



PB98-137821

Prepared for

**Eastern States IVHS-CVO Institutional
Issues Study**

February, 1998

Final Report: Phase 2

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Avenue, Washington, DC 20540, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.



PB98-137821

2. REPORT DATE
2-98

3. REPORT TYPE AND DATES COVERED
Final Report, 1-96 to 10-97.

4. TITLE AND SUBTITLE

Eastern States IVHS-CVO Institutional Issues Study
Final Report: Phase 2.

5. FUNDING NUMBERS

6. AUTHOR(S)

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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

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8. PERFORMING ORGANIZATION
REPORT NUMBER

(92-018)

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

FHWA & PA DOT

10. SPONSORING / MONITORING
AGENCY REPORT NUMBER

FHWA - PA - 98-002+
92-018

11. SUPPLEMENTARY NOTES
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U.S. DEPARTMENT OF COMMERCE

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12a. DISTRIBUTION / AVAILABILITY STATEMENT

Available from National Technical Information
Service, Springfield, VA

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

Phase 2 of the Eastern States IVHS-CVO Institutional Issues Study resulted in two major accomplishments. The first was the continuation of the CVO Regional Forum enabling the states to continue identifying and addressing regional CVO issues. The second was the selection of Delaware as the contracting state and the Eastern States Coalition as the states for the SAFER Data Mailbox Field Operations Test.

14. SUBJECT TERMS

IVHS, ITS, CVO, SAFER, CVISN, I-95 Corridor Coalition
Mainstreaming.

15. NUMBER OF PAGES

19

16. PRICE CODE

17. SECURITY CLASSIFICATION
OF REPORT

18. SECURITY CLASSIFICATION
OF THIS PAGE

19. SECURITY CLASSIFICATION
OF ABSTRACT

20. LIMITATION OF ABSTRACT

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1. INTRODUCTION

In 1991, the Federal Highway Administration (FHWA) announced grants of \$ 50,000 per State to study and identify institutional impediments to more efficient and effective commercial vehicle operations within that State's boundaries. In response to this program, eight jurisdictions joined together to conduct an Eastern States Intelligent Vehicle - Highway System Commercial Vehicle Operations (IVHS-CVO) Institutional Issues Study. The eight jurisdictions included: the States of Delaware, New Jersey, New York, Pennsylvania, Maryland, Virginia, and West Virginia; and, the District of Columbia.

In addition to the eight jurisdictions, representatives from the American Trucking Associations (ATA), the National Private Truck Council (NPTC), and the Independent Truckers and Drivers Association participated in the Institutional Issues Study. The FHWA, Office of Motor Carriers (OMC), also served as a key partner in the Study.

The study work was contracted through the Commonwealth of Pennsylvania, with work activity guided by a Steering Committee drawn from participating parties. Committee members included: one representative from each State; one representative each from Region 3 of the FHWA and Region 1 of the FHWA OMC; and, one representative from each industry association.

The final report for the Study was submitted to the Pennsylvania Department of Transportation in November, 1995. The report included an Interim Regional CVO Business Plan predicated on two primary premises:

- the Eastern States recognized that a number of national initiatives scheduled to come on line between 1995 through 1997 would have a major long-term impact on CVO

activities in the region. The Interim Plan should focus, therefore, only on shorter-term activities such as streamlining roadside safety enforcement and administrative base state procedures; and

- development of intelligent transportation systems for commercial vehicle operations (ITS/CVO) is a process that will develop over time, and only with significant research and development to bring these services into deployment status.

To this end, the Interim Plan was comprised of three elements intended to foster regional coordination and address common institutional barriers:

- **Regional CVO Coalition/Forum:** continue a regional CVO Coalition to oversee implementation of the Interim Plan and provide a forum to coordinate and address regional CVO program initiatives and issues;
- **Roadside Automated Clearance Program:** participate in the deployment of pen-based data systems and in the 100 MCSAP Sites Program; develop and implement procedures for identifying problem carriers/operators and assisting/monitoring their compliance; leverage Automated Vehicle Identification (AVI) toll installations for CVO applications; apply technologies to assist safety inspection screening and execution; and
- **Base-State Credentials Service Program:** promote consolidated customer service points of contact; make regulatory information easily accessible; provide multi-state oversize/overweight permits; support development of Electronic Data Interface (EDI) and Electronic Funds Transfer (EFT) capabilities; smoothly implement the International Fuel Tax Agreement (IFTA); harmonize in-vehicle paperwork and indicia.

2. EASTERN STATES IVHS-CVO INSTITUTIONAL ISSUES STUDY: PHASE 2

The Steering Committee for the Eastern States Consortium recommended that the work of the Institutional Issues Study be continued in a Phase 2, with an emphasis on implementing the Interim Plan. The Eastern States approved this recommendation, and the Steering Committee identified four work elements for priority attention in Phase 2 of the Study. These included:

- continuation of the Regional CVO Forum to manage Phase 2 activities, continue coordination and communication between States and industry, and develop an Eastern States CVO Business Plan;
- designation of a network of safety enforcement sites for inclusion in the "100 MCSAP Sites Program", and the development of safety databases and communications networks designed to strengthen and coordinate regional safety enforcement;
- working with Eastern State Toll Authorities to foster the adaptation of the EZ PASS AVI toll standard for commercial vehicle operations, in particular electronic screening at fixed and mobile facilities; and
- implementation of support for IFTA and International Registration Plan (IRP) programs, including promotion of one-stop-shop services, updated trucking guides, and carrier educational outreach activities designed to facilitate the transition to and understanding of new State business practices.

A consultant team headed by JHK & Associates, Inc. (JHK), which had provided the technical resources and facilitation services in support of the Steering Committee and the Regional CVO Forum necessary for the initial Institutional Issues Study, continued on contract with Pennsylvania DOT to implement the Phase 2 work elements. Specific tasks included:

- Task 1: Provide Secretariat and Facilitation Services for the Regional Forum and Quarterly Meetings of the Consortium
- Task 2: Assist the Consortium Steering Committee in Development and Management of the Phase 2 Work Program
- Task 3: Assist the Steering Committee in Developing a Regional CVO Business Plan in consort with the I-95 Corridor Coalition and Industry Stakeholders
- Task 4: Develop Solicitation Packages for Consultant Services, Provide Oversight of Consultants' Work, and Coordinate Phase 2 Project Nos. 2, 3, and 4
- Task 5: Provide CVO-Related Services to Consortium Member States
- Task 6: Facilitate Participation of Industry Representatives in Phase 2 Activities

3. PHASE 2 ACCOMPLISHMENTS

Phase 2 of the Eastern States IVHS-CVO Institutional Study resulted in two major accomplishments. The first was the continuation of the CVO Regional Forum, enabling the States to continue identifying and addressing regional issues. The second was the selection of Delaware as the contracting State and the Eastern States Coalition as the test states for the SAFER Data Mailbox Field Operations Test.

CVO Regional Forum

The Eastern States continued to meet on a quarterly basis throughout Phase 2. These meetings continued the CVO Regional Forum, thus enabling the Eastern States to build on the successes of Phase 1. Perhaps the most significant benefit obtained from this work was the planning work completed as preparation for the Eastern States to participate in upcoming national and regional CVO initiatives, summarized in the following section of this report.

The Regional Forum effectively became the communications medium through which representatives of the member States were kept informed of evolving national and regional initiatives related to CVO. Of particular note in this regard were the SAFER and CVISN programs. In addition, the Eastern States were represented on the Technical Review Committee for the I-95 Corridor Coalition CVO Program; the representatives provided regular updates regarding the Coalition's efforts to the Forum. (SAFER, CVISN and the I-95 Corridor Coalition program are discussed in more detail below.) The updates provided to the Forum regarding these initiatives allowed the member States to learn from the experiences of others, and assisted in the effort to ensure that compatible CVO technologies were implemented throughout the region. The Regional Forum also served as the management and coordination group for the SAFER Data Mailbox Field Operations

Test.

The work of the Regional Forum was instrumental in helping the member States procure and implement laptop computers to record inspection data at the roadside. The Regional Forum brought the enforcement community and industry together to work on technical issues related to the use of the laptops, and also to identify issues relating to developing a "high risk carrier" profile for use by the Eastern States.

SAFER Data Mailbox Field Operations Test

A major component of the national CVO initiatives was the development of the Safety and Fitness Electronic Record (SAFER) software program, which is described in more detail in the following section. Very briefly, 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 be available to the enforcement community in Maryland and Virginia.

The Eastern States Coalition was selected by FHWA to conduct a Field Operations Test of the Mailbox. Delaware was selected as the host state, and received a federal grant. This grant was used to procure laptop computers and communications technology for Delaware and the other Eastern States to test the Mailbox. In addition, technical assistance was provided to the States.

4. CVO-RELATED SERVICES TO CONSORTIUM MEMBER STATES

Three of the member states made use of dedicated Phase 2 funding for provision of CVO-related services. These states were Delaware, New York, and Virginia. Summaries of the services are discussed below.

Delaware

As part of an investigation of methods to improve the efficiency of the oversize/overweight permitting process in Delaware, the current computerized system used by the State of Utah (which was being modified for use by the State of Washington) was considered for adaptation to Delaware. The potential for such an adaptation was investigated, and then discussed at a meeting of the Northeast Oversize and Overweight Permitting Agreement (NOOPA) in October 1996. These discussions involved a representative of the Washington Department of Transportation who was knowledgeable about that State's proposed system; this individual was able to participate in the meeting through the utilization of Phase 2 funds.

New York

New York utilized Phase 2 funds to begin an investigation of a project that would incorporate intrastate carriers into a statewide resource database so that enforcement operations could obtain the same timely and accurate information on intrastate carriers that would be available for interstate carriers.

Virginia

Virginia, as a member of the Eastern States Consortium, a similar group of southeastern states, and the I-95 Corridor Coalition, had the opportunity to be involved in the activities of all three groups. Phase 2 funds for Virginia were allocated to efforts to assist with coordination of Virginia's involvement in those activities, particularly with regard to the I-95 Corridor Coalition initiatives described in the next chapter.

5. IMPLEMENTATION OF NATIONAL AND REGIONAL ITS/CVO INITIATIVES

During the time period that the Eastern States envisioned implementation of Phase 2 of the Institutional Issues Study, a number of the federal and regional ITS/CVO initiatives were implemented, resulting in a major impact on the proposed work plan. These initiatives involved most of the Eastern States, and provided access to technical assistance and funding. More importantly, these initiatives targeted these resources directly at problem areas identified by the Eastern States in the first phase of the Institutional Issues Study. This section of the report summarizes these national initiatives in order to illustrate the impact these had on Phase 2.

Commercial Vehicle Information Systems and Networks Project

In early 1996, the Federal Highway Administration 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 transaction set, and specified the development of a standard for short-range communications, the Dedicated Short-Range Communication Standard (DSRC). The application of EDI X-12 transactions, with specified Transactions Sets particular to CVO (TS-285 and TS-286), and the development of the DSRC standard for roadside communications related to safety and enforcement, was intended to create the national interoperability of systems using open standards.

The CVISN prototype projects in Maryland and Virginia involved applying the system architecture to the existing State systems to demonstrate the technical feasibility of the

architecture. Three major software programs were developed for testing the system architecture:

- **Credentialing Interface (CI):** a software program that serves as an electronic entry point for submission of carrier credentials to a state. The CI was designed to verify, check, and route a credential application to the appropriate agency, and return the completed credential to the carrier, providing end-to-end electronic one-stop-shopping. This included electronic funds transfer.
- **Carrier Automated Transaction Software:** a software program that contains electronic copies of all credential application forms required by a State. A carrier would complete all portions of the electronic application relevant to the carrier's needs, and transmit the completed application by modem connection to a State's Credentialing Interface.
- **Commercial Vehicle Information Exchange Window (CVIEW):** a software program that allows enforcement personnel to store "snapshot profiles" of carriers; that is, information on a carrier's safety rating, history, inspections, and credential status, for use in identifying problem carriers at the roadside. The CVIEW was also designed to enable weigh and inspection stations to access similar information for purposes of electronic screening. The CVIEW, which enabled enforcement personnel to transmit this data directly from the roadside, was designed to provide access to data about intra-state carriers, but also to allow enforcement personnel to exchange data on inter-state carriers through a program described below.

These software programs were intended to enable states to share data between legacy systems within a State and, through the CVIEW, between States. In addition to these State systems, through CVISN, FHWA funded the development of national clearinghouses for IRP, IFTA, and roadside safety. The CVISN architecture was designed to enable States to both transmit data to these clearinghouses, thus keeping safety and credentialing records on motor carriers relatively current, and also to access this same data. A major component of this part of the CVISN Architecture was the SAFER software program. Through SAFER, the enforcement community would also be able to transmit data from the roadside into a State's legacy systems, which in turn would transmit this data to the national clearinghouses being developed through CVISN.

Through CVISN, both Maryland and Virginia received substantial technical assistance for designing and implementing the systems summarized above. Each State also received \$1.0 million in FHWA grants, with no required match. Each State will also be eligible for additional funding when Congress reauthorizes the "NexTea" legislation.

I-95 Corridor Coalition Commercial Vehicle Operations Program

In December 1996, the I-95 Corridor Coalition held an organizational meeting for the proposed CVO working program. At that time, a request was made for volunteers to head the CVO Working Group. A request was also made for volunteers to head the Technical Review Committees working on subject-specific issues under the overall guidance of the Working Group. The leadership for the Working Group was finalized in early 1997, and within two months the leadership for the Technical Review Committees was established. This CVO Working Group leadership included a representative from Maryland, while the TRC leadership included representatives from Virginia, Maryland, New Jersey, Delaware, and New York. In addition, the ATA Foundation and the NPTC were included in the TRC leadership.

These two groups had the same function as the Eastern States Steering Committee and the more general Eastern States CVO Regional Forum. All of the Eastern State jurisdictions, except for West Virginia and the District of Columbia, were included in the I-95 CVO Working Group. Thus, the I-95 CVO Working Group expanded upon the existing Eastern States CVO Regional Forum, with the added benefit of including the Northeastern States as part of the overall Working Group. This offered a significant opportunity for the Eastern States to leverage existing programmatic resources.

In addition to expanding upon the Eastern States CVO Regional Forum structure, the I-95 Corridor Coalition also developed a work program that incorporated much of what the Eastern States had proposed in the Interim Regional CVO Business Plan. Specifically, the Corridor Coalition proposed a work plan that included field operations tests (FOTs) in the

following areas:

- **FOT 6: Fleet Forward:** This FOT tests the technical feasibility of delivering real time traffic and road condition information to commercial vehicle operators along the I-95 Corridor. The FOT will also assess the market demand for this information, and assess the feasibility of privatizing the delivery of this information;
- **FOT 7: Roadside Safety Information:** This FOT provides funding for Corridor Coalition States to procure and field test laptop computers and CDPD communications technology for use in transmitting and receiving CVO safety, credentialing, and inspection information from the roadside.
- **FOT 8: Electronic Credentialing:** This FOT provides funding for States to develop and implement systems enabling electronic credentialing for CVO;
- **FOT 9: Electronic Screening:** This FOT provides funding to test the feasibility of electronic screening for the I-95 Corridor; and
- **FOT 10: Carrier Safety Management.** This FOT provides funding to States and industry to identify “best practices” in safety management both within industry and among States, and then develop corridor-wide models and training programs to disseminate this information.

The Corridor Coalition requested member States to submit Letters of Interest (LOIs) for each FOT in the Spring of 1997. These LOIs were used as the basis for selecting which States were to receive funding for each FOT. These selections were made in the Summer of 1997. States were then provided with technical assistance to develop specific project plans, and funds were distributed to States based on these plans in the Fall of 1997.

Mainstreaming

Mainstreaming is an FHWA program implemented in early 1997. Each State participating in the program received a grant to be used for developing a State ITS/CVO business plan. In addition, additional funding was made available to the I-95 Corridor Coalition to select “regional champions”, whose scope of work was to develop a Regional ITS/CVO Coordination Plan. The Coordination Plan is intended to identify opportunities for multi-

state cooperation in ITS/CVO projects, and also to identify issues that need to be addressed by the Corridor Coalition as a whole.

6. IMPACT ON EASTERN STATES INSTITUTIONAL ISSUES STUDY: PHASE 2

With the advent of the national and regional initiatives discussed in the previous section of this report, the Eastern States were faced with significant choices. The Eastern States were uniquely positioned to leverage the funding and technical assistance resources being made available to States through these initiatives. Two members states, Maryland and Virginia, were CVISN prototype states. Six of the eight jurisdictions, with the exception of West Virginia and the District of Columbia, were members of the I-95 Corridor Coalition and thus eligible to receive assistance through the Corridor's CVO program. These jurisdictions were also involved with the Mainstreaming effort being implemented through the I-95 Corridor Coalition's CVO program. The Eastern States thus had access to significant financial and technical assistance resources that could be accessed without going through cumbersome administrative procedures.

The most effective means of illustrating this point is to list the work elements and consultant tasks identified for the Phase 2 Institutional Issues Study that were in turn incorporated into a national or regional initiative:

- **Development of Phase 2 Work Plans:** CVISN prototype states received technical assistance to develop their work plans. Through the I-95 Corridor Coalition, non-CVISN states that applied for and received funding for ITS/CVO initiatives also received technical assistance to assist with the development of project work plans. All of this technical assistance was funded out of existing resources, and required only an in-kind contribution from the participating states;
- **Roadside Safety Information:** Pennsylvania, New York, New Jersey, and Maryland received funding assistance for procurement of laptop computers and wireless CDPD communications technology to complement the SAFER Data Mailbox Test. This enabled these States to procure upgraded systems from the pen-based units previously procured for the SAFER Data Mailbox FOT. The use of this additional equipment also significantly expanded the scope of the FOT, thus significantly leveraging the resources

initially made available to the State of Delaware, as well as establishing a connection with the CVISN prototype project. Through CVISN, both Maryland and Virginia were to receive CVIEWS, which would enable testing the connectivity between SAFER, CVIEW, and the SAFER Data Mailbox Project.

- **Electronic Credentialing:** Through CVISN, both Maryland and Virginia would receive CI and CAT software programs. With respect to the CAT, FHWA funded development of both PC and Internet based CATS. New Jersey, New York, Delaware, and Pennsylvania all received funding for development of electronic credentialing systems through the I-95 Corridor Coalition. Both the national and regional initiatives provided funding for the software development costs for electronic credentialing systems, and also made available resources for development of legacy system modifications and interfaces. These systems were also designed to interface with the national clearinghouses, and incorporated open standards and interoperability.
- **Electronic Screening:** Both Maryland and Virginia received assistance with the development of electronic screening capabilities through CVISN. This included funding for hardware procurement, software development and installation, and operations and maintenance. Delaware and Virginia also received funding for electronic screening through the I-95 Corridor Coalition.
- **Carrier Safety Management:** Through the I-95 Corridor Coalition's CVO program, New York and Pennsylvania are receiving funding for a Carrier Safety Management project. This project, which also includes the State of Connecticut, the ATA Foundation, and the NPTC, will identify "best practices" for safety management, identify industry-training needs, and develop a "safe carrier" profile for the Corridor.
- **Regional ITS/CVO Business Plan:** Through the FHWA-funded Mainstreaming program, States have received funding to develop ITS/CVO business plans. The program is also funding Regional Champions who will coordinate and facilitate the development of a Regional ITS/CVO Coordination Plan. This Coordination Plan will serve the same purpose as the Regional Business Plan proposed by the Eastern States.

Table 1 summarizes the involvement of the Eastern States in national and regional initiatives by project type and source of funding.

In sum, with the advent of the national and regional ITS/CVO initiatives, the Eastern States were able to gain access to existing sources of funding and technical assistance. As can be seen from the preceding discussion, the specific projects and work tasks implemented through these initiatives matched the projects and work tasks identified by

Table 1: Summary of Eastern States Participation in National and Regional ITS/CVO Initiatives

State	New York	Virginia	Pennsylvania	Maryland	New Jersey	Delaware
Project and Funding Source						
Electronic Credentialing						
CVISN		X		X		
I-95	X		X		X	X
Roadside Safety Information						
CVISN		X		X		
I-95	X		X	X	X	
Electronic Screening						
CVISN		X		X		
I-95		X				X
Carrier Safety Management - I-95	X		X			
Mainstreaming: Regional ITS/CVO Coordination Plan	X	X	X	X	X	X

the Eastern States in the Phase 1 Interim Business Plan and the Phase 2 proposed work elements.

A key consideration here is that the Eastern States were able to receive the technical and funding resources needed to implement ITS/CVO initiatives from existing resources. The States did not have to put together project budgets and then seek approval from their respective administrations and general assemblies. Rather, the ITS/CVO initiatives were implemented within existing budgets. This provides the States with the opportunity to identify successes and best practices, share information between States, and develop the track record that will be needed when the time comes to seek approval of long term funding to implement ITS/CVO programs within the region.

An additional consideration is that participating in national and regional initiatives better insures that the ITS/CVO programs identified by the Eastern States will be deployed on a national level. The FHWA is targeting much of the proposed future OMC funding toward nationwide deployment of ITS/CVO, in particular CVISN.

7. CONCLUSIONS

As the preceding sections of this report indicate, Phase 2 of the Eastern States IVHS-CVO Institutional Issues Study did not proceed precisely as anticipated when Phase 2 was initiated. However, the objectives of Phase 2 were achieved, in a more cost-effective manner than would otherwise have been possible, through the approach that was followed by the Consortium.

With regard to the specific tasks identified at the outset of Phase 2:

- The intent of Task 1 was accomplished, largely as originally anticipated.
- The intents of Tasks 2, 3 and 4 were accomplished, not as originally anticipated, but rather through the Consortium's involvement in the national and regional initiatives described earlier in this report.
- The intent of Task 5 was accomplished, largely as originally anticipated, for the three states which requested services.
- As the project evolved, Task 6 was not found to be necessary, and the funds set aside for that task were not utilized.

The Eastern States Coalition, through its IVHS-CVO Institutional Issues Study, demonstrated national leadership in the CVO arena. Phases 1 and 2 of the Study represented one of the first efforts in the country to bring both government and industry together to address issues of improved safety and efficiency for the motor carrier industry, in particular by applying emerging ITS/CVO technologies. This leadership is demonstrated by the fact that the specific project components of both CVISN and the I-95 Corridor Coalition's CVO Program included the projects proposed in the Interim Regional CVO Business Plan, showing the forward-looking vision of the Eastern States Coalition.

Even though the Interim Regional CVO Business Plan was not implemented under the direction of the Eastern States Steering Committee, Phase 2 of the Study positioned the Eastern States to benefit significantly from the national and regional ITS/CVO initiatives. This is reflected by the fact that both Maryland and Virginia were selected as CVISN prototype states, and that the Eastern States Coalition was selected to conduct the SAFER Data Mailbox Field Operations Test. The Eastern States were in essence able to implement the components of the Interim CVO Business Plan using funds already appropriated through existing federal programs. This has enabled the Eastern States to test ITS/CVO applications and assess institutional issues that need to be addressed without having to request significant outlays from their respective general assemblies. When the time does come to seek legislative support, the data needed to support these requests will be available. This in turn will make it easier for decision makers to support ITS/CVO applications, a benefit both to more efficient delivery of government services and to more efficient operations of the trucking and bus industries. Most importantly, these actions will lead to improved highway safety, the most important societal benefit that can be contributed by ITS/CVO.

To this end, the work of the Eastern States Coalition through Phases 1 and 2 of the CVO Institutional Issues Study has successfully met the objectives of member States and industry partners.