roadside Safety Inspections	PennDOT (CVO)
Project 3: On-Board Safety Monitoring	PennDOT (CVO)
Project 4: Electronic Credentialing	PennDOT (BMV)
Project 5: *PRISM* Implementation	PennDOT (BMV)
Project 6: Hazardous Materials Cargo Monitoring	PennDOT (CVO) & NIER*
Project 7: Advanced Truck Warning Systems—Width & Height	PennDOT (ITS) & Turnpike
Project 8: Advanced Truck Warning Systems—Rollover	PennDOT (ITS) & Turnpike
Project 9: Electronic Toll Collection	Turnpike
Project 10: Automated Permitting: Size & HazMat	PennDOT (CVO) & Turnpike
Project 11: Electronic Data Interchange for Toll Billing	Turnpike
Project 12: Traveler Information Systems	PennDOT (ITS)
Project 13: Education & Training for State ITS/CVO Personnel	PennDOT
Project 14: ITS/CVO Education for Motor Carriers	PennDOT
Project 15: ITS/CVO Education Program for Government Officials & Public	PennDOT
Project 16: Establish an ITS/CVO Research Program	PennDOT
Project 17: Upgrade Roadside Rest Sites	PennDOT
*Northeast Institute for Environmental Research	

DEPLOYMENT SCHEDULE

Exhibit 6 outlines the anticipated deployment schedule for the ITS/CVO projects outlined in this document.

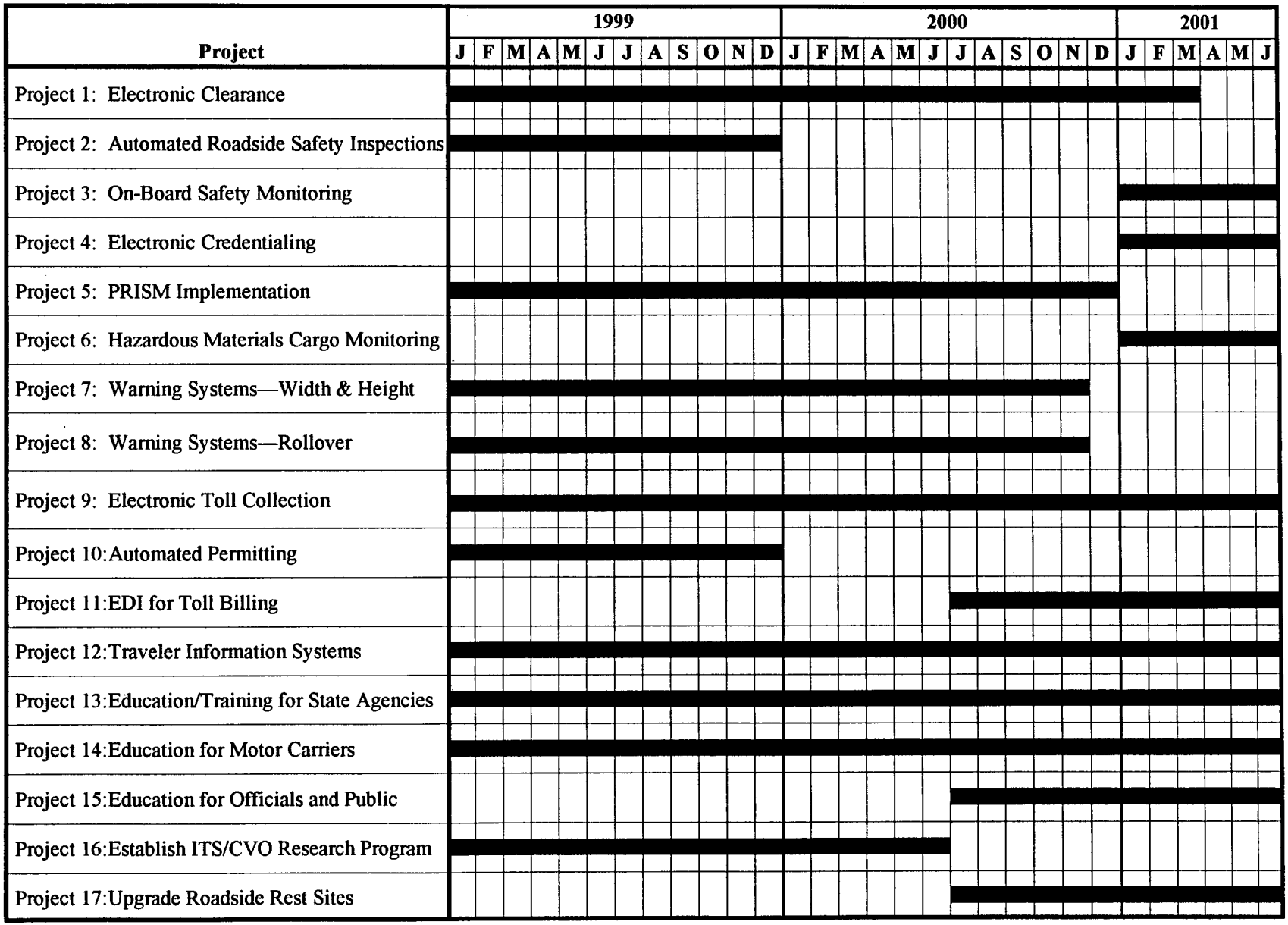
FUNDING APPROACH

Funding will be available through a variety of federal, state, and partner sources. It will not be possible to develop detailed funding plans until a detailed Project Plan is prepared. It is, however, anticipated that all of the state agencies with CVO responsibility will contribute funding to support CVO program implementation in their areas.

MCSAP and CVISN related funds, along with appropriate state matches, will be utilized for technical assistance and hardware/software acquisition. Operating and maintenance costs will be absorbed by the state agencies involved in the various CVO-related activities.

The state agencies representatives of the Statewide ITS/CVO Steering Committee will meet to prepare a detailed funding plan for incorporation into the Commonwealth's budget.

Exhibit 6. Project Schedule



GLOSSARY[1]

APTS (Advanced Public Transportation Systems). One of six user services areas defined by the original ITS National Program Plan. (Recent updates to the plan have reorganized the user services into different categories).

ATA (American Trucking Associations). A national trade association of the trucking industry. Its mission is to educate public officials about the trucking industry and to supply current, accurate information to ensure compliance with federal, state, and local laws.

ATIS (Advanced Traveler Information Systems). Information systems designed to provide roadway users with accurate and timely information on travel conditions.

ATR (Automated Traffic Recording). Traffic counts are taken using unmanned stations that transmit all data collected to a centralized location via telecommunications.

AVC (Automated Vehicle Classification). Classifies trucks by vehicle length, number of axles, and axle spacing.

AVI (Automatic Vehicle Identification). Identifies vehicles using light, microwave, or radio frequencies. Combines roadside receivers with on-board transponders to automatically identify vehicles. This includes license plate readers.

AVL (Automatic Vehicle Location). Calculates the location of a truck or trailer. There are several types of AVL: Dead Reckoning AVL and Radio determination AVL.

Advantage CVO (formerly Advantage I-75). A CVO operational test along Interstate 75. This project represents a partnership of public and private sector interests along the I-75 corridor. (See also Mainline Automated Clearance System).

Apportionable Fee. Any periodic recurring fee required for licensing or registering vehicles, such as, but not limited to, registration, license, or weight fees.

Apportionable Fleet. One or more vehicles identified as a fleet, except recreational vehicles, vehicles displaying restricted plates, city pick-up and delivery vehicles, buses used in transportation of chartered parties, and government-owned vehicles, used in two or more member jurisdictions that allocate or proportionally register vehicles and are used for the transportation of persons for-hire or designed, used or maintained primarily for the transportation of property.

Apportionable Vehicle. Vehicle operating in two or more member jurisdictions and used for the transportation of persons or property may apply for apportioned registration. Apportionable vehicles include: (1) a power unit having two axles and a gross vehicle weight in excess of 26,000 pounds, or (2) a power unit having three or more axles, regardless of weight; or (3) used in combination, when the weight of such combination exceeds 26,000 pounds gross weight. Vehicles or combinations thereof, having a gross vehicle weight of 26,000 pounds or less and two-axle vehicles and buses used in transportation of chartered parties may be proportionally registered at the option of the registrant.

Architecture. The overall structure and unifying design characteristics of a system.

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[1]Excerpted from: *Commercial Vehicle Information Systems and Networks (CVISN) Glossary* (online). (last update 10/21/96). Available: http://www.jhuapl.edu/cvisn/general_info/glossary.html

Base Jurisdiction. In a base state agreement, the jurisdiction where operators or owners have an established place of business, where mileage is accrued by a fleet, and where operational records of a fleet are maintained or can be made available.

Base Plate. Under IRP, a license plate issued by the Base Jurisdiction. It is the only registration identification plate issued for a vehicle by any member jurisdiction.

Base State System. A cooperative agreement under which an interstate carrier traveling in more than one jurisdiction will choose one state as a Base Jurisdiction. Thereafter the Base Jurisdiction is responsible for all interactions with the carrier. (See also Base Jurisdiction)

Base State Working Group on Uniform Motor Carrier Programs. A working group composed of state officials to facilitate state responses in meeting the mandate established in Section 4008 of the Motor Carrier Act of 1991.

Bus. A motor vehicle consisting primarily of a transport device designed for carrying more than 16 passengers, including the driver.

CAVC (Continuous Automated Vehicle Classification). Classifies all vehicles based on their length, number of axles, and axle spacing into user-defined categories for 365 days in one year.

CDL (Commercial Driver's License). A license issued to an individual by a state or other jurisdiction, according to the Code of Federal Regulations, Title 49, Part 383, which authorizes the individual to operate a designated class of motor vehicles.

CDLIS (Commercial Driver's License Information System). A software system that serves as a pointer to the complete record kept by the state issuing the license. The system is intended to provide states with the ability to check a nationwide information system for possible duplicates or for a suspended license before issuing a commercial driver's license to an applicant. It was established by the FHWA according to section 12007 of the Commercial Motor Vehicle Act of 1986.

CFR (Code of Federal Regulations). A codification of the general rules published in the Federal Register by executive departments and agencies of the federal government. An annual publication that contains all federal regulations in effect that govern motor carrier safety. Title 49 deals with motor carrier safety regulations.

CMV (Commercial Motor Vehicle). Any self-propelled or towed vehicle used on highways in intrastate or interstate commerce to transport passengers or property: (1) if it has a gross vehicle weight rating of 26,001 or more pounds; or (2) if it is designed to transport more than 16 passengers, including the driver; or (3) if it is used to transport hazardous materials (as defined in 49 U.S.C. App. 1801 et seq.) in quantity requiring placarding under federal regulation.

CMVSA (Commercial Motor Vehicle Safety Act). Requires all states to meet the same minimum standards for testing and licensing drivers of commercial motor vehicles. The act also mandates uniform penalties and a central reporting system.

CR (Compliance Review). An on-site examination of motor carrier operations, such as drivers' hours of service, maintenance and inspection records, driver qualifications, commercial driver's license requirements, financial responsibility, crashes, hazardous materials, and other safety and transportation records to determine whether a motor carrier meets the safety fitness standard.

CSFR (Carrier Safety Fitness Rating). The safety rating of the carrier based on an official approved safety algorithm.

CVIS (Commercial Vehicle Information System). An information system used to determine the feasibility of linking safety fitness to vehicle registration (see PRISM).

CVISN (Commercial Vehicle Information Systems and Networks). CVISN is the collection of state, federal, and private sector information systems and communications networks that support commercial vehicle operations (CVO). Many improvement initiatives are currently underway to develop new systems and upgrade existing systems to add new capabilities and allow the electronic exchange of information using open interface standards. This will enable delivery of new electronic services to states and carriers in the broad areas of safety, credentials, and electronic clearance. Specific examples of new services include: providing timely safety information to inspectors at the roadside; providing operating credentials to motor carriers electronically; allowing states to exchange registration and fuel tax information electronically, and conducting electronic screening of commercial vehicles at fixed and mobile sites while vehicles travel at highway speeds. In summary, CVISN components apply emerging technologies to improve the effectiveness and efficiency of state and private CVO stakeholders in the three broad functional areas of safety, credentials, and electronic screening.

CVO (Commercial Vehicle Operations). Includes all the operations associated with moving goods and passengers via commercial vehicles over the North American highway system and the activities necessary to regulate these operations.

CVSA (Commercial Vehicle Safety Alliance). An international organization of states, Canadian provinces and territories, and Mexico, with the primary objectives of enhancing commercial vehicle safety, providing uniformity, consistency and reciprocity among its member jurisdictions that regulate commercial motor vehicle safety.

Cab Card. Under IRP, a registration card (vehicle or fuel) issued by the Base Jurisdiction for a vehicle of an apportioned fleet that identifies the vehicle, base plate, and registered weight by jurisdictions and shows the jurisdictions where the vehicle is properly registered.

Citation. A legal action against a person, indicating that a law may have been broken.

Combination Vehicle. Any combination of vehicles with a gross combination weight rating of 26,001 or more pounds, provided the GVWR of the vehicle being towed is in excess of 10,000 pounds.

Combined Gross Weight. The total unladen weight of a combination of vehicles plus the weight of the load carried on that combination of vehicles.

Commercial Trailer. A trailer used to handle freight in the transportation of goods for others; excludes house, light farm, and car trailers.

Crescent. A HELP demonstration project whose goals were to assess the viability of new technology (e.g., WIM, AVI) in the highway environment; improve institutional arrangements; measure the improvements to efficiency and productivity made by the HELP system; and identify other applications for the technology developed under the HELP program.

DOT (Department of Transportation). A municipal, county, state, or federal agency responsible for transportation.

DVIS (Driver/Vehicle Inspection System). Proposed system that will contain key data on drivers and vehicles from recent inspections.

Data Dictionary. A catalog of all data types, giving their names, structure, and information about data usage. Advanced data dictionaries have a direct function that enables them to represent and report on the cross-references between components of data and business models.

Data Element. The smallest unit of data that has meaning in describing information; the smallest unit of named data. A data element has a specified size and format.

Data Model. A logical map of data that represents the inherent properties of the data independently of software, hardware, or machine performance considerations. The model shows data items grouped into third-normal-form records and shows the associations among those records. The term *model* may be contrasted with the term *schema*. A schema also shows a logical representation of data, but it is usually related to a type of software representation.

Data Type. The size and type of a data element. An interpretation applied to a string of bits, such as integer, real, or character.

Database. A collection of interrelated data stored with controlled redundancy to serve one or more applications; the data are stored so that they are independent of programs that use the data; a common and controlled approach is used in adding new data and in modifying and retrieving existing data within a database.

Domestic Intercity Trucking. Trucking operations within the territory of the United States, including intra-Hawaiian and intra-Alaskan, that carry freight beyond the local areas and commercial zones.

Double. A combination of two trailers pulled by a power unit. Usually refers to a power unit pulling two 28' trailers.

Driver. An occupant who is in actual physical control of a transport vehicle or, for an out-of-control vehicle, an occupant who was in control until control was lost.

Driver's License. A license issued by a state or other jurisdiction, to an individual which authorizes the individual to operate a motor vehicle on the highways.

Driving Time. The time spent at the driving controls while operating a motor vehicle.

EDI (Electronic Data Interchange). The exchange of routine business transactions in a computer-processable format, covering such traditional applications as inquiries, planning, purchasing, acknowledgments, pricing, order status, scheduling, test results, shipping and receiving, invoices, payments and financial reporting.

EFT (Electronic Funds Transfer). Any transfer of funds, other than a transaction originated by check draft, or other similar paper instrument, that is initiated through a computer terminal, telephonic instrument, computer, or magnetic tape to order, instruct, or authorize a financial institution to debit or credit an account.

ETC (Electronic Toll Collection). The process that allows a driver to pay tolls electronically.

ETTM (Electronic Toll and Traffic Management). The use of AVI to electronically collect tolls, enabling vehicles to pay tolls without stopping at toll booths.

Electronic Clearance. The process that allows commercial vehicles, whether operating intrastate or interstate, to pass a check point (e.g., weigh station) at mainline speeds without stopping to be checked for proper credentials, weight, and safety status.

En-Route Transit Information. Provides travelers with real-time, accurate, transit and ride sharing information while en route to their destination.

Endorsement. An authorization to an individual's CDL required to permit the individual to operate certain types of commercial motor vehicles.

Entity. A person, place, object, or concept that has characteristics of interest to an enterprise.

Exempt Motor Carrier. A person engaged in transportation exempt from economic regulation by the Interstate Commerce Commission (ICC) under 49 U.S.C. 10526.

FARS (Fatal Accident Reporting System). A database containing information related to fatal crashes.

FHVUT (Federal Heavy Vehicle Use Tax). A federal tax assessed by the Federal Internal Revenue Service for all vehicles over 55,000 pounds gross weight or combined gross weight. Proof of payment is required for vehicle registration, except new vehicles registered within 60 days.

FHWA (Federal Highway Administration). An agency within the U.S. Department of Transportation.

FMCSR (Federal Motor Carrier Safety Regulations). Title 49 of the Code of Federal Regulations, parts 325,383, 385, 387, 390-399, deals with motor carrier safety regulations, including noise emission standards, CDL, and safety regulations. These federal regulations attempt to improve the safety of commercial vehicle operations by reducing the incidence of mechanical defects and use of unqualified drivers.

FTA (Federation of Tax Administrators). An organization representing and addressing issues of concern to state tax administrators.

Fatal Crash. Any crash that results in one or more fatalities.

Fatality. Any injury that results in the death of a person at the time of the motor vehicle crash or within 30 days of the crash.

Fleet. Under IRP, one or more apportionable vehicles.

For-Hire Motor Carrier. A person engaged in the transportation of goods or passengers for compensation.

For Hire Vehicle. A vehicle used to transport goods or passengers for compensation.

Freight. Any commodity being transported.

Full Trailer. A trailer, other than a pole trailer, designed for carrying property and so constructed that no part of its weight rests upon or is carried by the towing road vehicle. An auxiliary undercarriage assembly, commonly known as a converted dolly and consisting of a chassis, fifth wheel, and one or more towbars, is sometimes used to convert a semitrailer to a full trailer.

Function. A logical collection of processes within a business segment.

GIS (Geographical Information System). A computerized data management system designed to capture, store, retrieve, analyze, and report geographic and demographic information.

GPS (Global Positioning System). A government-owned system of 24 earth orbiting satellites that transmit data to ground-based receivers. GPS provides extremely accurate latitude and longitude ground positions in WGS-84 coordinates.

GVW (Gross Vehicle Weight). The maximum allowable fully laden weight of the vehicle and its payload. The most common classification scheme, used by manufacturers and by states, often for both trucks and tractors.

GVWR (Gross Vehicle Weight Rating). A value specified by the manufacturer for a single-unit truck, track tractor, or trailer, or gross combined weight rating the sum of such values for the units that constitute a truck combination. In the absence of a gross vehicle weight rating, an estimate of the gross weight of a fully loaded unit may be substituted for such a rating. The gross vehicle weight rating of a truck combination may be called the gross combination weight rating.

General Freight Carrier. A carrier that handles a variety of commodities, typically in LTL quantities, and generally involves the use of terminal facilities to break and consolidate shipments.

HELP, Inc. (Heavy Vehicle Electronic License Plate). A multi-state, multi-national program that was established to develop and test the technologies for an integrated heavy vehicle monitoring and management system.

HMTA (Hazardous Material Transportation Act). This act mandated 13 federal rule makings and studies to tackle areas of concern, including the routing of hazardous materials, changes in placarding, training for hazardous material employees, motor carrier registration, and permitting an electronic data interchange.

HOS (Hours of Service). The hours of service that a driver has operated a vehicle.

Hazardous Material Transportation Uniform Safety Act. An act, passed in 1990, that requires that certain carriers and shippers engaged in the transportation of hazardous materials register with the Secretary of Transportation. The Hazardous Material Transportation Act (1974) extends the DOT's authority to regulate hazardous materials.

Hazardous Materials. A material or substance that has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and has been so designated. This includes radioactive material, explosives, and poisonous materials.

IFTA (International Fuel Tax Agreement). A base state agreement among states for collecting and disbursing fuel use tax.

IFTA Audit. A review of a carrier's records to verify fuel usage claims and other data supplied on IFTA tax forms.

IFTA, Inc. A nonprofit corporation chartered for the purpose of providing information, support, and training to carriers and public administrators in implementing and operating under the provisions of the International Fuel Tax Agreement for the payment of fuel taxes by commercial motor vehicles.

IRP (International Registration Plan). A base state agreement, mandated by ISTEA, that provided for vehicle registration reciprocity among member jurisdictions. Current members include all states and Canada.

IRP Audit. A review of a carrier's records to verify mileage figures and other data supplied by the carrier as a basis for determining registration fees and fee apportionment by IRP.

IRP, Inc. A nonprofit corporation chartered for the purpose of providing information, support, and training to carriers and public administrators in implementing and operating under the provisions of the International Registration Plan for commercial motor vehicles.

ISTEA (Intermodal Surface Transportation Efficiency Act of 1991). This act required all states to participate in IFTA and IRP by September 30, 1996. Provided primary federal funding for highway programs in the U.S. Contains IVHS Act of 1991 (Title VI, Part B). ISTEA has been superceded by the Transportation Equity Act for the 21st Century (TEA-21).

ITS (Intelligent Transportation Systems). ITS is the use of computer and communications technologies to address the challenges facing surface transportation—improving safety, productivity, and general mobility,

in spite of increasing congestion, continuing threats to travel safety and security, and increasingly constrained transportation agency budgets.

ITSA (Intelligent Transportation Society of America). A Federal Advisory Committee to advise the U.S. Department of Transportation on the ITS program.

Indicia. Items issued by the Registration Agency that "indicate" registration information has been gathered and appropriate fees paid. Indicia include license plates, fuel stickers, cab cards, etc.

Injury. Bodily harm to a person. This definition does not include effects of diseases such as stroke, heart attack, diabetic coma, epileptic seizure, and others.

Injury Crash. Any road vehicle crash that results in one or more injuries.

Interstate Commerce. Trade, traffic, or transportation in the U.S. that occurs between a place in a state and a place outside of such state or is between two places in a state through another state.

Interstate Highway. A traffic way on the interstate system.

Interstate Motor Carrier. A motor carrier engaged in interstate commerce whose vehicle(s) transports property or passengers between or through two or more states or other jurisdictions (see "Jurisdiction").

Interstate Operation. Vehicle movement between or through two or more jurisdictions.

Intrastate Commerce. Any trade, traffic or transportation in any state that is not in interstate commerce.

Intrastate Motor Carrier. A motor carrier whose vehicle(s) transports property or passengers from one point within a jurisdiction to another point within the same jurisdiction, excluding interstate movements.

Intrastate Operation. Vehicle movement from one point within a jurisdiction to another point within the same jurisdiction.

Jurisdiction. Jurisdiction means a state territory or possession of the United States, the District of Columbia, or a state, province, or territory of a country.

LTL (Less Than Truckload). A quantity of freight less than that required for the application of a truckload rate. Usually less than 10,000 pounds.

Lease. A written document vesting exclusive possession, control of, and responsibility for the operation of a vehicle to a lessee for a specific period of time.

Lessee. A person, firm, or corporation that has the legal possession and control of a vehicle owned by another under terms of a lease agreement.

Lessor. A person, firm, or corporation that, under the terms of a lease, grants the legal right of possession, control of, and responsibility for the operations of the vehicle to another person, firm, or corporation.

Light Trucks. Trucks under 10,000 pounds gross vehicle weight rating (e.g., pickups, vans, truck-based station wagons, and multi-purpose vehicles).

Long-Term Lease. Any lease written for a period exceeding 29 consecutive days.

MACS (Mainline Automated Clearance System). A demonstration project that allows transponder-equipped trucks to travel the entire length of I-75 and Highway 401 at mainline speeds with no more than one stop at

an inspection station and still verifying weight compliance and credential status. It is part of Advantage I-75.

MCMIS (Motor Carrier Management Information System). A central repository of comprehensive safety data on interstate motor carriers maintained by the FHWA OMC.

MCSAP (Motor Carrier Safety Assistance Program). A program established to remove potentially unsafe drivers and imminently hazardous vehicles from traffic by increasing the level of safety enforcement activity.

Medium and Heavy Trucks. Trucks over 10,000 pounds GVWR, including single-unit trucks, tractor-trailer combinations, trucks with cargo trailer(s), and truck-tractors pulling no trailer.

Motor Carrier. A person (an individual, partnership, association, corporation, business trust, or any other organized group of individuals) who is responsible for the safety fitness of a commercial motor vehicle engaged in commerce on roads and highways.

Motor Vehicle. Any vehicle, machine, tractor, trailer, or semitrailer propelled or drawn by mechanical power and used upon the highways in the transportation of passengers or property.

Motorist. Any occupant of a motor vehicle in transport.

Multi-Jurisdictional Oversize and Overweight Organization. An organization of the states (Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Missouri, Minnesota, Ohio, and Wisconsin) that promotes standard oversize weight permitting and enforcement.

NAFTA (North American Free Trade Agreement). An agreement establishing a free trade area between Canada, Mexico, and the United States, that provides for the phase-out of restrictions on cross-border land transportation services.

NDR (National Driver Register). A national repository of state-submitted data about adverse actions applied to a driver's record. Updated information is returned to the states.

NGA (National Governors' Association). An organization whose members are the governors of each state in the United States of America. It serves as a vehicle through which governors influence the development and implementation of national transportation policy.

NHTSA (National Highway Traffic Safety Administration). A branch of the U.S. DOT responsible for overseeing and improving safety and standards in the United States.

NIMC (National Incident Management Coalition). A program created to serve as a focus for consensus building as well as for the promotion and wider implementation of incident management programs.

NMVTIS (National Motor Vehicle Title Information System). An information system allowing users to check the validity and status of title documents, check vehicles titled in other jurisdictions, check salvage and junk vehicles, review odometer readings, and review information reported by salvage yards and insurance companies. The system has been developed to support the requirements of the Anti-Car Theft Act of 1992 and was to be operational by 1 January 1996.

NPTC (National Private Truck Council). An association of corporations that operate their own trucking fleets.

NTSB (National Transportation Safety Board). An independent agency of the federal government whose responsibilities include investigating transportation accidents, conducting studies, and making

recommendations on transportation safety measures and practices to government agencies, the transportation industry, and others.

Non-Regulated Trucking. A carrier that is exempt from economic regulations, e.g., exempt agricultural shipments.

OBC (On-Board Computer). Special-purpose micro computers that are attached to sensors that record vehicle and driver attributes.

OMC (Office of Motor Carriers). This is a division of the U.S. Department of Transportation's (USDOT) Federal Highway Administration (FHWA). OMC is responsible for issues concerning the nation's motor carrier industry and is organized as follows:

- Headquarters—OMC's main office is located at the USDOT building in Washington, D.C.
- Regional Resource Centers—There are four OMC regional resource centers in the United States. Resource centers provide expert technical assistance to division offices and headquarters.
- Division—Each state has a division office that works closely with state motor carrier safety and registration officials. Division offices report to the regional offices.

On-Board Safety Monitoring. The systems that provide for sensing the safety status of a vehicle, cargo, and driver at mainline speeds.

On-Duty Time. On-duty time starts when the driver begins work or must be ready for work, and ends when the driver is relieved of all responsibilities. On-duty time includes all time spent driving, loading and unloading, preparing crash reports, and attending to the operation of a vehicle. It also includes meals and coffee breaks.

One-Stop Shopping. Refers to the ability to obtain all required tax and regulatory credentials from a single source.

Operating Authority. Specifies the products a carrier may haul and where it may haul them. The legal permission required by a carrier to haul goods from one point to another.

Operating Expenses. The costs of handling traffic, including both direct costs, e.g., driver wages and fuel, and indirect costs, e.g., computer expenses and advertising, but excluding the interest expense.

Operations Out of Service Order. The official document or declaration used by FHWA or state enforcement officials to order a motor carrier, driver or vehicle to cease operations for imminent hazard conditions.

Operator. With respect to motor vehicles, every person, other than a chauffeur, who is in actual physical control of a motor vehicle on a highway.

Out-of-Service Driver. A driver who can no longer operate a vehicle because of being on duty over the maximum periods permitted by the Code of Federal Regulations.

Out-of-Service Vehicle. A vehicle that cannot be operated because the vehicle is in such a condition that is to likely cause an crash or breakdown.

Out-of-Service Violation. Any violation of the Federal Motor Carrier Safety Regulations that results in a vehicle out-of-service condition.

Oversize/Overweight Permit. A special permit that is issued for vehicles operating outside the statutory limits set for size and weight.

Owner. The entity listed as the owner of a vehicle.

Owner/Operator. An equipment lessor who leases his/her vehicular equipment with driver to a carrier.

PDPS (Problem Driver Pointer System). A central repository of information regarding problem drivers throughout the country. Its primary function is to support the driving license issuing process.

POE (Port of Entry). A roadside site used to monitor and regulate trucks using state highways with respect to weight, size, safety, and possibly weight distance taxation.

PRISM (Performance and Registration Information Systems Management). The PRISM program (formerly referred to as the Commercial Vehicle Information System (CVIS) began as a mandate by Congress to explore the potential of linking the commercial vehicle registration process to motor carrier safety. The intent of Congress as stated in Section 4003 of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 was to "link the motor carrier safety information network system of the Department of Transportation and similar State systems with the motor vehicle registration and licensing systems of the states" to achieve to purposes: 1. determine the safety fitness of the motor carrier prior to issuing license plates; and 2. cause the carrier to improve its safety performance through an improvement process and, where necessary, the application of registration sanctions.

PUC (Public Utility Commission). A state agency whose responsibilities include the regulation of for-hire (public and private) carriers of passengers and goods within a state.

Passenger. Any occupant of a road vehicle other than its driver.

Power Unit. The control and pulling vehicle for trailers or semitrailers.

Pre-Trip Travel Information. A user service that will provide travelers with information before their departure and before the mode choice is made.

Principal Place of Business. A single location designated by the motor carrier, normally its headquarters, where records will be maintained.

Private Carrier. A person, firm, or corporation that uses its own trucks to transport its own freight.

Process. A repetitive, well-defined set of logical tasks that support one function, can be defined in terms of inputs and outputs, and have a definable beginning and end. Processes can be decomposed into processes and are triggered by an event and carried out by a business segment to achieve a stated purpose. A low-level process may be replicated across the business segment.

RAPP (Regional Automated Permit Processing). Pilot project that generated a central shared database enabling participating states to track permits and check credentials.

RFTA (Regional Fuel Tax Agreement). A base state agreement entered by Maine, Vermont, and New Hampshire to administer interstate fuel tax.

Reciprocity Agreements. Agreements between states allowing for the reciprocal granting of equivalent rights and/or privileges to properly credentialed vehicles.

Registered Weight. The weight for which a vehicle is licensed or registered within a particular jurisdiction.

Registrant. A person, firm, or corporation in whose name or names a vehicle is properly registered.

Registration Agency. A governmental organization that gathers registration information, collects registration fees and issues indicia (plates, stickers, cab cards, etc.) for commercial motor vehicles.

Registration State. A state in which a motor carrier has registered its vehicles for operation.

Regulated Motor Carrier. A carrier subject to economic regulation by the Interstate Commerce Commission.

Report (formerly Profile). A more detailed expansion of the information in a snapshot. A report provides the same kind of information as in a snapshot, but at a more detailed level (e.g., specific inspection data, accident records, events).

Roadside. The part of the traffic way between the outer edge of the shoulder and the edge of the traffic way, located off the road, but inside the traffic way and not part of the median.

Roadside Inspection. An inspection of a commercial vehicle or driver that occurs at the roadside.

Roadway. That part of a traffic way designed, improved, and ordinarily used for motor vehicle travel or, where various classes of motor vehicles are segregated, that part of a traffic way used by a particular class. Separate roadways may be provided for northbound and southbound traffic or for trucks and automobiles. Bridle paths and bicycle paths are not included in this definition.

Rural Area. Any area not within urban areas.

SAFER (Safety and Fitness Electronic Records). An on-line system that will be available to users over a nationwide data network that will return a standard carrier safety fitness record to the requester within a few seconds.

SAFETYNET. A distributed system for managing safety data on both interstate and intrastate motor carriers and for the federal and state offices to electronically exchange data on interstate carriers with MCMIS.

SCE (Selective Compliance Enforcement). A program used by FHWA to prioritize carriers for participation in compliance reviews based on commodity transported, annual carrier mileage, months since last review, vehicle OOS rate, driver out of service rate, preventable recordable crash rate, and general safety fitness rating.

SEB (State Entry Beacon). A fixed-position controller, also called a reader, its associated transmit and receive antennas, as well as modulation/demodulation hardware and software that are located at the state border.

SSRS (Single-State Registration System). A base state agreement for administering operating authority.

Semitrailer. A trailer, other than a pole trailer, designed for carrying property and so constructed that part of its weight rests upon or is carried by the towing road vehicle. A truck trailer equipped with one or more axles and constructed so that the front end rests upon a truck tractor.

Shared Road. Any bikeway that is part of a roadway, but not a bicycle lane.

Shoulder. That part of a traffic way contiguous with the roadway for emergency use, for the accommodation of stopped road vehicles and lateral support of the roadway structure.

Smart Card. Plastic cards with an embedded integrated circuit chip containing memory and a microprocessor.

Snapshot (also see Report). A condensed collection of safety and summary level information pertaining to: who a carrier is, where the carrier is based, its basic type of operation, and the carrier's safety rating and safety record.

Specialized Carrier. A trucking company franchised to transport articles that, because of their size, shape, weight, or other inherent characteristics, require special equipment for loading, unloading, or transporting.

State of Domicile. The state in which a carrier maintains its headquarters.

Straight Truck. A vehicle with its cargo body and tractor mounted on the same chassis.

Surface Transportation Board (STB). The STB is a bipartisan, independent, adjudicatory body, organizationally housed within the Department of Transportation (DOT), with jurisdiction over certain surface transportation economic regulatory matters. The Board was established pursuant to the ICC Termination Act of 1995 to assume certain of the regulatory functions that had been administered by the Interstate Commerce Commission (ICC). Other ICC regulatory functions were either eliminated or transferred to the Federal Highway Administration (FHWA) or the Bureau of Transportation Statistics within DOT. The Board has broad economic regulatory oversight of railroads, addressing such matters as rate reasonableness, car service and interchange, mergers and line acquisitions, line constructions, and line abandonments. The Board also has certain oversight of pipeline carriers, intercity bus carriers, water carriers engaged in noncontiguous domestic trade, household goods carriers, and motor carriers involved in collective activities or undercharge claims. The Board has discretion to reduce and tailor its regulatory activities, as it finds appropriate, to meet changing transportation environments or individual circumstances.

TCC (Transportation Computer Center). Houses the mainframe computer system used by the Department of Transportation. MCMIS resides on this mainframe.

TEA-21 (Transportation Equity Act for the 21st Century). Requires the USDOT to carry out a comprehensive program to deploy intelligent transportation systems that: (1) improve the safety and productivity of commercial vehicles and drivers; and (2) reduce costs associated with commercial vehicle operations and Federal and State commercial vehicle regulatory requirements. Defines the following priority areas for USDOT ITS/CVO initiatives: (1) encourage multistate cooperation and corridor development; (2) improve the safety of commercial vehicle operations and increase the efficiency of regulatory inspection processes to reduce administrative burdens by advancing technology to facilitate inspections and generally increase the effectiveness of enforcement efforts; (3) advance electronic processing of registration information, driver licensing information, fuel tax information, inspection and crash data, and other safety information; and promote communication of the information among the States; and (4) enhance the safe passage of commercial vehicles across the United States and across international borders. TEA-21 also provides primary federal funding for highway programs in the U.S.

Tag Number. A vehicle's license plate number, including state, of a vehicle.

Temporary Trip Permit. Temporary travel permits, valid for two to ten days, allowing a vehicle to travel in a jurisdiction where a carrier does not have a permanent registration permit.

Total Distance. For IRP, the total number of miles operated by a fleet of proportionally registered vehicles in all jurisdictions during the preceding year.

Tractor. A self-propelled motor vehicle designed and/or used primarily for drawing other vehicles.

Tractor Semitrailer. A combination vehicle consisting of a power unit (tractor) and a semitrailer.

Trailer. A road vehicle designed to be drawn by another road vehicle.

Transparent Borders. The ability of commercial vehicles to travel unimpeded across state borders.

Transponder. An electronic tag carried by a motor vehicle that has electronically stored information that can be retrieved by a roadside reader.

Trip. The period during which a vehicle is continuously traveling from its point of origin to its destination. The vehicle may stop for short periods during the trip without causing discontinuation of the trip if no change occurs in the loaded weight.

Trip Ticket. An electronic ticket stored on the transponder that contains trip-related information such as the carrier, vehicle, driver and transponder ID's, commodity code, weight measurements, date/time/location, and results of last clearance event. The trip ticket is transmitted during DSRC between vehicle and roadside reader equipment.

Truck. A motor vehicle designed to carry an entire load. It may consist of a chassis and body, a chassis, cab and body, or it may be of integral construction so that the body and chassis form a single unit.

Truck Combination. A truck consisting primarily of a transport device that is a single-unit truck or truck tractor with one or more attached trailers.

Truck Tractor. A motor vehicle consisting of a single motorized transport device designed primarily for drawing trailers.

Truckload. Quantity of freight required to fill a truck. When used in connection with freight rates, the quantity of freight necessary to qualify a shipment for a truckload rate, usually over 10,000 pounds.

UCR (Unified Carrier Register). A national system that will allow for registering carriers and issuing US DOT numbers. It will maintain census information on carriers that are authorized to operate in the United States. The concept for this system is being developed. The UCR is intended to replace the current systems used for assigning DOT numbers, assigning ICC numbers, implementing the Single State Registration System (SSRS), and tracking financial responsibility.

Unrated Carrier. A motor carrier without an assigned safety rating from the FHWA.

VIN (Vehicle Identification Number). A unique combination of alphanumeric characters affixed to one vehicle in specific locations and formulated by the manufacturer.

VISTA (Vehicle Information System for Tax Apportionment). A software system developed by Lockheed Information Management Systems for calculating transactions among states based on reporting by carriers.

VRC (Vehicle to Roadside Communication). A means to deliver messages between moving vehicles randomly entering a communications zone and a fixed roadway infrastructure for both wide-area communication and large-based applications.

VTIE (Vehicle Title Information Exchange). A system to enable the exchange of title information about specific vehicles to verify that titles are valid and to detect altered or fraudulent documents.

Vehicle-Mile. A measurement of the total miles traveled by all vehicles in an area. Generally applied to intercity movements only.

Violation. A violation of the Federal Motor Carrier Safety Regulations assigned to a vehicle as part of an inspection.

WIM (Weigh-In-Motion). Measures dynamic axle weight at highway or slower speeds. Weigh-In-Motion refers to various technologies that enable vehicle weights to be determined without the need for a vehicle to physically stop on a scale.

APPENDIX A: PENNSYLVANIA'S ITS/CVO BUSINESS PLAN STEERING COMMITTEE MEMBERS

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Robert Haught, Pennsylvania State Police

Paul Hoover, Fullington Auto Bus Co.

Terry Humelsine, PA Towing Association

John Jerich, Jr., President, John S. Jerich, Jr., Inc.

Jack Johnson, Johnson's Road & Towing Service

Joe Jones, Keen Transport, Inc.

Paul Jovanis, Professor and Department Head, Department of Civil and Environmental Engineering, The Pennsylvania State University

Fred Juba, Enforcement Unit, Motor Carrier Division, Pennsylvania Department of Transportation

Ted Kazmierczak, Pyne Freight Lines

William Keen, Keen Transport, Inc.

Ann Marie Kessler, Bureau of Motor Vehicles, Pennsylvania Department of Transportation

Garvin R. Kissinger, Managing Director/Public Affairs, AAA Mid-Atlantic

Steven Koser, ITS Coordinator, Pennsylvania Department of Transportation

Dennis Lebo, Special Assistant to Deputy Secretary for Planning, Pennsylvania Department of Transportation

Ted Leonard, Executive Director, Pennsylvania AAA Federation

James Locktosh, Wal-Mart Stores, Inc.

Michael Maffei, President, Tri-State Truckers Association

Bill Maxson, Biscontini Distribution Ctr.

Jay McCormick, Woolever Bros. Transportation

Richard McCusker, Executive Vice President, Milton Trans., Inc.

Dennis McGee, State Program Specialist, Office of Motor Carriers, Federal Highway Administration

Dennis McNichol, III, President, Dennis Trucking Company

Dave Metzler, Carlisle Carriers Corp.

Linley Oberman, Manager, Customer Service Division, Pennsylvania Department of Transportation

Michael Patten, Program Manager, The Pennsylvania State University

Eileen Pauletta, Congestion & Travel Demand Manager, Pennsylvania Department of Transportation

Stephen Pelton, Pelton Trucking Co., Inc.

James Runk, President, Pennsylvania Motor Truck Association

Michael Schubert, Customer Service, Pennsylvania Turnpike Commission

Frank Shaffer, Emergency Management Specialist, Pennsylvania Department of Transportation

Bonnie Shughart, Colonial Metals, Co.

Maria Smith, Research Analyst, Bureau of Motor Fuel Taxes, Pennsylvania Department of Revenue

Daniel Smyser, Manager, Motor Carrier Division, Pennsylvania Department of Transportation

Jeff Snelbaker, Safety Director, Carlisle Carrier Corp.

John Tarquino, Planning Specialist, Pennsylvania Department of Transportation

Janine Valle, Pennsylvania Motor Truck Association

Jack Walters, Safety Director, Somerset County Trucking Association

Anthony White, Director, Bureau of Motor Fuel Taxes, Pennsylvania Department of Revenue

Donald Wilson, Motor Carrier Enforcement, Pennsylvania Public Utility Commission

Kim Witherow, Senior Engineer, I-95 Corridor Coalition, Castle Rock Consultants

Thomas Zamboni, Commercial Vehicle Registration Manager, Pennsylvania Department of Transportation