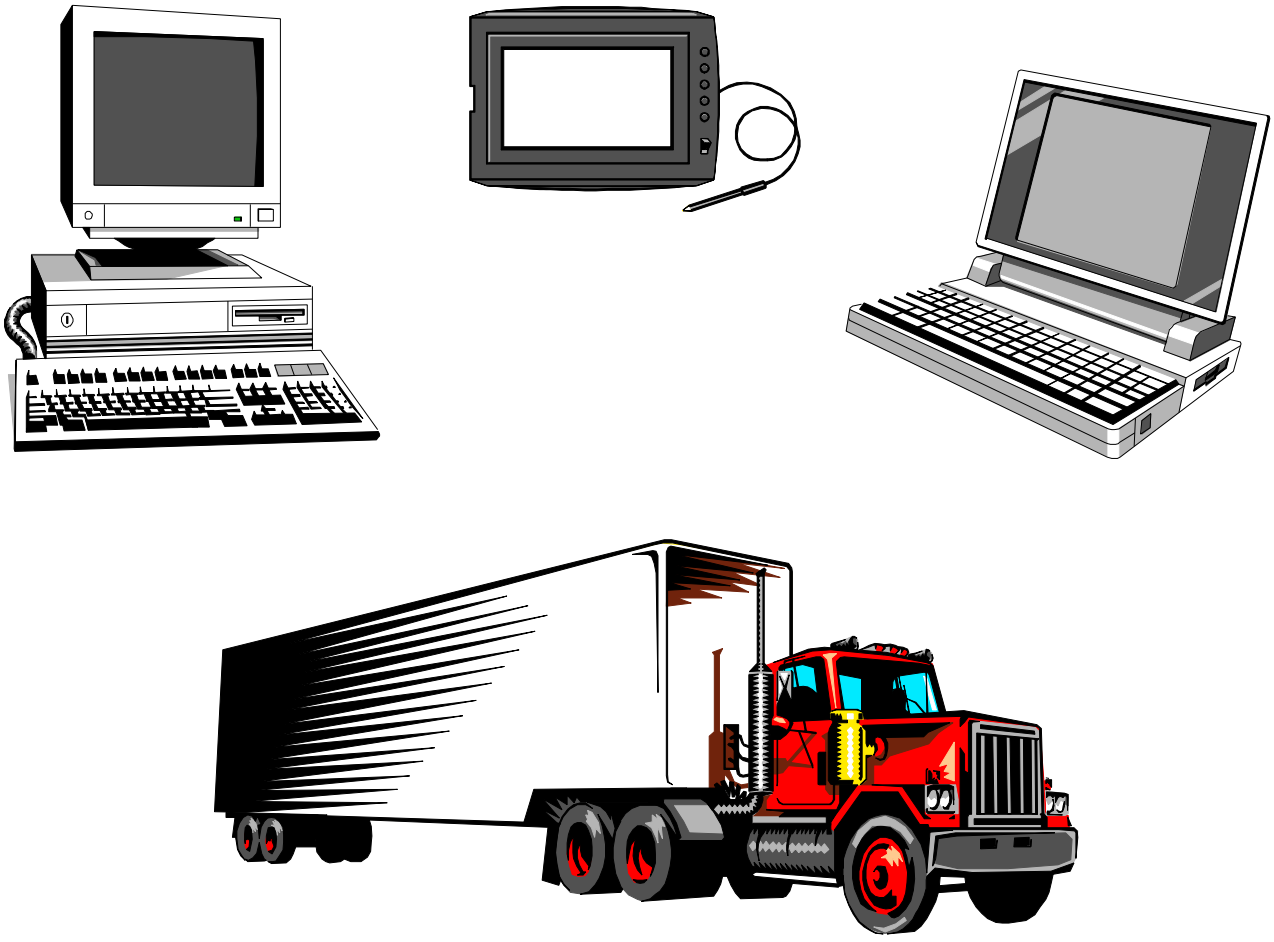
Wisconsin Department of Transportation

ITS/CVO Business Plan



June, 1998

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Wisconsin ITS/CVO Business Plan

Executive Summary

In early 1997, Wisconsin DOT Deputy Secretary Terry Mulcahy established an interdivisional work group to plan for Wisconsin's use of intelligent transportation systems (ITS) technologies to improve the department's commercial vehicle operations (CVO) programs. The plan is part of the national mainstreaming effort, to incorporate ITS/CVO technologies into state and metropolitan transportation planning and to coordinate ITS/CVO activities among agencies and states. Wisconsin's business plan will become part of the Great Lakes Mainstreaming Consortium's regional ITS/CVO business plan being prepared by the Kentucky Transportation Center. The plan also contributes to the Commercial Vehicle Information and Systems Network (CVISN) program, a federal initiative to create interoperable CVO information systems nationwide.

WisDOT's ITS/CVO work group completed an inventory of current programs, identified needed improvements, determined appropriate uses of ITS technologies to make those improvements, and developed a package of projects to be implemented during the next several years. This report presents the research and recommendations resulting from the ITS/CVO business planning process.

Vision, Issue Identification and Goal-Setting

The ITS/CVO planning effort was guided by the following departmental vision for WisDOT's CVO program:

- Increase safety and efficiency.
- Continuously improve processes.
- Complement regional and national CVO and ITS efforts.
- Maintain partnerships with industry to gain their input and address their concerns and needs.
- Protect taxpayer investment in Wisconsin's transportation infrastructure.

Because the department is the umbrella agency for all of Wisconsin's major motor carrier enforcement, credentialing, planning, and facility development and operation efforts, it is in a unique position to identify and act upon problem areas. With

participation by industry and department staff, the work group developed the following list of CVO problems and issues that need attention:

- WisDOT faces an increasing credential workload with decreasing staff resources.

- Application processing backlogs cause inconvenience and financial burdens to motor carriers.

- Current processing systems are unable to support process improvements that would improve both state and carrier efficiency, such as electronic transmission of reports, self-issuance of credentials, staggered IRP renewals, and permanent IRP plates.

- WisDOT's CVO enforcement program must handle an increasing truck volume with static or decreasing staffing levels.

- Current CVO enforcement methods cannot automatically identify non-compliant carriers. As a result, mostly "legal" carriers are stopped, which reduces carrier efficiency and does not contribute to the effectiveness of enforcement.

- Carriers not in compliance with weight, size and safety regulations may be using alternate routes to avoid being stopped at safety and weight enforcement facilities (SWEF) on major truck routes.

- The department's CVO enforcement efforts in southern Wisconsin are of critical importance to Wisconsin and the region, given the large volume of trucks traveling to and from this area along the Illinois, Indiana, Ohio, Pennsylvania and New York tollway corridor, where there are virtually no SWEFs.

- Safety inspections are time-consuming, limiting the number of carriers that can be checked for safety violations.

- Routing of oversize/overweight loads is done by manual processes that are slow and prone to human error.

The identified problems fall into two areas - - deskside (credential administration) and roadside (safety, weight, size and credential enforcement). The work group developed goals and objectives to address the problems, and to serve as an outline for project development. Figure 1 presents the ITS/CVO goals and objectives, and those projects that will help to achieve each objective.

Proposed ITS/CVO Projects

Wisconsin has numerous opportunities to meet these goals and objectives, through both process improvements and use of ITS technologies. The ITS/CVO developed general strategies for improvements to deskside and roadside operations.

The recommended strategy for deskside operations is as follows:
- Further automate credentialing processes
- Open the processing systems to electronic access by carriers
- Achieve electronic sharing of information with other jurisdictions

The recommended strategy for addressing roadside issues is the following:
- Maintain a strong deterrent to CVO non-compliance
- Increase the efficiency and effectiveness of enforcement
- Use SWEFs to check high volume truck traffic on major highway corridors
- Use mobile enforcement on bypass routes and in areas without SWEFs

Increasing the efficiency and effectiveness of CVO enforcement includes:
- Completion of department's long-range SWEF location and development plan
- Coordination with other states on basic concepts of SWEF location/operation
- Implementing ITS technologies at SWEFs and mobile sites

The ITS/CVO work group recommended ten projects for implementation during the next four to five years. After reviewing and analyzing project objectives, costs and expected return on investment, the projects were assigned priority ranking based on their potential for successful implementation and for helping WisDOT achieve the business plan goals. The recommended projects are described below. A summary of the project analysis follows in Figure 2.

<u>Project No. 1: Assessment of Information Technology Needs</u> (# 2 priority)

In this project, the national CVISN model and standards for ITS/CVO systems will be applied to the WisDOT CVO environment. The result will be a Wisconsin-specific blueprint of how CVO systems and data bases will interface with each other and with outside systems. The blueprint will guide WisDOT's evaluation of current and future systems development projects. It will also help identify what standards are applicable to a project and determine the required skills and knowledge. The IT resources needed for each ITS/CVO project will be determined, and the department will decide whether the needed resources will be provided in-house or by contractors.

Project No. 2: Electronic Access for Carriers to IFTA and IRP Processing Systems (# 4 priority)

The completed installation of R.L. Polk IFTA and IRP processing systems lays the groundwork for this project. The new systems will allow significant process improvements such as staggered IRP renewals and permanent IRP plates. Electronic access to the systems will be established, so carriers can self-issue selected credentials and electronically submit quarterly fuel tax reports and other IRP and IFTA applications. (Self-issuance means that the carrier applies electronically, WisDOT processes the application and sends the credential electronically to the carrier, where it can be printed on the carrier's own printer.) The systems will be developed to CVISN standards, to allow communication with carriers, the IFTA and IRP clearinghouses, and State Patrol.

Project No. 3: Development of New Oversize/Overweight Permit Processing System (#3 priority)

The objective of this project is to develop an oversize/overweight permit processing system for that provides automated routing and bridge analysis. Electronic access to the automated system would be established, to allow carriers to electronically submit and self-issue permits. Current efforts that will serve as building blocks for the automated system are the development of a LAN-based O/O permit processing system (OPUS), completed data entry for the automated bridge analysis system developed by WisDOT's Division of Infrastructure Development, and continuous additions to Wisconsin's GIS base map.

Project No. 4: Complete Department Long-Range Safety and Weight Enforcement Facility (SWEF) Plan (tied for #1 priority)

WisDOT will complete its long-range plan for the construction, reconstruction and rehabilitation of SWEFs. The SWEF planning team will identify key corridors for commercial motor vehicle (CMV) travel, crashes and incidents. The plan will be consistent with the goals and objectives of the ITS/CVO Business Plan and regional CVO enforcement programs. As a result of the plan, SWEFs capable of mainline automated screening will be strategically located in selected high CMV volume, primarily inbound/port of entry corridors where mobile enforcement would be otherwise impractical.

Project No. 5: Join Regional or National Mainline Automated Clearance Systems Consortia (# 5 priority)

Wisconsin will become a partner in one or more national/regional CVO automatic clearance consortia. WisDOT will research the existing consortia, and negotiate agreements with one or more of them. WisDOT will work with industry representatives during the selection process and in follow-up outreach efforts to carriers to acquaint them

with the availability and benefits of the consortia. This project will serve as a foundation for further progress toward a fully integrated mainline automated clearance system for safety, credentials and weight enforcement.

Project No. 6: Deploy Mainline Automatic Clearance Technology at Permanent Safety & Weight Enforcement Facilities (SWEF) (tied for # 1 priority)

Following the completion of the SWEF Plan, WisDOT will implement automated screening of vehicles for size, weight, credential and safety violations at permanent safety and weight enforcement facilities. SWEFs will be designed/configured with high-speed weigh-in-motion (HSWIM) scales, automatic vehicle identification (AVI) systems, safety software systems (SAFER, ISS, etc.), and applicable CVISN-compliant hardware and software. Automated screening will allow State Patrol to concentrate CVO enforcement on non-compliant carriers.

Project No. 7: Join IFTA and IRP Clearinghouses (#7 priority)

The IFTA and IRP Clearinghouses are being established to allow member jurisdictions to exchange IFTA licensee and IRP registrant information electronically. This will replace the current method of exchanging paper reports and checks with other jurisdictions. Following installation of the Polk COVERSft fuel tax system, Wisconsin began participating in the IFTA Clearinghouse pilot project. After successful completion of the pilot, Wisconsin will become a clearinghouse member. Joining the IRP Clearinghouse will follow the installation of the Polk COVERS IRP processing system, which is planned for 1998.

Project No. 8: Deploy mobile ITS/CVO enforcement technologies which augment, integrate with and enhance permanent facility systems (# 6 priority)

Over a four year period, WisDOT will phase ITS technologies into State Patrol's mobile CVO enforcement program. State Patrol districts will be supplied with portable weigh-in-motion (PWIM), automatic vehicle identification (AVI) and pen-based computers/mobile data computers. The ITS technologies will allow State Patrol to more effectively and efficiently conduct CVO enforcement in corridors without SWEFs and on SWEF bypass routes.

Project No. 9: Deploy FHWA-approved performance-based automatic braking system diagnostic analyzers at SWEFs (# 8 priority)

FHWA is currently evaluating automatic brake performance diagnostic devices for use in CVO safety inspections. When approved by FHWA, WisDOT will deploy the devices at safety and weight enforcement facilities (SWEFs). Currently, inspectors must physically

inspect and measure push rod travel on each brake. This is a lengthy process, particularly since an individual truck may have up to 12 brakes. The new devices would instead measure actual braking performance in a fraction of the time.

Project No. 10: Negotiate border/regional SWEF agreements (# 9 priority)

WisDOT will establish dialogue with officials in neighboring states and regional FHWA officials, using established contacts, to pursue regional integration of SWEF operations and conceptual agreement on SWEF locations. WisDOT will seek to negotiate regional memoranda of agreement and establish a regional CVO enforcement operating group to coordinate efforts.

Other projects: It should be noted that projects concerning CVO needs will be included in the ITS traveler information and ITS incident management business plans currently in preparation by WisDOT.

Plan Implementation and Updates

Successful implementation of ITS technologies in Wisconsin's CVO program will require close coordination among the involved divisions and stakeholders, as well as continued high-level departmental support. It will also require continuous monitoring and updating of the plan. It is recommended that the ITS/CVO work group continue to meet regularly to monitor plan implementation, deal with any problems or issues that arise, and update the plan as needed. The work group should report to the WisDOT administrators 3 to 4 times yearly to inform them of progress made and to seek direction and support for future activities.

Figure 1. ITS/CVO Goal and Project Matrix

Goals/Objectives	Projects									
	1. Assessment of IT Needs	2. Electronic IFTA & IRP Access	3. OS/OW System Processing	4. Long-Range SWEF Plan	5. Auto. Clearance Consortia	6. Auto. Clearance at SWEFs	7. I FTA & IRP Clearinghouses	8. Mobile ITS/CVO Enforcement	9. Brake Analyzers at SWEFs	10. Reg'l SWEF Agreements
Goal 1: Improve efficiency of application, processing and delivery of motor carrier credentials.										
· Objective a: Implement IFTA and IRP electronic access for carriers by 7/99.	■	■								
· Objective b: Implement electronic self-issuance on O/O permit system by 6/30/01.	■		■							
· Objective c: Achieve interoperability with other related systems, both within Wisconsin as well as in other jurisdictions.	■	■	■				■			
Goal 2: Improve effectiveness and efficiency of CVO enforcement.										
· Objective a: The total number of CMVs weighed or screened for overweight violations steadily increases.						■		■		
· Objective b: The number of CMVs screened for safety violations steadily increases.						■		■	■	
· Objective c: The number of CMVs required to stop at fixed SWEFs steadily decreases.				■		■				
· Objective d: Focus enforcement efforts on carriers operating illegally and those with unsatisfactory safety ratings.				■		■		■	■	
· Objective e: Coordinate with regional and national enforcement efforts through joint planning and system interoperability.	■			■	■	■				■
Goal 3: Enhance safe and efficient movement by commercial vehicles.										
· Objective a: Deploy equipment and technology necessary to accomplish mainline automatic screening of size, weight, credentials and safety at both fixed and mobile locations by 12/31/01.	■			■		■		■		
· Objective b: Steadily decrease the number of carriers operating outside of legal size and weight limitations.						■		■		
· Objective c: Increase compliance with credentialing rules.						■		■		

Figure 2. ITS/CVO Projects: Priority Ranking, Estimated Costs, Potential Funding Sources and Estimated Return on Investment

	1. Assessment of IT Needs (#2 priority)	2. Electronic Access to IFTA and IRP for Carriers (#4 priority)	3. OS/OW Routing and Processing System (#3 priority)	4. Complete Long-Range SWEF Plan (tied for #1 priority)	5. Join Automated Clearance Consortia (#5 priority)
Est. Costs (one-time; new annual)	$100,000 one-time cost	$75,000 one-time cost & $157,500 new annual costs ($150,000 of new annual already budgeted for '97-'99)	$1,000,000 one-time cost & $40,000 new annual costs	Minimal travel costs during plan preparation	Help, Inc: $10,000 (assoc.) or $30,000 (full) new annual membership costs MAPS Inc: no memb. fees
Potential Funding Sources	FY 98 operating budgets (DMV & DSP); USDOT model/seed implementation funds; Federal ITS funds	FY 99 DMV operating budget; DMV's current ISTEA grant; Motor carrier contribution	99-01 State budget; ISTEA 2; CVISN; State and federal improvement; Motor carrier contribution; Maintenance & Traffic funds	FY 98-99 division operating budgets	FY 99 division operating budgets (joint DSP & DTID); Motor carrier contribution
Estimated Return on Investment	State: • Eliminate potentially costly system revisions in future. • Assist with budgeting and planning for IT staff or contractors. Carriers: • No direct costs or benefits identified. However, interstate carriers will benefit indirectly from the interoperability of WisDOT CVO systems with those of other jurisdictions.	State: • $165,000 in savings from process improvements made possible by new IFTA and IRP systems. • Electronic submission of applications/reports and credential self-issuance will allow WisDOT to reduce backlogs while meeting increasing demand. • Per NGA Study, most states can expect to see a positive savings-to-expenditure ratio from electronic credentialing. Carriers: • Per ATA Study, electronic credentialing can have positive benefit/cost ratios for carriers with over 10 units. • Improved efficiency • Motor Carrier Advisory Comm. members indicate that if access costs are reasonable, electronic IFTA and IRP credentialing would be beneficial to carriers.	State: • Self-issuance of some permits will help WisDOT handle increasing workload in a timely manner. • Help protect WisDOT from liability claims that could reach $250,000 per involved employee per incident. • Est. $20,000 annual savings due to fewer bridge hits. • Per NGA Study, most states can expect to see a positive savings-to-expenditure ratio from electronic credentialing. Carriers: • Per ATA Study, electronic credentialing can have positive benefit/cost ratios for carriers with over 10 units. • Avoidance of $600-800 per day delay costs due to permit processing backlogs. • Motor Carrier Advisory Comm. members believe an automated routing system will improve efficiency of O/O vehicle transport.	State: • Plan will provide guide for more more efficient and effective use of CVO enforcement resources. • Focus attention on CVO enforcement needs and benefits. • Useful information for long-range maintenance planning. Carriers: • No direct costs or benefits to carriers identified. However, carriers will experience indirect benefits due to well-planned SWEF system.	State: • Joining consortia lays groundwork for benefits from deployment of automated clearance systems. • WisDOT gains access to regulatory and enforcement info to improve its CVO enforcement program. Carriers: • Depending on consortia, Wis. carriers could have representation on the board. If this is the case, industry could share in the membership costs and gain the benefits of participation in setting policies and procedures for the consortia. • Motor Carrier Advisory Comm. members feel joining a consortium would be beneficial to carriers, if they have board representation, if costs are reasonable, and if transponders would be interoperable with other consortia.

Figure 2. ITS/CVO Projects: Priority Ranking, Estimated Costs, Potential Funding Sources and Estimated Return on Investment (continued)

	6. Deploy Automated Clearance at SWEFs (tied for #1 priority)	7. Join IFTA and IRP Clearinghouses (#7 priority)	8. Deploy Mobile ITS/CVO Enforcement (#6 priority)	9. Brake Systems Analyzers at SWEFs (#8 priority)	10. Negotiate Regional SWEF Agreements (#9 priority)
Est. Costs (one-time; new annual)	Help Inc: $1,750,000 one-time & $100,000 new annual costs MAPS: $3,500,000 one-time & $350,000 new annual costs	$5,000 one-time cost (IRP)	Help Inc: $1,041,000 one-time costs (of which $616,000 already budgeted) & $93,000 new annual costs	$230,000 one-time cost & $23,000 new annual cost	Minimal travel costs (ongoing)
Potential Funding Sources	FY99 DSP/DTID op budgets; CVISN; State & federal improvement funds; Mtr carrier contribution	FY 99 DMV operating budget; CVISN funds	FY99 DSP op budget; 99-01 State budget; MCSAP; ISTEA 2; Operations testing funds; Motor carrier contribution	MCSAP; 01-03 State budget; State & fed improvement funds; Operations testing; Motor carrier contribution	Division operating budgets
Estimated Return on Investment	State: • Mainline WIM will increase capture rate for non-compliant vehicles by 50%, with an estimated annual SWEF enforcement revenue increase of $2.2 million. • Increased capture rate from SWEF enforcement will also result in deterred pavement damage estimated at $2.75 million annually. • Improved effectiveness of SWEF program will result in avoided traffic crashes, with associated societal benefits. • NGA Study found low ratio of direct savings-to-expenditures in states with electronic screening. Carriers: • ATA Study predicts positive benefit/cost ratios for fleets of all sizes for participation in automated clearance. • MCAC members indicated this project could have efficiency & equity benefits.	State: • Clearinghouses will allow more timely sending and receipt of fee and information transmittals • Electronic transmission will free up an estimated 1 FTE for other processing duties. Carriers: • No direct costs or benefits identified for carriers.	State: • Electronic clearance will allow State Patrol to focus enforcement on non-compliant carriers, resulting in an estimated 50% increase in the capture rate for non-compliant carriers, and an estimated $1.7 million annual increase in mobile enforcement revenue. • Increased capture rate from mobile enforcement will also result in deterred pavement damage estimated at $2.75 million annually. • NGA Study found low ratio of direct savings-to-expenditures in states with electronic screening. Carriers: • ATA Study predicts positive benefit/cost ratios for fleets of all sizes for participation in automated clearance.	State: • New devices will reduce time need for brake inspection from 20 minutes to 30 seconds, allowing more vehicles to be checked for this significant safety problem, and resulting in less crashes. • Because of parallel use of automated clearance, brake inspections can be focused on carriers with poor safety records. • New testing systems are safer for inspectors - - no need to physically access underside of truck. Carriers: • No direct costs identified for carriers. However, ATA Study identified labor cost savings to carriers with reduction in time spent on safety inspections.	State: • Regional coordination of SWEF operation and conceptual agreement on SWEF locations would increase effectiveness of CVO enforcement efforts in region. Carriers: • No direct costs or benefits identified. However, a better coordinated regional approach to SWEF location and operation could improve efficiency for carriers.

1.0 Introduction

1.1 Purpose

Wisconsin's Commercial Vehicle Operation (CVO) program is multi-disciplinary, involving enforcement, infrastructure development, maintenance, revenue collection, and regulation of carriers and drivers. Emerging intelligent transportation systems (ITS) technologies have the potential to significantly affect all aspects of CVO programs, both in Wisconsin and nationally.

The purpose of Wisconsin's ITS/CVO Business Plan is to develop efficient, safe commercial vehicle operations which are coordinated throughout the state and region, incorporating ITS technologies where appropriate. This business plan was developed by the Wisconsin Department of Transportation (WisDOT) with support from the Federal Highway Administration and the motor carrier industry.

The plan will also provide guidance for the inclusion of ITS/CVO activities in the state biennial budget process. Section 6.3 of the plan will identify those projects that are recommended as issues for the 1999-2001 state budget.

1.2 Vision

The business plan will recommend Department goals and objectives for CVO, identify CVO issues that are important to Wisconsin, and set forth options to address those issues. It will position the Department to take advantage of ITS technologies and funds to help the department achieve its CVO goals.

The Department envisions a CVO program that:

- increases safety and efficiency
- continuously improves processes
- complements regional and national CVO and ITS efforts
- maintains partnerships with industry to gain their input and address their concerns and needs
- protects taxpayer investment in Wisconsin's transportation infrastructure

2.0 Overview of the Business Planning Process

2.1 Previous activities

During the past several years, WisDOT has been involved in planning activities that helped to lay the groundwork for the ITS/CVO business plan. These activities include the following:

- ITS Steering Committee: Established in 1993, the committee meets monthly to provide leadership and coordination to implement a statewide ITS program as a component of the Wisconsin transportation system. The vision of WisDOT's ITS program is to develop a system of improved infrastructure use and enhanced user choice by implementing ITS technologies and services compatible with and supportive of the national program directives.

- Gary-Chicago-Milwaukee (GCM) Corridor Study: WisDOT is a partner in this ongoing study, along with Illinois and Indiana. WisDOT staff involvement includes serving on the study's CVO task force.

- Wisconsin I-90/94 Intercity Corridor Study: This completed study involved many individuals from the public and private sector, who participated in focus groups to help the study team identify problems and generate project ideas. High priority projects identified by the groups included automated safety inspections, commercial motor vehicle (CMV) pre-clearance, and weigh-in-motion scales. Some of the study recommendations are beginning to be implemented. The study's CVO recommendations are expected to serve as a blueprint for CVO planning in Wisconsin. See Appendix A for details of the focus groups and prioritization workshop. This background information on stakeholder needs and concerns was used for the ITS/CVO work group's initial identification of problems and issues.

- Business Process Reengineering (BPR): WisDOT's Division of Motor Vehicles (DMV) has conducted a business progress reengineering effort for its vehicle titling and registration operations. DMV held facilitated brainstorming sessions in 1995 with staff, stakeholders and customers to identify possible business improvements. One session concentrated on motor carrier operations, and produced numerous suggestions and insights for process and system improvements related to motor carrier credential issuance and enforcement efforts. The most frequently heard suggestion was to allow electronic transmission of motor carrier applications and reports, as well as self-issuance of credentials such as cab cards and oversize/overweight permits. Another frequent suggestion was to combine or link existing motor carrier databases, to enable in-

house staff and on-the-road enforcement officers to access a carrier's complete record with a single identification number. Other frequent suggestions included issuance of permanent IRP plates, pre-clearing vehicles at weigh stations, and accepting credit card payments. See Appendix B for a complete list of suggestions from the brainstorming session. These customer suggestions were used for the ITS/CVO work group's initial identification of CVO problems and issues.

- Motor Carrier System Development Plan: Building upon the 1995 BPR brainstorming session, DMV's Motor Carrier Services Section continued to solicit staff suggestions for process and system improvements. The suggestions served as the base for a system development plan. The plan, completed in 1996, charts the system reengineering and upgrading efforts needed for the next 10 years. DMV has begun the reengineering process by leasing new IFTA and IRP processing systems.

- Safety and Weight Enforcement Facility (SWEF) Plan: The Divisions of State Patrol and Transportation Infrastructure Development have been working on this long-range plan. The department has reduced the number of SWEFs by two due to severe deterioration of the facilities, and has examined the reconstruction and/or relocation of remaining SWEFs. Work on the plan has been temporarily suspended until after the ITS/CVO Business Plan is approved.

- Mainsteaming: In August, 1996 WisDOT joined the Great Lakes Mainstreaming Consortium. It is envisioned that the mainstreaming effort will allow Wisconsin to contribute to and benefit from regional ITS/CVO activities.

- Motor Carrier Advisory Committee (MCAC): The committee serves in an advisory capacity to the Department on matters related to commercial vehicle operations. The MCAC, whose members include carriers, representatives of CVO trade associations, law enforcement and state and federal agency staff, meets several times a year. Committee members' comments and perceptions about ITS technologies gave direction to the Department as it began its involvement in the ITS/CVO area. MCAC continued to provide advice and counsel throughout the development of the ITS/CVO business plan.

2.2 Establishment of ITS/CVO Business Plan Work Group

Early in 1997, WisDOT Deputy Secretary Terry Mulcahy called for an interdivisional team to prepare an ITS/CVO business plan for Wisconsin. The business plan would contribute to the regional plan being developed by the Kentucky Transportation Center for the Great Lakes Mainstreaming

Consortium. By February, 1997, a work group was established to accomplish this task. Initial membership of the work group included the following divisions that play major roles in ITS/CVO efforts:

- Division of Motor Vehicles (DMV): responsible for credentialing programs; lead staff for the ITS/CVO business plan
- Division of State Patrol (DSP): responsible for enforcement programs
- Division of Transportation Infrastructure Development (DTID): responsible for engineering programs
- Division of Transportation Investment Management (DTIM): responsible for WisDOT's overall ITS planning efforts

During the planning process, it became apparent that expertise in the areas of budgeting, information technology and federal programs was needed. New members were added from WisDOT's Office of Policy and Budget (OPB) and Division of Business Management (DBM - Bureau of Automation Services) and the FHWA Office of Motor Carriers, Wisconsin Division. (A WisDOT organizational chart is presented in Figure 3.)

The task team developed a timeline for completion of the business plan by the end of 1997. The planning process included periodic progress reports and regular discussions with the department's ITS Steering Committee, Motor Carrier Advisory Committee, and division administrators. During the planning process the Wisconsin Motor Carrier Association established a technology committee that also provided input to the work group on implementation of ITS/CVO projects.

2.3 Development of Plan and Identification of Projects

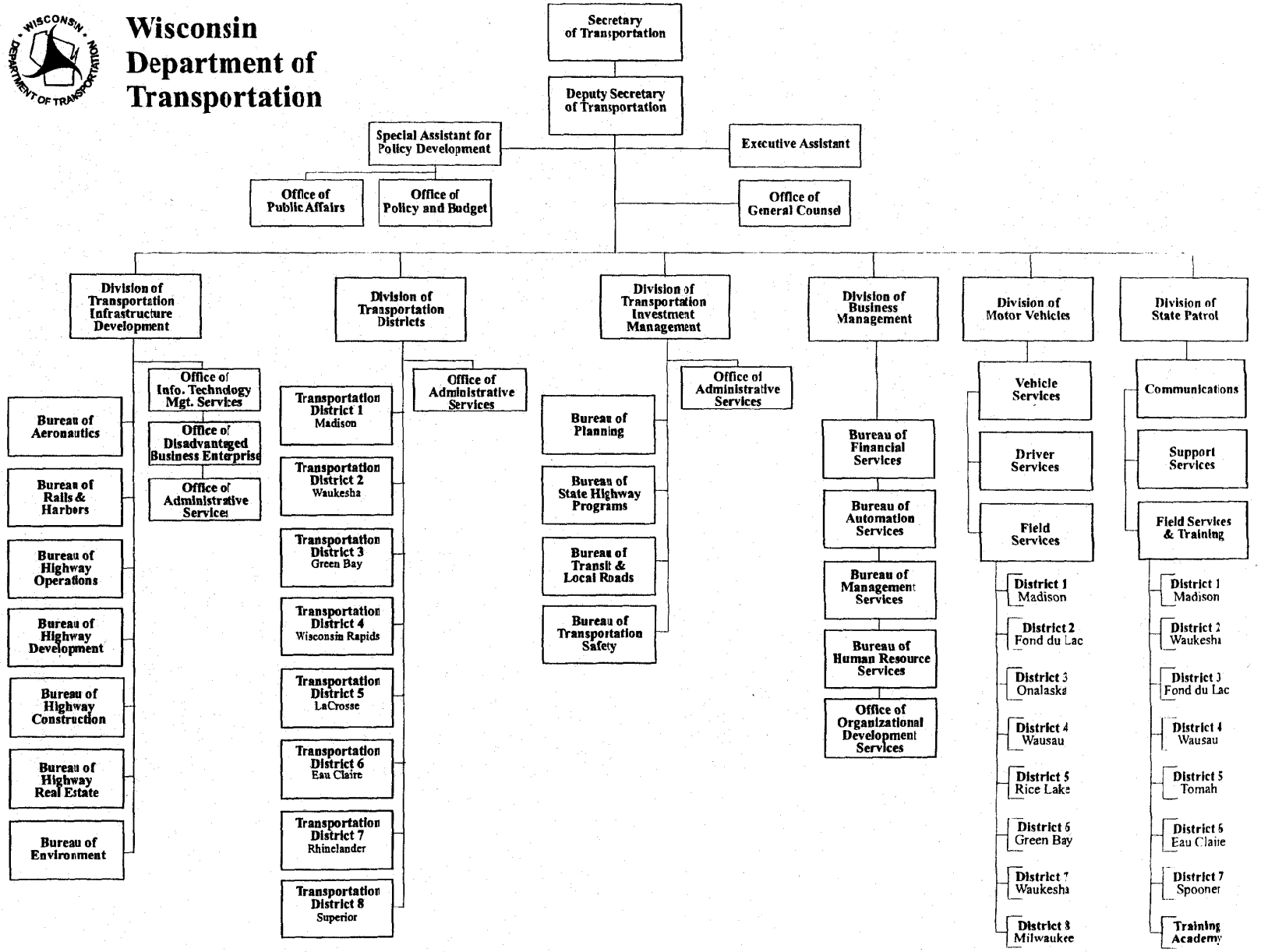
The work group's meeting and activity schedule was as follows:

1/7/97: Meeting with Deputy Secretary Mulcahy with division representatives for guidance on the business plan content and goals and discussion of who from each division should be involved in the process. One outcome of the meeting was a memo to all division administrators from the Deputy Secretary, calling for cross-divisional support and cooperation in the development of the business plan.

Late January, 1997: Presentations on the ITS/CVO business planning process at the Motor Carrier Advisory Committee and ITS Steering Committee meetings.

2/11/97: First official meeting of the work group. Discussion of the parameters of the business plan and identification of work group members

Figure 3. Wisconsin DOT organizational chart



and advisors. Representatives were given the assignment to identify and describe their division's CVO programs.

February - May, 1997: Work group members met informally and provided CVO program descriptions, identification of problem areas and current issues, and CVO components of previous ITS studies in which the state has been involved. This information was compiled into a first draft of the business plan, including vision, mission and goals.

6/6/97: Work group meeting to review first draft of the plan, make suggestions for changes, and discuss parameters for projects to be included in the plan. The work group agreed upon a timeline for plan completion.

June, 1997: Information on the work group's progress was shared with the ITS Steering Committee, Motor Carrier Advisory Committee and WisDOT administrators.

6/25/97: Work group and Deputy Secretary Mulcahy met with staff from the Kentucky Transportation Center to discuss the ITS/CVO business planning process.

7/15/97: Work group meeting to discuss feedback from June presentations and meetings. Discussion of a preliminary list of projects for the plan, including weeding out projects that are premature for the business plan's timeframe. Assignments made to members to further develop project descriptions.

7/17/97: Second draft of business plan distributed to work group members.

8/1/97: Work group meeting to review project descriptions in detail to clarify and make suggestions for improvement. Preliminary discussion of methods for prioritizing projects and estimating costs and benefits.

August, 1997: Presentations to ITS Steering Committee and WisDOT administrators on work group's progress.

9/12/97: Work group meeting including other WisDOT staff to discuss methods for estimating project costs and benefits. Assignments made to work group members and other staff to prepare this information for each project.

October, 1997: Briefings on the business plan to DMV administrator's office and Motor Carrier Advisory Committee. MCAC established subcommittee to review plan and provide input to the work group.

10/20/97: Third draft sent to work group members and others for review.

11/7/97: Briefing on business plan to ITS Steering Committee.

11/10/97: Work group meeting to discuss the most recent plan draft. Discussed FHWA evaluation criteria received at Mainstreaming Workshop in October. Reviewed questions and issues raised regarding project costs, benefits, timing and approach. Agreed upon a method to do preliminary ranking of projects before next meeting.

11/14/97: Fourth draft sent to MCAC subcommittee and work group members in preparation for conference call meeting.

11/24/97: Conference call with MCAC subcommittee to discuss business plan and get industry input on the potential impacts of the proposed projects on carrier operations.

11/24/97: Work group meeting to complete project ranking and identify potential funding sources for each project.

12/17/98: Revised draft sent to work group and to members of WisDOT Traffic Safety Council.

1/9/98: Presentation to ITS Steering Committee, with a follow-up mailing of the latest draft to committee members for comment.

1/12/98: Work group meeting to review and comment on latest draft, receive first draft of executive summary, and discuss presenting the plan to WisDOT senior management.

1/14/98: Work group meeting to prepare and make assignments for presentation of the plan.

1/20/98: Briefing on the business plan to MCAC, and discussion of carrier thoughts on implementation of ITS/CVO projects.

2/16/98: Work group meeting to review revised draft of plan and practice the plan presentation.

2/23/98: Presentation of the plan to WisDOT senior management by the work group.

2/27/98: Work group meeting to outline a discussion paper to respond to senior management questions.

3/27/98: Work group meeting to review and revise discussion paper and plan for development of ITS/CVO issue papers for the 1999-2001 state budget process.

4/7/98: Members of work group met with Wisconsin Motor Carriers Assocation's technology committee to answer questions about ITS/CVO projects and to discuss implementation of electronic credentialing and automated clearance, possible funding mechanisms and legislative action needed for the proposed projects.

5/6/98: Work group meeting to prepare for presentation of discussion paper and revised plan to senior WisDOT management on 5/19/98.

5/19/98: Work group members presented discussion paper and revised plan. ITS/CVO business plan was approved by senior WisDOT management.

3.0 Description of the State

3.1 Current State CVO Programs/Activities

CVO Credentials Programs

All major motor carrier credential programs in Wisconsin are administered by the WisDOT Division of Motor Vehicles (DMV). DMV's Bureau of Vehicle Services administers the following programs:

Hazardous Materials Registration
Heavy Vehicle Use Tax (HVUT)
International Fuel Tax Agreement (IFTA)
International Registration Plan (IRP)
Motor Carrier Audits
Motor Carrier Authority
Motor Carrier Insurance
Oversize/Overweight Permits (O/O Permits)
Single State Registration (SSRS)
Trip Permits: Vehicle Registration and Fuel Tax

DMV's Bureaus of Driver Services and Field Services are responsible for administering the state's Commercial Driver License (CDL) program.

Additionally, two other state departments administer programs for certain specialized carriers. The Department of Revenue issues licenses to motor fuel transporters and the Department of Natural Resources issues hazardous waste transporter licenses.

<u>Commercial Driver License</u>

Wisconsin conforms to national CDL program requirements. CDLs are issued to persons operating vehicles that weigh or are registered over 26,000 pounds, carry hazardous materials that require placarding under federal law, or that are designed/used to carry 16 or more persons including the driver. Licenses are issued based on vehicle type. Endorsements are required to drive vehicles with special operating characteristics or with passengers. Persons applying for CDLs must first pass one or more knowledge tests, depending on license class and type of endorsements needed. Applicants must then pass a skills test in the type of vehicle they plan to drive. The skills tests are administered by DMV Bureau of Field Services staff at Service Centers statewide or by third-party testers authorized by DMV. Applicants who use a third party tester must go to a DMV Service Center to have the license processed.

DMV maintains Wisconsin's CDL database. CDL information is entered on a WisDOT mainframe system that is linked to the national Commercial Driver License Information System (CDLIS) and the problem driver pointer system (PDPS) for purposes of CDL licensing and enforcement nationwide.

Hazardous Materials Registration

Wisconsin law requires certain transporters and offerors of hazardous materials to register and pay an annual fee to the Wisconsin Department of Transportation. A 1996 Appeals Court decision found the collection of the fee to be unconstitutional. Therefore, the fee is not currently being collected. During the most recent budget process, the Wisconsin Legislature did not act to continue the registration program under a different fee structure. It is anticipated that the statutory requirement for the registration program will be eliminated in the current legislative session.

Wisconsin's Hazardous Material Registration system is located on the DMV LAN. The program was written in DataEase, and the database has been transferred to Access.

Heavy Vehicle Use Tax (HVUT)

In order to obtain or maintain vehicle registration credentials, federal law requires intrastate and interstate motor carriers operating vehicles at a gross vehicle weight of 55,000 pounds or more to provide proof that they have paid the federal Heavy Vehicle Use Tax to the IRS.

From 1984 to 1997, WisDOT entered a motor carriers' proof of HVUT payment on-line, using a homegrown mainframe system. When a carrier applied to register or reregister a heavy truck, the system automatically verified whether HVUT had been paid for that vehicle.

Computerized proof of payment filing had many benefits, primarily that proof could be filed whenever it was submitted by the carrier to a central work unit. Online proof allowed processors in both the interstate and intrastate registration programs to newly register or renew registration without requiring the carrier to submit copies of proof of payment for each transaction. However, Wisconsin discovered that the drawbacks of on-line processing of HVUT proof often outweighed the benefits. The computer program impeded registration in excess of the federal requirements, often erroneously blocked registration of vehicles for which HVUT had been paid, and contributed to backlogs in annual registration renewals. Modifying the computer logic to make the system more user-friendly was not possible because DMV's programming resources are currently focused on making WisDOT systems year 2000 compliant.

Until programming resources can be made available to modify the HVUT system, Wisconsin reverted to a paper filing of payment proof as is done in neighboring states. Carriers operating interstate will send a copy of proof of HVUT payment with each IRP renewal application. The proof will be maintained in the carrier's IRP file for the current plus one year. Intrastate carriers will send a copy of HVUT payment proof to the Intrastate Trucking Unit. The proof will be maintained in general files by processing date.

The experience with the HVUT system should be cautionary. As we move toward increased computerization and electronic credentialling for our motor carrier systems, it will be important to ensure the new systems support the streamlining of processes for both WisDOT and carriers.

International Fuel Tax Agreement (IFTA)

All interstate motor carriers must report the fuel they use in all states and Canadian provinces. Through the IFTA program, carriers report to their base jurisdiction each quarter. The base jurisdiction is responsible for processing the tax report, collecting fuel taxes for all jurisdictions where the carrier operates and transmitting the taxes to those jurisdictions. On average, Wisconsin has had 3,600 to 3,700 IFTA licensees each year since 1991.

On July 1, 1997 the department began using a new LAN-based, client-server COVERSft system provided by the R.L. Polk Company. It is expected that the new system will allow electronic submission of quarterly fuel tax reports. Wisconsin has recently joined the pilot project for the IFTA Clearinghouse.

International Registration Plan (IRP)

Interstate motor carriers register their vehicles through the IRP. IRP registration allows both interstate and intrastate travel. Carriers register through their base (home) jurisdiction, which is responsible for collecting registration fees and transmitting the fees to those jurisdictions where the carrier operates.

The IRP data processing system is a mainframe system developed in the early 1980s. Maintaining the system is very labor intensive, at least in part due to the complex calculations required to determine carrier fees based on the fee schedules of numerous jurisdictions. As a result, enhancement of the system has been limited to only that which is absolutely necessary. All data entry is manual. There is no capability of data entry by tape, disk or electronically from the customer. All data processing is done in a batch mode overnight. This makes it impossible to issue credentials to a customer at the

time of transaction. There is no electronic data interchange with other jurisdictions or customers.

Since 1988, the number of IRP vehicles served by WisDOT has doubled, and the number of IRP accounts is up about 33 percent. However, the staffing level of the IRP Unit is now less than half of what it was in 1988. This is particularly a problem during the last quarter of each year, when all IRP registrations need to be renewed by December 31. Due to budget cutbacks, funds have been less available for limited term employees and overtime hours to help prevent renewal backlogs. MCSS implemented a number of process improvements to control renewal backlogs. The IRP and Fuel Tax Units were merged, and staff were cross-trained on certain tasks to assist each other during their busy seasons. Procedures for payment deposits and issuance of IRP supplements were streamlined. Planning began for implementation of permanent IRP plates and staggered IRP renewals.

It is anticipated that the department will begin using the COVERS IRP data processing system September 1, 1998. This system is a LAN-based, client-server system provided by the R.L. Polk Company. Since the new system will accommodate permanent IRP plates and staggered IRP renewals, these process improvements are now in the beginning stages of implementation. The new system can also be upgraded to provide service changes requested by carriers, such as electronic submission of applications and self-issuance of credentials. Self-issuance means that the carrier applies electronically, WisDOT processes the application and sends the credential electronically to the carrier, where it can be printed on the carrier's own printer.

Motor Carrier Audits

Motor carriers licensing their vehicles under IFTA and/or IRP are subject to audit. Carriers must provide records of miles travelled and fuel used in each jurisdiction. Carriers are selected for audit either on a random basis or because information received from various sources indicates an audit may be necessary.

WisDOT audits approximately 3-5% of its IFTA and IRP licensees annually. These audits are done to ensure compliance with the international agreements to which the department belongs. The software used for IFTA and IRP auditing was developed and is maintained by Motor Carrier Services staff.

Motor Carrier Authority

Authority is permission for a for-hire carrier to transport a commodity. For regulated commodities, interstate authority is granted by the US DOT, while

intrastate authority is granted by WisDOT. Authority for carriers hauling "exempt" commodities (as defined by the federal government) is issued individually by each state.

All intrastate for-hire motor carriers must obtain authority and file proof of insurance with the department. Authority and proof of insurance are processed on a WisDOT mainframe system.

Motor Carrier Insurance

All for-hire carriers of passengers or property, including intrastate carriers, are required to file proof of insurance before operating in Wisconsin as a prerequisite to obtaining vehicle registration, operating authority, registration trip permits, and single state registration. Minimum insurance requirements are established by administrative rule.

Oversize/Overweight Permits

The department issues permits to provide safe and efficient movement for vehicles larger and heavier than the statutes allow. Multiple trip permits generally allow travel on all Wisconsin roadways. Single trip permits are valid for 1 trip within a 14 day period on a specific route.

The number of oversize/overweight permits issued annually has increased 38% since 1987; from 35,299 to 48,674. A 6% increase per year is projected through 2000. The average annual percentage of single-trip permits that involve overweight vehicles has continuously increased over the past 5 years. The number of permits issued for super loads (270,000 pounds or more) has ranged from 40 to 69 annually during the past 5 years. No method or technology is in place to examine the collective impact of these increases on the useful life of roadway and bridges. The increases also have programmatic effects by increasing the difficulty of permit evaluation and issuance.

The body of administrative law related to O/O permits is both large and complex. The evaluation and issuance of O/O permits has become even more complex in recent years, due to such factors as proliferation of permit types, new vehicle types, new configurations for very heavy vehicles, structural limits on bridges and roadways, and local authority requests to avoid certain routes. The Department has significant potential liability from the increasing likelihood of accidents arising from inaccurately issued permits.

Motor carriers expect that states will use new technology to improve customer response. Carriers participating in DMV's 1995 brainstorming

session requested 24 hour availability of permits. The carriers estimate that they incur costs averaging $600-$800 per day for delays in transporting oversize/overweight loads. With the increasing volume and complexity of permits, the Oversize/Overweight Permit Unit will not be able to maintain current turnaround time, let alone meet customer demand for round the clock service, if the issuance environment is not changed.

The O/O Permit Unit has implemented process improvements to increase efficiency, such as becoming a self-directed work team and issuing more permits without referral to WisDOT's bridge engineers. However, major system changes are needed to make a significant impact on the increasing workload and customer demand. Several neighboring states (Minnesota, Iowa, Ohio and Indiana), finding themselves in similar situations, have implemented or are awaiting delivery of automated permit issuance systems to meet carrier expectations without relaxing permit regulations. As a first step in this process, Wisconsin's permit processing system is being moved to a LAN environment. The LAN-based Oversize Permit Unit System (OPUS) will achieve some processing efficiencies, and lay the groundwork for more system automation in the future.

Single State Registration

All interstate for-hire carriers of passengers or property are required to register their USDOT operating authority with their base state. Base state is determined by the location of the carrier's principal place of business. Wisconsin registers interstate for-hire carriers, collects Wisconsin for-hire permit fees for Wisconsin and other states, and transmits other states' fees on a monthly basis. SSRS applications are processed on a WisDOT mainframe system.

Trip Permits: Vehicle Registration and Fuel Tax

Trip permits are used by interstate motor carriers to qualify their vehicles for temporary operation on Wisconsin highways. The cost is $15.00 each for a 72-hour trip permit.

CVO Safety and Enforcement Programs

The Division of State Patrol (DSP) is the enforcement agency of WisDOT. Presently, the Wisconsin State Patrol is authorized 112 motor carrier enforcement officers, 99 of which are non-supervisory inspectors. State Patrol inspectors enforce commercial motor vehicle (CMV) weight, equipment, authority, permit, registration, fuel tax and other motor carrier related legislation. Inspectors also conduct safety inspections; conduct carrier safety audits; and inspect school buses, commercial buses, and

reconstructed salvage vehicles. The Motor Carrier Safety Assistance Program and the Size/Weight/Credential Enforcement Program constitute the majority of Wisconsin's commercial motor vehicle enforcement efforts.

Motor Carrier Safety Assistance Program (MCSAP)

Since 1984, WisDOT has actively participated in the FHWA-sponsored Motor Carrier Safety Assistance Program (MCSAP). MCSAP activities include conducting extensive and detailed inspections of vehicle equipment, driver qualifications and hours of service, as well as post-crash, hazardous materials and cargo tank safety inspections. In addition to roadside inspections, State Patrol inspectors conduct compliance reviews, which are safety audits conducted at carrier terminals. WisDOT receives approximately $2.2 million annually from FHWA to participate in the MCSAP program.

DSP conducts approximately 30,000 safety inspections annually. About 50% (15,000) reveal violations of State and Federal safety regulations. Approximately 30% (9,000) result in the driver, the vehicle or both being placed out-of-service for particularly serious truck safety violations.

Size/Weight Enforcement

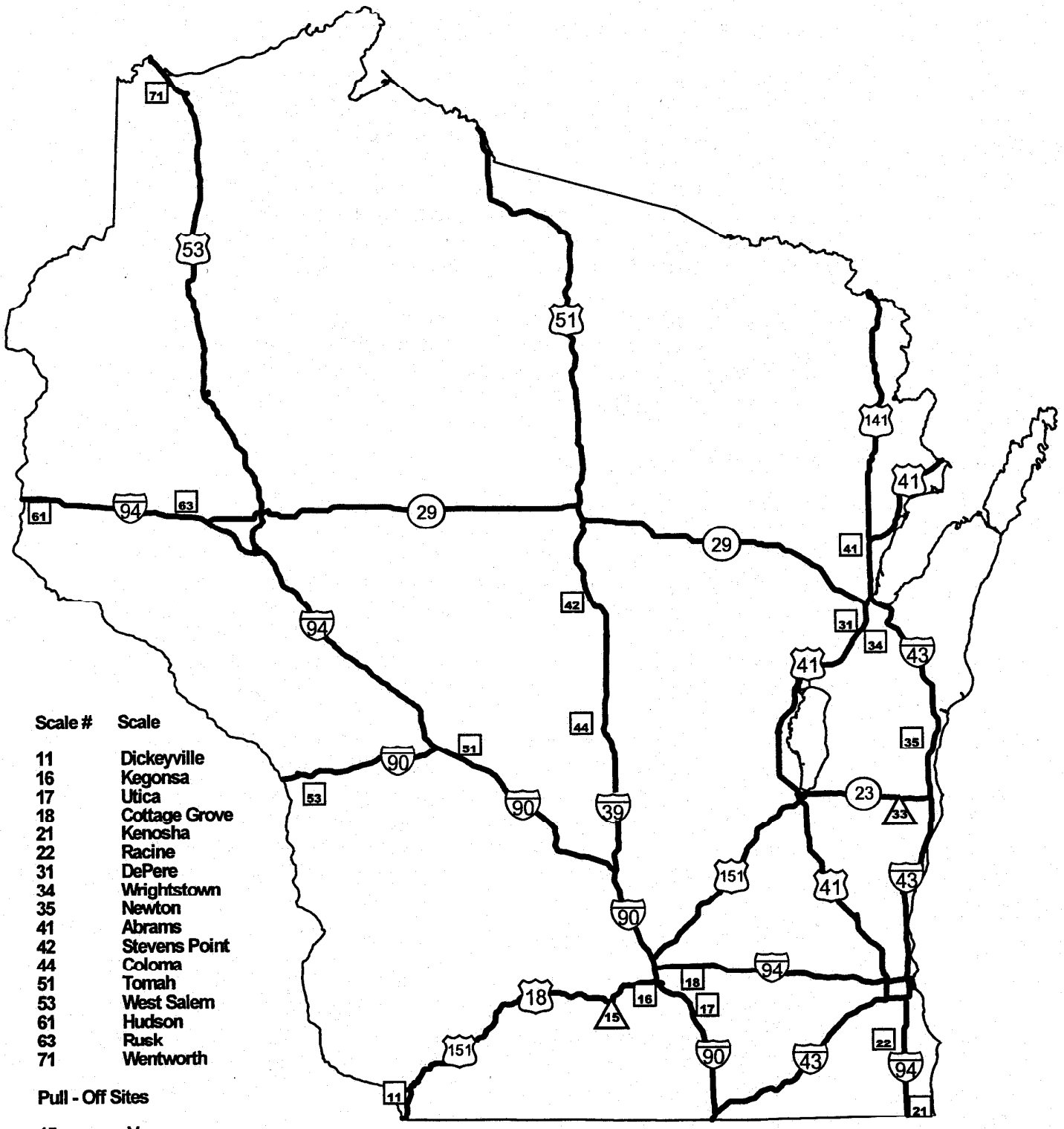
Inspectors ensure that carriers operate within statutory or permitted size (length, height, width) and weight limitations. Presently, the State Patrol weighs approximately 1.4 million CMVs annually. Carriers are checked to ensure that they have proper registration, fuel tax, insurance and authority credentials. Enforcement activities are conducted at State Patrol safety and weight enforcement facilities (SWEF) and through mobile commercial vehicle enforcement. The federal government mandates that each state conducts and maintains an adequate size and weight enforcement effort.

Mobile commercial vehicle enforcement augments the activities performed at the permanent facilities. Mobile enforcement is conducted to respond to particular complaints of unsafe or overdimensional commercial motor vehicle traffic, to cover areas not served by permanent sites, and to pursue CMV traffic that is bypassing permanent facilities. Inspectors may use private, state-certified scales or portable wheel weighers to perform the inspection.

Facilities

The Division of State Patrol operates a statewide network of 17 safety and weight enforcement facilities (SWEF) and 2 improved pull-off sites. Most of these facilities are located along the State's major CMV arterial highways and near state borders. Figure 4 presents the current SWEF and pull-off locations.

Figure 4
State of Wisconsin
Truck Inspection and Weight Facilities



Scale #	Scale
11	Dickeyville
16	Kegonsa
17	Utica
18	Cottage Grove
21	Kenosha
22	Racine
31	DePere
34	Wrightstown
35	Newton
41	Abrams
42	Stevens Point
44	Coloma
51	Tomah
53	West Salem
61	Hudson
63	Rusk
71	Wentworth

Pull - Off Sites

15	Verona
33	Wentworth

Four of the Department's (17) SWEF facilities are equipped with ramp sorting weigh-in-motion (WIM) scales. A WIM scale significantly enhances the ability to screen a larger volume of vehicles. For example, although the four WIM-equipped facilities represent less than 25% of the total number of SWEFs, they account for approximately 50% of the total number of statewide vehicle weighings. However, out-moded ramp design and lack of ability to screen for safety and proper credentials are constraining factors in the effectiveness of the WIM scales.

Motor Carrier Enforcement System (MCES)

The Motor Carrier Enforcement System (MCES), a mainframe-based management information system, contains over 800,000 on-line copies of all motor carrier incident reports and safety inspections. In addition, access is provided into DMV files which allows vehicle registration, driver's license, overweight and oversize permits, authority, insurance and other credential information to be checked at the roadside. Program managers use the MCES to track the performance of personnel, utilization of facilities and enforcement and safety trends. Safety reports are downloaded to a national motor carrier safety database (SAFETYNET) which is administered by FHWA. Inspectors at permanent facilities also have the ability to electronically forward copies of inspection reports, real-time, to the Wisconsin Division FHWA/Office of Motor Carriers.

School Bus and Other Vehicle Inspection

The State Patrol inspects 10,000 school buses (commercial motor vehicles by federal and state definitions) each year; conducts salvage title, motor bus and human service vehicle inspections; and performs a variety of other law enforcement related activities.

CVO Engineering Related Programs

WisDOT's Division of Transportation Intrastructure Development (DTID) has the leadership role for the department's engineering-related CVO programs. The division coordinates with DSP regarding the location of SWEFs. DTID also works closely with DMV's O/O Permits Unit to provide information and analysis needed for evaluating permit applications. As the O/O permits system is upgraded, it will be necessary to establish links with the DTID databases that provide data for permit application evaluation.

Long Truck Routes (Administrative Rule TRANS 276)

Federal law requires that long trucks (those with overall lengths greater than 65 ft., semi-trailers between 48 and 53 ft., and twin 28.5 ft. trailers) be

allowed to operate on and within one mile of the National Network. Wisconsin has a system of state highways designated for use by these long trucks. Federal law requires that any request to add a highway to the designated system must be reviewed and acted upon within 90 days. The DTID is responsible for updating the administrative rule that deals with the long truck network . DTID annually produces a map depicting this network.

The map is produced on CADDS and is available through the ethernet via File Cabinet. The map is updated regularly and printed copies are distributed. The Administrative Rules process to change the highway listing is not automated.

Bridge Analysis for Oversize/Overweight Permits

DTID's Bureau of Highway Development works with the transportation district offices to evaluate Wisconsin's bridges for structural strength and capacity, and to develop and maintain a bridge log. The bridge log contains information on the capacity of a structure, and its vertical and horizontal clearances. This log is computerized so that proposed routes and loads can be checked before a permit is issued. The electronic log is available for use by WisDOT personnel. The electronic file undergoes a complete update annually, with some corrections made throughout the year. Hardcopy printouts are available to outside parties (trucking firms). The hardcopy log is printed once annually.

The bridge log is updated to allow computerized route checks to be run to determine if an oversize or overweight permit applicant's vehicle may be too heavy for a bridge. If the initial computer routing finds a vehicle's weight to be a certain amount greater than a bridge's rated capacity, a more detailed analysis is performed to determine if the structure should be subjected to that overweight load.

There is some need for faster turnaround on bridge log updates that have an impact on bridge clearance, and ultimately on overheight vehicles travelling under the bridge. For example, a repaving project may reduce the amount of bridge clearance by several inches. The difference may be critical for an overheight vehicle that is travelling along that route. Possible process changes that may update the bridge log in a more timely manner for O/O permit evaluation include having the district offices do on-line updates of the bridge log and more education of district staff about the importance of updated bridge logs to the safety of O/O vehicles travelling Wisconsin roadways.

DTID has developed an Automated Bridge Analysis System that will do an automated review of bridge sufficiency for O/O permit applications. Although

the system is currently in use, only a limited number of bridges have been entered on the database. As more bridges are added, the system will have a greater impact on improving the efficiency of bridge reviews.

Pavement Analysis for Oversize/Overweight Permits

DTID's Pavements Section works with the transportation district offices to maintain an inventory of pavements throughout the state. For single trip permit vehicles greater than 270,000 lbs. (250,000 lbs. if Class II Highways involved) a detailed analysis is performed to determine if the pavements should be subjected to the overweight load.

The Pavement Management Decision Support System (PMDSS) contains information on depth, width and types of bases and surfaces. It is currently in a workstation format but is being converted to ARCVIEW. The districts are responsible for updating this system. Currently 3 of the 8 districts are up-to-date. The Pavement Information File contains current surface type, plus condition and ride ratings. The information from these two databases is used by the Pavements Section to manually check if a "superload" should be granted a permit. It is hoped that sometime in 1998 this system will be automated and available to those in the department with ARCVIEW capability.

Temporary Restrictions (Highway Construction)

DTID's Bureau of Highway Operations works with the transportation districts to keep the bridge log up-to-date regarding width and height restrictions due to temporary circumstances such as construction or maintenance activities. These restrictions, along with road closures and detours, are also depicted on a statewide map that is produced weekly during the construction season. The bridge log and the construction map are used by DMV's O/O Permits Unit and trucking companies to assist with movement of CMVs.

The restrictions are transmitted to the Bureau of Highway Operations from the transportation districts via the traffic inconvenience report. The reports are sent via e-mail, FAX, Inter-departmental mail (hard copy), or phone. The information is then keyed into a word processing program (on MS Word) which is then printed on the statewide construction map. It is also rekeyed in a different MS Word format (by county) to be downloaded into WisDOT's WorldWideWeb homepage and for the toll-free construction recording done by State Patrol. This is done on a weekly basis during the construction season. The restrictions are keyed into the department's computerized temporary restriction listing, which is tied into the bridge log, for use by DMV's O/O Permits Unit and the transportation districts for routing of permitted O/O vehicles. This listing is updated daily on an as-needed basis.

District Interaction

The Bureau of Highway Operations acts as the liaison between the O/O Permit Unit and transportation districts for permits that are subject to transportation district review. This most often occurs for vehicles over 16 ft. wide.

CVO Planning Related Programs

Various divisions of WisDOT are involved with planning activities related to CVO, often involving agencies from other states.

I-90/94 Intercity Corridor Plan

Major WiSDOT partners in this strategic planning effort are the Division of Transportation Investment Management (DTIM) and Division of Transportation Districts (DTD). DTIM's ITS Section coordinated the inter-agency effort, and provided technical and project level support to DSP and DMV in the areas of automated safety and weight inspections and advance purchase of credentials. Numerous other public and private sector partners were also involved in developing the plan. This effort was a key component of the overall WisDOT strategic plan for ITS.

Gary Chicago Milwaukee (GCM) Corridor

WisDOT is currently involved in a major update of the CVO component of the GCM Corridor Program Plan. This section of the overall CPP update addresses activities in the following four program project areas:

- CVO working group
- CVO traveler information
- CVO incident management
- CVO safety enforcement re-engineering

This program area will be targeted for activity in 1998-99, as resources are available. The ITS Section coordinates WisDOT's overall involvement in the multi-state GCM study, and the Divisions of State Patrol and Motor Vehicles participate in the CVO planning component.

Mainstreaming

Mainstreaming is a federal initiative to incorporate ITS/CVO into state and metropolitan transportation planning and to coordinate ITS/CVO activities among agencies and states. In Wisconsin, DMV and DSP are the main

partners in the mainstreaming effort, with the ITS Section providing support. DMV is responsible for development of the Wisconsin ITS/CVO Business Plan. The ITS/CVO Business Plan work group also includes personnel from WisDOT's Office of Policy and Budget, and Divisions of State Patrol, Transportation Infrastructure Development, Transportation Investment Management and Business Management, as well as the FHWA Office of Motor Carriers - Wisconsin Division.

Current ITS/CVO Projects

ITS/CVO projects that are currently being implemented in Wisconsin or are completed are the following:

- I-90/94 Intercity Corridor Study: This study led to the development of a strategic plan for ITS deployment in the region. WisDOT, with local and federal involvement, completed this plan in 1996.
- Dane County Freeway Incident Management Plan: The goal of this project is to develop a strategic implementation plan for for the Madison/Dane County area for ITS-supported incident management systems to detect and verify crashes, enable rapid emergency response, and help control and clear incident scenes. HNTB is currently under contract for this project.
- ITS/CVO Business Plan: WisDOT has signed an agreement to produce a business plan for the implementation of ITS technologies in its CVO programs.
- IFTA/IRP On-Line Carrier Access - WisDOT's Division of Motor Vehicles has contracted with R.L. Polk Company to install new IFTA and IRP processing software as a first step in providing on-line access to carriers for electronic credentialing and reporting.
- Midwest Electronic One-Stop System: Wisconsin and 5 other states participated in this federally-sponsored demonstration and operational test of a multi-state, electronic purchase system for motor carrier credentials. The project ended unsuccessfully in 1997, and a final report is being prepared by the grant auditors.
- CVO Institutional Barriers Study: WisDOT is conducting a study to identify possible institutional issues (such as law or rule language, privacy issues, liability concerns, etc.) that might impede the implementation of ITS programs in Wisconsin.
- ITS Commercial Vehicle Operations (CVO) Mainstreaming Program: WisDOT has joined the Great Lakes Mainstreaming Consortium, and is participating in the development of a regional ITS/CVO business plan.
- MCSAP 100/200 Site Project: The goals of this State Patrol project were to equip inspection sites and teams to use the Inspection Selection

System (ISS) to select vehicles/drivers for inspections, electronically check CDL status and electronically enter inspections at portable sites using the ASPEN data entry system. The project is still in progress, with Patrol staff evaluating the effectiveness of these methods.

- Heka Brake Tester Pilot Project: State Patrol received a FHWA R&D grant to test this brake system for roadside inspections. The system was installed in 1996 and is currently being evaluated by Patrol under guidance of the Battelle Corporation.
- Minnesota/Wisconsin Out-of-Service Verification Project: Minnesota and Wisconsin collaborated on a project to share electronically share information about out-of-service carriers traveling between the two states. The project ended in 1997, with the evaluation that although the concept was a good one, the license plate scanners were not able to read an adequate percentage of license plates to justify the costs of operation.
- Oversize Permit Unit System (OPUS): WisDOT's Division of Motor Vehicles is in the process of moving its oversize/overweight permit processing to a new LAN-based environment, which will allow for improved efficiency in keying applications.

3.2 Economic and Political Considerations

There are approximately 5,000 interstate motor carriers[1] based in Wisconsin. Additionally, there are more than 20,000[2] interstate motor carriers operating into, out of and through Wisconsin on a quarterly basis. As of 1/1/97, there are 49,300 Wisconsin base-plated intrastate trucks and tractors registered at 10,000 pounds or more. Buses with Wisconsin base plates as of 1/1/97 include 8,125 with school bus plates, 1,527 with municipal plates, 338 with motor bus plates and 165 with urban transit bus plates. As of 12/31/96, Wisconsin has 216,283 commercial drivers entered on the CDLIS database.

Approximately 80% of all manufactured freight in Wisconsin is transported by truck, and over 70% of all Wisconsin communities are served exclusively by truck.[3] Seventy-seven percent of all manufacturing firms are located in communities within five miles of a route identified in the department's Corridors 2020 plan.

[1] Based on 1997 IRP registration data

[2] Based on quarterly fuel tax reporting figures

[3] Wisconsin Motor Carrier Association newsletter, April, 1997

Wisconsin motor carriers already consider their industry to be highly taxed. According to the August 18, 1997 issue of *Transport Topics*, the USDOT's Cost Allocation Study lends support to that notion, with its finding that more than 80 percent of trucks are paying more than their fair share of taxes. Wisconsin carriers feel that any investment in ITS technologies must show benefit, not just collect data and add another tax. They believe that use of weigh-in-motion scales on highways or on weigh station entrance ramps is a worthwhile investment.[4] At DMV's business process reengineering session for motor carriers, receiving faster credentials (electronically or through self-issuance) was frequently cited by carriers as a way to improve their productivity and competitiveness, in turn helping the state economy.

Highway capacity has not kept pace with increases in truck and other vehicular traffic. The result has been increases not only in congestion but also the frequency with which trucks and cars must operate in close proximity. Support for new highway projects is not automatic. Citizens and state legislators routinely question whether motor fuel taxes should be increased to fund new highway projects. There is increasing emphasis on highway maintenance to make more effective use of existing infrastructure. The potential for the federal government to increase maximum truck weights in the near future may result in significant decreases in expected lifespans for pavements and bridges if careful stewardship of existing infrastructure is not maintained.

Reviewing Wisconsin's traffic crash history, other vehicle types consistently have an overall crash involvement rate twice that of large trucks. However, the involvement rate for large trucks in fatal crashes is slightly higher than that of other vehicle types. Nationally, dramatic truck crashes involving passenger vehicles have prompted public dialogue regarding government's ability to effectively monitor and regulate CMVs. Several active groups have formed to address this issue, and have attracted significant media attention.

The involvement rate of large trucks in traffic crashes in Wisconsin is twice as high in urban areas as compared to rural. However, the large truck involvement rate in fatal crashes is 2.5 times higher on rural roads than on urban roads. Large trucks also have higher crash involvement rates on non-interstate highways - - - twice the involvement in overall crashes and nearly three times the involvement in fatal crashes, compared to interstate highways.

[4] Discussion during Wisconsin Motor Carrier Advisory Committee meeting, May 6, 1997

3.3 Issues and Opportunities

Major **issues** affecting the administration and enforcement of CVO regulations in Wisconsin include the following:

- Increasing need for faster turnaround of motor carrier credentials on a daily basis. Backlogs occur in every program. Motor carriers sometimes have to wait days for an oversize permit or IRP registration.
- Safety and Weight Enforcement Facility Planning (SWEF): The department has been studying the role that Safety and Weight Enforcement Facilities (Weigh Stations/SWEFs) should play in the state's overall CVO enforcement strategy.
- The Department of Transportation has completed a reorganization of the modal divisions in the organization.
- Safety and enforcement resources - While the number of safety inspectors and inspections has remained constant over the past several years, WisDOT projects truck VMT to increase 94% by 2020. Additionally, as inspector salaries increase and MCSAP grants decrease or stay at the same level, DSP may not be able to afford as many inspectors for MCSAP.

Wisconsin has significant **opportunities** to implement ITS technologies in the motor carrier data processing system and in the safety and weight enforcement facilities.

Motor Carrier Data Processing System

Wisconsin has opportunities to greatly improve its processing efficiencies and to participate in the Commercial Vehicle Information Systems and Networks Program (CVISN) by upgrading its motor carrier data processing system.

Processing Efficiencies

As discussed previously, WisDOT has experienced a significant increase in demand for CVO credentials, while staffing and related resource levels have decreased. While process improvements have been implemented to make more efficient use of staff resources, upgrading the processing systems would yield even more significant efficiencies.

To take advantage of such technologies as electronic data interchange (EDI), the motor carrier data processing systems currently being used by the department must be updated and/or completely rebuilt. The four programs that have the greatest impact on interstate motor carriers (IFTA, IRP, O/O permits and SSRS) should be upgraded as soon as possible. The lease of

new IFTA and IRP systems from the R. L. Polk Company is the first step of a motor carrier system upgrade. The upgrade of the O/O permit system should be planned during FY 98/99 and initiated during the FY 2000/2001 biennium. Following the system upgrades, WisDOT will be able to implement self-issuance of some credentials, electronic transmission of quarterly fuel reports, permanent IRP plates, and staggered IRP expirations, all of which will improve the efficiency and convenience of DMV's motor carrier credentialing programs. Due to uncertainty at the federal level as to the future of the SSRS program, a system upgrade is not yet planned. When more information about the program's future is available, WisDOT will begin planning for a SSRS system upgrade.

The upgraded systems need to be capable of exchanging data with systems in other jursidictions. The systems also need to interface with State Patrol's Motor Carrier Information System (and, in the case of the O/O system, with the DTID's bridge and pavement databases) to allow for automated evaluation of O/O permits and for tracking of carrier credentials and violations by enforcement personnel.

Participation in CVISN

Upgraded motor carrier processing systems are the keystone of Wisconsin's participation in the CVISN effort. The systems will set up databases with information about carriers' operations and credentials that is critical to enforcement efforts in Wisconsin and other jurisdictions. The systems will be built to comply with the CVISN standards to ensure that WisDOT can exchange data with carriers, other Wisconsin state agencies, and other jurisdictions.

The FHWA describes CVISN as a collection of information systems that will enable the seamless movement of goods and services throughout the United States and North America. CVISN will provide standards that allow existing information systems used by government agencies to be connected through a nationwide system architecture. This will enable government agencies to electronically share information and create a network of authorized users who will have electronic access to information about the motor carrier industry both within states and on an interstate basis.

Systems built to CVISN standards will provide the framework for automated clearance and screening of motor carriers at weigh stations and during mobile CVO enforcement activities. The enforcement community will be able to screen motor carriers through the use of such electronic technologies as transponders, on-board computers, etc. Currently, electronic clearance consortia such as Help, Inc. and Advantage CVO have been organized across

the nation, offering opportunities for Wisconsin to cooperate with other jurisdictions in a coordinated ITS/CVO enforcement effort.

A major component of the development and deployment of CVISN-compliant systems is a very strong partnership between government and the motor carrier industry. It is envisioned that CVISN-compliant systems will increase efficiency and reduce costly paperwork for state government and industry. They will improve safety for the motor carrier industry and the traveling public. For example, full implementation of automated clearance can eliminate weigh station delays for compliant carriers and allow enforcement to focus its resources on non-compliant carriers.

Recent studies have determined that up to 15 percent of trucks are operating overweight. However, with current SWEF equipment, less than 1 percent of all trucks weighed are found to be in violation of state or federal weight laws. Clearly, without electronic screening, SWEF resources are focused on weighing legal trucks. Periodically a weigh station must temporarily close, to clear the trucks that are in the queue, on the ramp, waiting to be checked. This prevents the queue of trucks from backing up onto the highway.

It should be noted that although the long-term effect of automated clearance will be reduction of the number of trucks that must stop at weigh stations and easing of weigh station congestion, these benefits may not be seen early in the implementation process. In the short term, legal trucks that are equipped for electronic screening will be able to pass by the weigh stations. However, many legal trucks that are not yet equipped to allow electronic screening will be required to stop at weigh stations, as will trucks operating at illegal weights or with improper credentials. The net effect is that more illegal and potentially illegal trucks will be required to stop. (Presently, most of these trucks are allowed to pass by the weigh station when the station is temporarily closed to clear the queue of trucks). This will not necessarily reduce the number of trucks that must stop at weigh stations or the resulting congestion. It eliminates the need for legal trucks to stop and leaves more time for the illegal and potentially illegal trucks to be checked.

Safety and Weight Enforcement Facilities (SWEF)

The department has determined that the State Patrol is and should continue to be the primary agency responsible for CVO enforcement in Wisconsin. At issue is how to best accomplish that mission. Should all enforcement be done at SWEFs, through mobile enforcement or through a combination of SWEFs and mobile enforcement? The department needs to determine its CVO enforcement strategy. The strategy should lay the groundwork for evaluation and decisions on the ITS tools available to make the department's enforcement efforts more effective and efficient.

SWEF use in the United States runs the gamut of no weigh stations in New York and Texas to 52 in California. Wisconsin currently operates 17 SWEFs. Among the advantages that SWEFs provide for CVO enforcement are:

1. Certified platform scales for weight screening and enforcement.
2. Access to computer systems that provide on-line access to carrier, vehicle, driver and CMV safety files.
3. A facility that allows efficient processing of CVO enforcement activities regardless of climatic conditions.
4. Safe environments for MCSAP safety inspections and direct upload of inspection reports to WisDOT and FHWA CMV safety databases.
5. Facilities to effectively and safely place vehicles and drivers out-of-service.
6. Physical foundation for ITS/CVO enhancements.
7. Permanent facilities can check up to 2,500 trucks per day while mobile enforcement strategies typically check 3-5 trucks per hour.
8. Deterrent effect, even when closed.

The Concept of Motor Carrier Enforcement

Effective enforcement of any law requires that there be a perception that those who violate the law will be apprehended and penalized. This perception promotes voluntary compliance. Motor carrier enforcement is no exception. Presently, the ability of the Department to create such a perception is seriously challenged. Approximately 1-3 percent of all CMV traffic in Wisconsin is checked by enforcement operations. This percentage can be expected to decrease as CMV traffic increases, so long as the number of enforcement officers and the technological capabilities of the Department remain constant. For instance, at the level of truck VMT projected by WisDOT for the year 2020, and with the current level of enforcement resources and technology, DSP would be able to check only .5 - 1.5 percent of CMV raffic.

One way to successfully create the perception that a violator will be caught is to operate technologically enhanced safety and weight enforcement facilities. If motor carriers believe that they and/or their vehicle(s) will be inspected (for weight, credentials, equipment, driver logs, etc.), they are more likely to comply with all motor carrier laws, rules and safety regulations.

Effective motor carrier enforcement must be multi-faceted. To complement enforcement activities at SWEFs, there must be mobile enforcement activity on bypass routes. There will always be a certain segment of violators who

will choose to bypass SWEFs using alternate highway bypass routes. Mobile enforcement is the most effective means of countering this activity. It should be noted that typical bypass routes are not constructed to the same standards as are the highways where SWEFs are located. Overloaded vehicles, and even legally loaded vehicles bypassing for some other reason, do more damage to these highways and thus increase infrastructure costs to the state. Additionally, traffic crash rates for large trucks are significantly higher on the non-interstate roadways that would typically be bypass routes. Mobile enforcement efforts that would discourage carriers from bypassing the interstate system may contribute to safer travel by large trucks.

Other methods that are part of a multi-faceted motor carrier enforcement program include the following: (1) staggering of hours of SWEF operation; (2) use of special saturation details and 24 hour operations; and (3) coordinating enforcement efforts with other states in the region.

The Great Lakes Mainstreaming effort provides an opportunity for states to share resources. If a motor carrier is making an interstate trip, a SWEF has a deterrent effect regardless of where it is located. All SWEFs perform essentially the same functions. If there is a SWEF somewhere along the route, and motor carriers know or believe they will be checked, there is the likelihood the carriers will be legal along the entire route. For example, a carrier who leaves Louisville for Minneapolis is likely to be legal if they know they will be inspected somewhere along the route, regardless of which jurisdiction handles the inspection.

SWEF Activity in Neighboring States

Through the Great Lakes Mainstreaming partnerships, states have an opportunity to coordinate the location and operations of SWEFs. Recent discussions with partners in our region provided the following information about current facilities on primary interstate routes, and plans for new facilities that affect or could benefit Wisconsin.

Minnesota

Current Facilities

1. I-94 wb, 2 miles west of Mn/Wi stateline at St Croix is currently operating and will continue to operate.

Planned Facilities

2. I-35 nb/sb near Albert Lea.
3. I-90 wb west of LaCrosse in the Dresback area.
4. I-90 eb near Sioux Falls.
5. I-94 eb near North Dakota stateline

Illinois

Current Facilities

1. I-55 nb and sb at IL 53 in Will Co.
2. I-55 sb n. of Springfield in Sangamon Co.
3. I-55 nb n. of IL 16 in Montgomery Co.
4. I-55/70 eb and wb at I-255 in Madison Co.
5. I-57 nb and sb n. of IL 50 in Will Co.
6. I-57 nb and sb n. of I-24 in Williamson Co.
7. I-64 eb e. of IL 159 in St. Clair Co.
8. I-70 wb w. of Indiana border in Clark Co.
9. I-70 eb e. of US 51 in Fayette Co.
10. I-74 eb and wb w. of I-80 in Rock Island Co.
11. I-74 eb and wb w. of I-39 in McLean Co.
12. I-80 wb e. of US 45 in Will Co.
13. I-80 eb w. of US 45 in Will Co.
14. I-80 eb and wb n. of IL 92 in Henry Co.

Planned Facilities

15. I-39 two facilities (nb and sb) north of I-88 in Ogle Co.
16. I-64 in White Co.
17. I-255 in Madison Co.
18. Illinois is interested in discussing the possibility of constructing a facility southbound on I-94 at Illinois-Wisconsin border. Illinois may not have the land or the staff available for a facility, but may be able to assist in the construction and maintenance of such a facility.

Indiana

Current Facilities

1. I-94 eb and wb near the Michigan stateline. These are new facilities equipped with weigh-in-motion, license plate readers and inspection buildings.
2. I-65 sb south of I-80 near Lowell. This is a new facility.

Planned Facilities

3. I-65 nb in Clarksville area, as close to Kentucky stateline as possible.
4. I-69 sb near Michigan stateline
5. I-74 eb near Illinois stateline
6. I-74 wb near Ohio stateline

Iowa

Current Facilities

Iowa has numerous facilities and is beginning a study to identify new SWEF needs. Iowa plans to disinvest in all outbound weigh stations and build only inbound facilities.

Michigan

Current Facilities

1. I-69 nb near Coldwater, n. of Indiana stateline.
2. I-75 nb and sb at Mackinac Bridge.
3. I-75 nb and sb at Bridgeport, s. of Saginaw.
4. I-75 nb and sb at Pontiac.
5. I-75 nb and sb at Monroe, n. of Ohio stateline.
6. I-94 nb and sb near New Baltimore, n. of Detroit.
7. I-94 eb and wb near Grass Lake, east of Jackson.
8. I-94 nb and sb at New Buffalo, n. of Indiana stateline.
9. I-96 eb and wb at Fowlerville, e. of Lansing.
10. I-96 eb and wb near Ionia, w. of Lansing.

Planned Facilities

No new facilities are being planned.

Wisconsin's Role in Regional CVO Enforcement

In order to improve safety and protect the infrastructure throughout the Great Lakes Mainstreaming region, it is important that motor carriers be inspected somewhere along the route. Currently, it is possible for a carrier leaving New York or other areas in the Northeast[5] and traveling along the Interstate Highway system to Milwaukee or Green Bay to make the entire trip without going through a SWEF unless the Kenosha scale is open. There are no SWEFs on the I-80 tollway in Ohio and Indiana. Pennsylvania has one old weigh station on I-80 and has no plans to modernize it. There are no SWEFs on the Pennsylvania Turnpike. Westbound carriers would proceed onto I-94, I-294 or I-290 and I-90 in Illinois (the TriState Tollways)[6] and not be checked until they enter Wisconsin. This is a funnel effect. Wisconsin acts as a funnel for motor carrier traffic that is destined for points in Wisconsin and beyond. The opposite is also true. Wisconsin "feeds" the tollway system with CVO traffic. Because of the lack of SWEFs in the east and along the tollways it is especially important that Wisconsin be involved in CVO enforcement to ensure that the perception of enforcement is in the minds of motor carriers.

As discussed earlier, there are SWEFs strategically located, or planned to be located, in the Great Lakes Region that will benefit Wisconsin. It is important that Wisconsin effectively plan the location of its future SWEF sites.

[5] New York, Rhode Island and Maine have no weigh stations. Vermont has one weigh station and New Hampshire has two. It should be noted that some of these states use permanent pull-offs or rest areas to do CVO enforcement, and/or they carry out mobile enforcement efforts.

[6] Tollways do not have weigh station facilities.

Southern Wisconsin Area: Because there is a lack of SWEFs in the greater Chicago metropolitan area and along the I-80/90 tollways to the east, Wisconsin can benefit itself and its partners by screening and checking vehicles at the Wisconsin/Illinois border. Motor carriers originating from the Fox River Valley, Milwaukee and other points could pass through outbound SWEFs on I-90 and I-94 eastbound near the Illinois stateline (or in Illinois if space were available) and could be cleared or apprehended. Wisconsin facilities such as the Racine SWEF provide a deterrent for carriers headed from these points of origin to the Gary-Chicago corridor and beyond. Carriers coming from the east, Chicago area or via routes where they were not checked could be screened (and checked, cleared, apprehended, etc.) at inbound SWEFs in Wisconsin.

The lack of SWEFs on the tollways in Illinois, Indiana, Ohio, Pennsylvania and New York highlights the importance of State Patrol's CVO enforcement efforts in southern Wisconsin. Wisconsin and the partners to the east could suffer or do suffer the consequences of these "SWEF free corridors" in regards to westbound I-90 and I-94 traffic. If Wisconsin does not enforce CVO regulations near the Wisconsin/Illinois border, much traffic that is destined for Wisconsin, Upper Michigan and points west would go unchecked for credential, safety and weight violations.

Because of Wisconsin's gateway role, and because other states (along the I-80/90 SWEF-free tollways to the east) benefit from Wisconsin's enforcement efforts, there needs to be a discussion of the costs to provide an effective level of CVO enforcement in the region. Perhaps WisDOT could be compensated for its CVO enforcement efforts that benefit the I-80/90 tollway corridor by a special FHWA allocation. Without the CVO enforcement efforts in southern Wisconsin, the deterrent effects discussed earlier will be compromised. The probability that motor carriers will operate illegally and not be apprehended on I-80, I-90 and I-94 could be much greater.

Other Areas of Wisconsin: As noted earlier, several states in the surrounding area are planning SWEF construction. Indiana and Iowa plan to concentrate on inbound weigh stations. It is anticipated that if all states within the region adopted the strategy of inbound stations, SWEFs would be effectively located along the region's primary corridors.

Wisconsin has an excellent opportunity to benefit from the mainstreaming effort. Wisconsin already has inbound SWEFs strategically located on I-94 near Hudson, I-90 near La Crosse, US 2 near Superior, US 41 near Green Bay and US 151 near Dubuque. Through coordination with Iowa, Minnesota and Michigan, these SWEFs can be utilized to their fullest potential.

Enforcement Options

In its long-range SWEF planning process, the Department needs to identify which strategies it will use for CVO enforcement on I-94 south of Milwaukee. In 1996, the I-94 corridor average annual truck traffic (excluding weekends) was 5,440,500. In this corridor, given current enforcement levels, the Department is only able to safety inspect less than 4,000 trucks per year or .0007% of the total truck traffic. However, Federal reports indicate that national out-of-service rates for drivers and vehicles are 5 percent and 28 percent respectively. (Wisconsin's vehicle rates are higher. See the MCSAP program description in section 3.1 of the plan.) By any account, tens of thousands of unsafe vehicles and drivers are operating unchecked along this heavily traveled corridor each year.

Studies have shown that between 13 and 15 percent of trucks operate in violation of weight limits. As reported in the June, 1997 issue of the *Mainstreaming Newsletter*, a Florida study found that when weight limits were not enforced at all, nearly 13 percent of all trucks in the corridor were overweight. After implementing intensive patrolling and enforcement, only 1.4 percent of all trucks were overweight.

A 1997 internal WisDOT analysis estimated the annual costs of overweight truck traffic at approximately $41 million per year. The same analysis estimated the realized value of deterred pavement damage given present enforcement levels to be approximately $11 million annually. The value of avoided traffic crashes at current motor carrier enforcement levels was estimated at between $27 - $61 million per year.

Clearly, motor carrier enforcement efforts play an important role in keeping unsafe operations off the roads, and protecting the infrastructure from the damaging effects of excessive weight. Wisconsin needs to determine the most effective methods for carrying out these enforcement efforts.

A review of the number of SWEFs throughout the U.S. reveals certain regional trends. While states in the New England area do not tend to operate permanent facilities (or only a small number of them), areas such as the Midwest, Northwest, Southeast and Southwest typically operate extensive networks of facilities on their major arterials. SWEFs carry significant initial and ongoing costs. However, as noted above-mentioned 1997 Wisconsin analysis, SWEFs can provide substantial benefits to a state, in terms of avoided crashes and deterred pavement damage.

Wisconsin needs to study the outcome of various enforcement strategies to determine if alternate options can increase the ability of the Department to

enhance traffic safety, promote carrier compliance, better protect infrastructure, fit into regional efforts and be cost-effective.

A regional partnership for coordinated SWEF operations and conceptual agreement on SWEF locations should be pursued. A well-coordinated approach to CVO enforcement could increase the ability of Wisconsin and other states in the region to enhance traffic safety, protect infrastructure, and improve CVO enforcement efficiency and effectiveness along major interstate highway corridors.

4.0 Strategic Overview

The CVO issues and opportunities identified in this plan provide a foundation for Wisconsin's ITS/CVO business planning efforts. The strategic framework for this plan (vision, guiding principles, goals and objectives) was developed by the work group, with guidance from WisDOT upper management, CVO stakeholders, existing national ITS/CVO and CVISN policies, the Department's strategic plan and previous ITS planning efforts. Taken as a whole, the framework is consistent with the CVISN guiding principles, particularly related to gradual development of new systems in concert with stakeholders, electronic exchange of information, more efficient credential administration, more efficient and effective enforcement by focusing on higher risk carriers, and improved productivity and efficiency for carriers. The projects proposed in the business plan assume a commitment to build systems that comply with CVISN standards and principles.

4.1 Mission Statement

The mission of the Wisconsin Commercial Vehicle Operations (CVO) Program is to promote the safe and efficient operation of commercial motor vehicles in Wisconsin.

4.2 Guiding Principles

The projects included in this Business Plan were developed to reflect the following:

- Develop systems and processes that are efficient and cost-effective for both government and carriers.
- Improve public safety.
- Protect Wisconsin's investment in its infrastructure.
- Compliment regional and national CVO and ITS efforts, including consistency with CVISN standards and principles.
- Maintain partnerships with industry to identify and address concerns and needs.
- Select short-term projects that will logically build towards long-term goals.

4.3 Goals and Objectives

The goals and objectives of Wisconsin's ITS/CVO Business Plan are as follows:

Goal 1: Provide efficient application, processing and delivery of motor carrier credentials (e.g., registration, tax payments, permits, etc.).

- **Objective a:** Implement IFTA and IRP electronic access for carriers by 7/99.

- **Objective b:** Implement electronic self-issuance on the O/O permit system by 6/30/01.

- **Objective c:** Achieve interoperability with other related systems, both within Wisconsin as well as in other jurisdictions.

Goal 2: Increase the efficiency and effectiveness of CVO enforcement.

- **Objective a:** **T**he total number of CMVs weighed or screened for overweight violations steadily increases.

- **Objective b:** The number of CMVs screened for safety violations steadily increases.

- **Objective c:** The number of CMVs required to stop at fixed SWEFs steadily decreases

- **Objective d:** Focus enforcement efforts on carriers operating illegally and those with less than satisfactory safety ratings.

- **Objective e:** Coordinate with regional and national enforcement efforts through joint planning and system interoperability.

Goal 3: Enhance safe and efficient movement by commercial vehicle operations.

- **Objective a:** Deploy equipment and technology necessary to accomplish mainline automatic screening of size, weight, credentials and safety at both fixed and mobile locations by December, 2001.

- **Objective b:** Steadily decrease the number of carriers operating outside of legal size and weight limitations.

- **Objective c:** Increase compliance with credentialing rules.

5.0 Program Summary

Wisconsin's ITS/CVO goals and objectives provide the structure for the projects developed and recommended by the work group. This section of the plan will describe the projects in detail and discuss the priority assigned to the projects by the work group.

5.1 Business Plan Structure

Ten projects are recommended for implementation as part of the ITS/CVO Business Plan. The projects fall into the general categories of deskside (CVO credentials administration) and roadside (CVO enforcement - - including safety, weight, size and credentials).

The recommended strategy for deskside operations is to further automate the credentialing processes, beginning with those that are the most complex and affect the most carriers: International Fuel Tax Agreement (IFTA), International Registration Plan (IRP) and Oversize/Overweight Vehicle Permits. The major goal is to open the processing systems to electronic access by carriers, which will reduce paperwork and keying, and allow carriers to self-issue some credentials. Another objective is to achieve electronic sharing of information with other jurisdictions, particularly with the IFTA and IRP programs that currently require extensive production and sharing of paper documents with other jurisdictions.

The recommended strategy for addressing roadside issues is to maintain a strong deterrent to CVO non-compliance, while increasing the efficiency and effectiveness of enforcement efforts. Both permanent SWEFs and mobile enforcement are essential to maintaining the strong deterrent. SWEFs are an efficient method of checking the high volume of truck traffic on major highway corridors. Mobile enforcement is needed to address the non-compliant carriers on bypass routes, as well as to provide enforcement in areas that do not have SWEFs.

Recommended methods to increase the efficiency and effectiveness of CVO enforcement efforts start with attention to long-range SWEF location and development planning, as well as coordination with other states on basic concepts of SWEF location and operation. Implementing electronic screening technologies at both SWEFs and mobile sites, as well as automated brake system testers at SWEFs will help to make the best use of enforcement officers' time in checking CVO traffic.

The ten recommended ITS/CVO projects are the following:

1. Assessment of Information Technology Needs
2. Electronic Access for Carriers to IFTA and IRP Processing System
3. Develop a New Oversize/Overweight Permit Processing System
4. Complete Department Long-Range SWEF Plan
5. Join Regional/National Mainline Automated Clearance Systems Consortia
6. Deploy Mainline Automatic Clearance Technology at Permanent Safety and Weight Enforcement Facilities (SWEF)
7. Join IFTA and IRP Clearinghouses
8. Deploy Mobile ITS/CVO Enforcement Technologies to Augment SWEF
9. Deploy Automatic Braking System Diagnostic Analyzers at SWEF
10. Negotiate Border/Regional SWEF Agreements

Figure 5 on the following page illustrates the ITS/CVO goals and objectives that each project is expected to help achieve.

Two other projects that were identified as important to CVO carrier operations (CVO Traveler Information and CVO Incident Management) will be developed as part of the ITS traveler information and incident management business plans being prepared other work groups chaired by DTIM's ITS Program staff.

Figure 1. ITS/CVO Goal and Project Matrix

Goals/Objectives	Projects									
	1. Assessment of IT Needs	2. Electronic IFTA & IRP Access	3. OS/OW System Processing	4. Long-Range SWEF Plan	5. Auto. Clearance Consortia	6. Auto. Clearance at SWEFs	7. I FTA & IRP Clearinghouses	8. Mobile ITS/CVO Enforcement	9. Brake Analyzers at SWEFs	10. Reg'l SWEF Agreements
Goal 1: Improve efficiency of application, processing and delivery of motor carrier credentials.										
· Objective a: Implement IFTA and IRP electronic access for carriers by 7/99.	■	■								
· Objective b: Implement electronic self-issuance on O/O permit system by 6/30/01.	■		■							
· Objective c: Achieve interoperability with other related systems, both within Wisconsin as well as in other jurisdictions.	■	■	■				■			
Goal 2: Improve effectiveness and efficiency of CVO enforcement.										
· Objective a: The total number of CMVs weighed or screened for overweight violations steadily increases.						■		■		
· Objective b: The number of CMVs screened for safety violations steadily increases.						■		■	■	
· Objective c: The number of CMVs required to stop at fixed SWEFs steadily decreases.				■		■				
· Objective d: Focus enforcement efforts on carriers operating illegally and those with unsatisfactory safety ratings.				■		■		■	■	
· Objective e: Coordinate with regional and national enforcement efforts through joint planning and system interoperability.	■			■	■	■				■
Goal 3: Enhance safe and efficient movement by commercial vehicles.										
· Objective a: Deploy equipment and technology necessary to accomplish mainline automatic screening of size, weight, credentials and safety at both fixed and mobile locations by 12/31/01.	■			■		■		■		
· Objective b: Steadily decrease the number of carriers operating outside of legal size and weight limitations.						■		■		
· Objective c: Increase compliance with credentialing rules.						■		■		

5.2 Description of Projects

This section will describe how WisDOT plans to implement each of the ten recommended ITS/CVO projects. An in-depth discussion of the costs and benefits associated with each project will follow in Chapter 6.

Project No. 1: Assessment of Information Technology Needs

Objective: Ensure that Wisconsin's CVO credentials administration and safety/enforcement systems are implemented in conformance with the national ITS architecture, adhere to national and international CVISN standards, and inter-operate efficiently and effectively with private sector systems, whether located in the vehicle or in a fixed location. Determine the amount of information technology (IT) professionals' time required to implement the business plan projects. Decide whether to develop IT expertise in the ITS/CVO program area in-house, or contract for it outside the department.

Outcome: WisDOT and CVO systems are modular and based on the national models. Wisconsin CVO systems inter-operate with other states and national/international clearinghouses, and meet CVISN data definition and transaction management standards. WisDOT central systems, SWEFs, in-vehicle systems, transportation facilities, trucking firms, etc. are able to communicate and exchange data through standard facilities and interfaces with minimal conversion and ongoing interfacing costs. WisDOT's development and operating costs to meet inter-operability requirements are reduced.

Lead Divisions: Divisions of Motor Vehicles (DMV), State Patrol (DSP) and Business Management (DBM)

Other Participating Divisions: Divisions of Infrastructure Development (DTID), Transportation Districts (DTD) and Investment Management (DTIM).

Market: Motor carriers, law enforcement, FHWA, consortium partners

Approach: Data definitions, data quality, transaction standards, and technical communication interfacing standards are the infrastructure for electronic commerce and ITS. The CVO infrastructure, in conjunction with an overall architecture defining processing modules, their functions/services and interactions with other modules has been developed. Many of public and private standardization efforts have been consolidated under the CVISN umbrella program. In this project, the CVISN model and standards would be applied to the WisDOT CVO environment. The result would be a Wisconsin specific blueprint of CVO systems, service modules, data bases, and

interfaces. This blueprint would be used as a guide to evaluate the design and specification of current and future systems development projects. It would also be used to identify what standards are applicable to a project and thus identify the required skills and knowledge. Recognizing that ITS and CVISN are evolving areas, the blueprint would have to be maintained over time. Referring to the blueprint, the IT resources needed for each ITS/CVO project will be determined, and the department will decide whether the needed resources will be provided in-house or through contractors.

Key Issues:

- Developing ITS and CVISN skills and knowledge
- Designating appropriate staff resources
- Timing in relation to ongoing efforts, contracts, and commitments

Products: Wisconsin CVISN blueprint or vision. Projects and resources needed to assure that current and future implementation efforts conform to the blueprint. Estimates of IT resources needed for each ITS/CVO project. Decision as to whether IT resources will be provided in-house or through contractors.

Schedule: Project should begin in upon approval of ITS/CVO business plan, and be completed in less than 6 months.

Cost: $100,000 for contractor, based upon experience with comparable projects.

Estimated Project Management Requirement: DMV, DSP and DBM collectively 0.3 FTE during project.

Project No. 2: Electronic Access for Carriers to IFTA and IRP Processing Systems

Objective: Complete installation of R.L. Polk IFTA and IRP processing systems that provide customer access for self-issuance of selected credentials, electronic quarterly fuel tax reporting and processing of IRP supplements and renewals.

Outcome*:* Automated systems, built to CVISN standards, that increase processing efficiency, reduce backlogs and support such process improvement as staggered IRP renewals and permanent IRP plates. Credential interfaces will link the systems to carriers, allowing them to electronically submit applications and reports, and to self-issue some credentials. The systems will also be able to communicate with the IFTA and IRP clearinghouses and State Patrol.

Lead Division: Division of Motor Vehicles (DMV)

Other Participating Divisions/ Offices: Division of Business Management (DBM), Office of Policy and Budget (OPB)

Market: Motor carriers and permit services

Approach: The installation of new R.L. Polk IFTA and IRP processing systems lays the groundwork for significant process improvements and participation in electronic data exchange efforts with carriers and other agencies and jurisdictions. The new IFTA system was installed in July, 1997. Installation of the new IRP system is currently in the testing phase, with completion anticipated by September, 1998. Planning is underway to integrate the two systems. A parallel effort is the development of electronic access to the IFTA and IRP systems, so carriers may self-issue credentials and electronically file tax reports, and WisDOT may share data with other jurisdictions through the IFTA and IRP clearinghouses. WisDOT staff are currently working with R.L. Polk contractors to explore the best options for a credentials interface to the COVERS IRP and COVERSft systems. The state is considering interfaces with both a website and with carrier software products. Additionally, methods of providing for electronic funds transfer are being explored. Further discussion will be focused on selecting those options that provide the easiest access to carriers while keeping the state's administrative tasks to a minimum. The state's long-range goal is to have as many carriers as possible participate in electronic credentialing, but realistically, carriers will need to be phased in initially when electronic access is first available.

Key Issues:

- Coordination between DBM and vendor of new systems.
- May not have the necessary amount of data processing resources.
- Selection of credentialing interface option(s) that best serve needs of carriers and the state.

Products: New processing systems for IFTA and IRP programs. Appropriate linkages to allow carriers access to the systems for electronic submission of applications and reports.

Schedule: IFTA and IRP system conversion is underway, with completion of electronic access anticipated by 6/30/99.

Cost: IFTA system conversion is complete. The IFTA system annual contract carries no additional annual costs beyond what the state has already been paying for its previous IFTA vendor system. The vendor contract for the

new IRP system costs approximately an additional $150,000 annually, which has already been budgeted for the 1997-99 biennium. Both the IFTA and IRP vendor contracts include system maintenance costs. Electronic access costs are estimated at $75,000 to develop and install a credentialing interface, and $7,500 in annual maintenance costs for the interface.

Estimated Project Management Requirement: Required DBM staff time to establish electronic access depends upon the method(s) chosen. DMV project management will require an estimated 0.5 FTE during the project.

Project No. 3: Develop New Oversize/Overweight Permit Processing System.

Objective: Develop new oversize/overweight permit processing system that provides automated routing, bridge analysis and permit self-issuance.

Outcome: More efficient permit issuance system. Reduce and/or eliminate permit application backlogs. Eliminate the need to hire additional staff to keep up with projected volume of applications. Improve carrier efficiency. Provides detailed highway usage statistics to assist in maintenance decisions. Improves traffic safety by implementing more effective routing - - specifically, better decisions about when and where to include O/O trucks in the general traffic mix.

Lead Division: Division of Motor Vehicles (DMV)

Other Participating Divisions/Offices: Divisions of Transportation Infrastructure Development (DTID), Business Management (DBM) and State Patrol (DSP). Office of Policy and Budget (OPB)

Market: Motor carrier industry, specialized haulers and permit services

Approach: A project is underway to change O/O processing to the LAN-based Oversize Permit Unit System (OPUS) as a first step in moving to an automated routing system. Completion is expected by June, 1998. Upon approval of funding in budget process, a decision will be made regarding whether to develop an in-house system or purchase a vendor system. It is anticipated that a vendor system will most likely be the chosen method. As such, an RFP/RFI for the automated system would be developed, with anticipated release in late 1999. WisDOT staff would work with the chosen vendor to customize the new system to our needs, including necessary interfaces with carriers and with other WisDOT systems. The new system will need to be linked with DTID's Automated Bridge Analysis System, that checks the route restrictions (clearances), does an automated review of the

bridge sufficiency and routes around restrictions. This application is currently in use, but only a limited amount of bridge data have been entered thus far. Entry of all bridge data is expected to be completed in 1999. The new system will also be linked with the state's of GIS base map. State and federal roads are now on Wisconsin's GIS base map. Local road information will be added as it is available.

Key Issues:

- System development must be coordinated with DTID bridge analysis system improvements.
- May be difficult to obtain the needed data processing resources.
- Selection of appropriate method(s) for interface with carriers.
- Security issues related to outside parties having access to WisDOT's system.
- A parallel effort is underway to make WisDOT construction maps available through the internet. A basic construction map is now available on the WisDOT web site. In the future, carriers may be able to subscribe to a more detailed construction map through WisDOT's extranet, to aid them in selecting routes.
- Until all local roads are included on the GIS base map, some requested routes will "kick out" of the automated routing system.
- Coordination with efforts to establish multi-state permit credentialing; compliance with CVISN standards.

Products: Automated O/O routing and processing system with appropriate interfaces to carriers and to other WisDOT systems.

Schedule: Assuming funding approval in the next state budget cycle, expect completion by approximately 7/1/01. Interim products are LAN-based processing system (OPUS) by 6/30/98; and completed data entry on the automated bridge analysis system by 12/31/99.

Cost: Contact with other states and vendors that have implemented similar systems indicate system development and implementation will cost approximately $1,000,000. A rough breakdown of the estimated cost is $600,000 for the system package and scoping of adjustments are needed for Wisconsin's situation, and $400,000 to build the necessary connections and linkages to make the system operational. The experience of other states indicates that an estimated additional $40,000 per year will be required for system maintenance.

Estimated Project Management Requirement: Coordinated effort with heavy involvement from DTID and DBM. Number of DTID and DBM FTE needed is not yet estimated. DMV project management will require an estimated 0.6 FTE over the length of the project.

Future Directions: This project lays the groundwork for possible future efforts that could further automate O/O processing, including the following:

- Development of automated pavement analysis system: DTID's Pavements Section is working on developing a computer-based method to check the sufficiency of pavements to handle overweight vehicles. They are working on a GIS-based application that will incorporate some existing data bases and will perform the calculations that are currently done by hand.
- Interlinked systems: The DMV, Bridge and Pavement automated systems could be interlinked to speed up processing of permits. Eventually, the systems could be automated so that little to no DOT staff time would be expended to issue certain types of permits. Permit applications could be electronically submitted by services or the carriers could self-issue permits. This would require a better system for getting real time restriction information on-line.

Project No. 4: Complete Department Long-Range Safety and Weight Enforcement Facility (SWEF) Plan

Objective: Complete SWEF planning and schedule of construction, reconstruction or rehabilitation of facilities in corridors which are identified to be important to the vision and guiding principles outlined in the ITS/CVO Business Plan and which integrate into regional CVO enforcement programs. Technologically and structurally upgrade facility design to incorporate projects contained in the ITS/CVO Business Plan.

Outcome: SWEFs capable of mainline automated screening will be strategically located in selected high CMV volume, primarily inbound/port of entry corridors where mobile enforcement would be otherwise impractical.

Lead Divisions: Divisions of State Patrol (DSP) and Transportation Infrastructure Development (DTID)

Other Participating Divisions/Offices: Divisions of Investment Management (DTIM) and Transportation Districts (DTD). Office of Policy and Budget (OPB).

Market: WisDOT, taxpayers, motorists, carriers

Approach:

- Determine/identify key corridors for CMV travel**.**

- Determine key corridors for CMV crashes/incidents.
- Establish a snapshot of statewide CMV traffic patterns.
- Establish a network of SWEFs which can effectively monitor, screen, and weigh the largest number of CMVs in accordance with regional CVO agreements.

Key Issues:
- How will SWEF location decisions be affected by agreements negotiated with neighboring states?
- How will the costs of construction, reconstruction, rehabilitation and operation be funded?

Products*:* Document that describes Wisconsin's plans for realignment, reconstruction, construction, rehabilitation and closing of SWEFs statewide.

Schedule: Reconvene WisDOT SWEF Committee upon completion of ITS/CVO Business Plan. Present comprehensive SWEF Plan within 6 months.

Cost: Travel costs for meetings.

Estimated Project Management Requirement: DSP: .4 FTE; DTID: .4 FTE; OPB: .3 FTE

Project No. 5: Join Regional/National Mainline Automated Clearance Systems Consortia (HELP, Inc, Advantage CVO, MAPS Inc., etc.)

Objective: Wisconsin partnership in one or more national/regional CVO automatic clearance consortia.

Outcome: Foundation for further progress toward a fully integrated mainline automatic clearance system for safety, credentials and weight enforcement. Both Wisconsin truckers and regulators will benefit from mainline automatic clearance technology. Carriers will become more efficient, realizing reductions in delays, wear and tear of equipment and reduced fuel consumption. CVO regulators will become more efficient and effective, concentrating efforts toward non-compliant carriers. The environment will benefit from reduced emissions, as waiting lines at SWEFs are reduced or eliminated.

Lead Division: Division of State Patrol (DSP)

Other Participating Divisions/Offices: Divisions of Transportation Infrastructure Development (DTID), Business Management (DBM), and Motor Vehicles (DMV). Office of Policy and Budget (OPB)

Market: Motor carriers, regulators, motoring public

Approach:
- Negotiate agreements with various consortia.
- Enlist carrier and industry trade organization to publicize benefits and enroll carriers.
- Work with service vendor to tailor system for Wisconsin's needs.

Key Issues:
- Apportionment of hardware/software costs
- Access to/security of data
- Support of motor carriers for the concept
- Willingness of motor carriers pay any required fees
- How will this integrate regionally?

Products: Contract/agreement

Schedule: Expect to select one or more consortia within 6 months of approval of ITS/CVO business plan.

Cost: Contingent upon negotiated agreement. Presently, joining Help, Inc./PrePass costs $30,000 per year for a full voting membership, or $10,000 for a non-voting associate membership. The membership fee could potentially be shared with the private sector. The membership fee does not include infrastructure and software systems. Advantage CVO and MAPS Inc. do not currently assess membership fees. Some staff travel costs may be associated with the outreach efforts necessary to implement the agreement.

Estimated Project Management Requirement: *Prior to agreement*: .25 FTE for DSP. *Post-agreement*: .05 FTE for DSP.

Project No. 6: Deploy Mainline Automatic Clearance Technology at Permanent Safety & Weight Enforcement Facilities (SWEF)

Objective: Improve the effectiveness and efficiency of WisDOT CVO regulatory efforts. Improve highway safety and provide an enforcement environment that is less intrusive to carriers operating within the law.

Outcome: Reduction in the number of vehicles operating overweight and without proper credentials (registration, insurance, motor fuel tax licenses, etc.). CMV safety inspections will be directed toward carriers with less than satisfactory safety ratings. Results in more effective and efficient enforcement and regulation, less intrusive to motor carriers who are operating legally.

Lead Division: Division of State Patrol (DSP)

Other Participating Divisions: Divisions of Transportation Infrastructure Development (DTID), Motor Vehicles (DMV), Transportation Districts (DTD), and Business Management (DBM)

Market: Motor carriers, CVO regulators, motorists, taxpayers

Approach: Designation of which SWEFs are equipped with automated clearance to be done as part of long-range SWEF plan. Following plan completion, **c**onfigure/design SWEFs with:

- High-speed weigh-in-motion **(**HSWIM) scales
- Automatic vehicle identification (AVI) systems
- Applicable CVISN-compliant hardware/software systems
- Safety software systems (SAFER, ISS, etc.)

Key Issues:

- Funding and coordination of maintenance of advanced technological systems.
- How will safety (DSP) and credential (DMV) databases and clearinghouses be integrated into the clearance system?
- What will be the policy toward carriers not equipped with transponders?
- How will electronic data exchange be accomplished between jurisdictions?

Products*:* Various hardware and software systems.

Schedule: Begin planning in conjunction with other projects (joining automated clearance consortia, negotiating regional SWEF agreements and completing the SWEF plan). Completed installation expected by approximately 12/31/00. Interim product is construction or reconstruction of identified SWEFs with necessary (above ground) equipment by approximately 12/31/99.

Cost:

- Help, Inc./PrePass consortia provides all above-ground systems at no cost to the state. Using this model, and estimates from vendors and participating states, the following costs are anticipated:

Estimated one-time costs: $175,000 per site @ 10 sites = $1,750,000 (includes $150,000 for high-speed WIM system, $23,000 for transponder mounting, and $2,000 for signage)
Estimated new annual costs: $10,000 per site @ 10 sites = $100,000 per year for equipment maintenance

- In the MAPS Inc. program, costs to the state would include both the above and below ground systems. Using this model, the following costs are anticipated:

Estimated one-time costs: $350,000 per site @ 10 sites = $3,500,000 (includes WIM, transponder mounting, signage and AVI-related systems)
Estimated new annual costs: $35,000 per site @ 10 sites = $350,000 per year for equipment maintenance

It should be noted that neither the Help Inc. nor MAPS Inc. cost estimates includes any necessary road reconstruction work. This will vary greatly depending upon the current condition of individual SWEFs.

Estimated Project Management Requirement: DTID/DTIM/DTD: .75 FTE, DSP: .5 FTE, DBM unknown at this time.

Project No. 7: Join IFTA and IRP Clearinghouses

Objective: Exchange IFTA licensee and IRP registrant information through clearinghouses.

Outcome: Eliminate need to send printed reports, fuel tax transmittals and IRP vehicle listings to all other jurisdictions. Provide ability for other member jurisdictions to inquire electronically about carrier operations.

Lead Division: Division of Motor Vehicles (DMV)

Other Participating Divisions: Division of Business Management (DBM)

Market: IFTA and IRP member jurisdictions

Approach: Following installation of the Polk COVERSft fuel tax system, Wisconsin is now participating in the IFTA Clearinghouse pilot project, which will involve significant coordination with the Clearinghouse project managers as to hardware and software needs. Assuming the pilot project is successful, Wisconsin will become a clearinghouse member. Joining the IRP Clearinghouse will depend upon the installation of Polk's COVERS IRP

processing system, which is planned for 1998. The IRP Clearinghouse concept is still under development, so the timeline for Wisconsin participation is less certain than is the case with the IFTA Clearinghouse.

Key Issues: Data processing resources, cost estimates, operational costs, compliance with CVISN standards.

Products*:* Computer software; agreement/contract with clearinghouses.

Schedule: Initial stage of project is underway, with participation in IFTA Clearinghouse pilot. Upon approval, completion is expected by approximately 7/1/99, with joining the IRP Clearinghouse. Interim goal is officially joining the IFTA Clearinghouse after successful completion of the pilot project, by 7/1/98.

Cost: No start-up costs to join the IFTA Clearinghouse, due to participation in pilot. IRP, Inc. estimates one-time costs to join the IRP Clearinghouse are $3,500-$5,000. Discussions with clearinghouse staff indicate that no annual or per-transaction fees are anticipated.

Estimated Project Management Requirement: DMV and DBM staff time required to undertake this project is estimated to be minimal; less than 0.1 FTE.

Project No. 8: Deploy Mobile ITS/CVO Enforcement Technologies Which Augment, Integrate With and Enhance Permanent Facility Systems.

Objective: Enhance highway safety and more effectively and efficiently conduct CMV enforcement in corridors without SWEFs and on SWEF bypass routes.

Outcome: DSP districts will be outfitted with portable weigh-in-motion, AVI and pen-based computers/mobile data computers. Departmental efforts will increase, legal carriers will not be delayed and enforcement concentration will be directed at carriers with unacceptable safety ratings. Result is more effective and efficient enforcement/regulation that is less intrusive to motor carriers who are operating legally.

Lead Division: Division of State Patrol (DSP)

Other Participating Divisions/Offices: Divisions of Transportation Infrastructure Development (DTID), Business Management (DBM), and

Transportation Investment Management (DTIM). Office of Policy and Budget (OPB).

Market: WisDOT, taxpayers, motorists, carriers

Approach: Over a 4 year period, phase ITS technologies into DSP's mobile CVO enforcement program, specifically:

- Deploy pen-based/mobile data computers with ASPEN, I.S.S., MCREGS, and SAFER software systems. (expenditures approved in 1997-99 biennial budget)
- Deploy portable weigh-in-motion (PWIM).
- Deploy portable AVI.

Key Issues: Mobile systems should be integrated, real-time with SWEF-based systems.

Products: Various hardware and software systems

Schedule: Technologies to be phased in over a 4 year period. First interim target is deployment of mobile data computers by 6/30/99.

Cost:

- Deploying mobile data computers for 70 inspector squad cars @ $8,800 per unit will cost $616,000, which has been included in the 1997-99 biennial budget. The cost to connect the mobile data computers to WisDOT mainframe systems is estimated at $65,000.

- Based upon estimates from vendors and participating states, costs of deploying automated screening for mobile enforcement are estimated at $40,000 per unit, which includes portable WIM (@ $30,000) and a marginal increase in vehicle cost (@$10,000). Using the Help, Inc. model, it is assumed there would be no cost to the state for mobile AVI. Assuming 10 mobile enforcement units would be deployed, total cost would be $400,000. (MAPS, Inc. is not currently involved in mobile electronic screening.)

- Based upon estimates from vendors and participating states, the annual cost for maintenance of PWIM equipment is estimated at $30,000 (or $3,000 per unit). Annual maintenance of mobile data computers is estimated at $63,000 (or $900 per unit).

Estimated Project Management Requirement: .2 FTE

Project No. 9: Deploy FHWA-Approved Performance-Based Automatic Braking System Diagnostic Analyzers at SWEFs

Objective: Improve highway safety by screening more carriers for brake performance.

Outcome: If approved, brake performance diagnostic devices will eliminate the requirement for CMV regulators to physically inspect and measure push rod travel (a lengthy process) on each brake (can be as many as 12) and instead measure actual braking performance in a fraction of the time. Inspector safety will be enhanced by eliminating the need to navigate between the wheels/axles of large CMVs. Result is more effective and efficient enforcement/regulation that is less intrusive to motor carriers.

Lead Division: Division of State Patrol (DSP)

Other Participating Divisions: Division of Transportation Districts (DTD)

Market: Motor carriers, CMV regulators, motorists

Approach: The start of this project depends upon FHWA approval of this technology. WisDOT will monitor the results of national tests and FHWA action before selecting and deploying a product. Deployment will be at SWEFs that are being converted to automated clearance.

Key Issues:
- Performance based.
- Brake defects are a leading causal factor in CMV crashes.
- Brake defects one of most frequently detected defects during safety inspections.
- More CMVs will be checked.

Products*:* Various hardware and software systems.

Schedule: Contingent upon FHWA approval. Best estimate is completion by 12/31/01.

Cost: Equipment cost is estimated at $230,000 (or $23,000 per unit), including installation, based on current experience with FHWA testing program for this type of equipment. The estimated annual cost for equipment maintenance is $23,000 (or $2,300 per unit).

Estimated Project Management Requirement: DSP: .10 FTE; DTD: .10 FTE

Project No. 10: Negotiate Border/Regional SWEF Agreements.

Objective: More efficient, effective and cost-effective regulation of CMV safety through regional integration of operations.

Outcome: Coordination of CVO enforcement on a regional basis will enable states to operate more efficiently and effectively.

Lead Division: Division of State Patrol (DSP)

Other Participating Divisions/Offices/Agencies: Division of Transportation Infrastructure Development (DTID). Offices of Policy and Budget (OPB) and General Counsel (OGC). FHWA/Office of Motor Carriers (Wisconsin Division).

Market: Other state agencies

Approach:

- Establish dialogue with identified officials in neighboring states and regional FHWA officials, using established contacts. The GCM Corridor Study's CVO Safety Enforcement Re-engineering Project, beginning in 11/97, has the objective of developing joint enforcement strategies in the GCM corridor. This project can serve as a springboard for negotiation of coordinated multi-jurisdictional CVO enforcement agreements.
- Negotiate regional memoranda of understanding/agreement
- Establish regional CVO enforcement operating group to coordinate efforts.

Key Issues:

- How interested are neighboring states in coordinating SWEF operations and discussing conceptual SWEF location agreements?
- What are the possibilities of a special FHWA allocation to acknowledge Wisconsin's role in checking truck traffic headed to/from the SWEF-free
- I-80/90 tollway corridor (Illinois, Indiana, Ohio, Pennsylvania and New York)?

Products*:* Border or regional agreements on SWEF operations and concepts of SWEF location. More cooperative CVO enforcement environment.

Schedule: GCM Corridor Study's CVO Safety Enforcement Re-engineering Project is in progress. Wisconsin will continue to build upon that effort to continue discussions with other jurisdictions on an on-going basis.

Cost: Travel costs for meetings with agencies from other jurisdictions.

Estimated Project Management Requirement: Negotiation team: 1.0 FTE (collective), Maintenance of agreement: .2 FTE (collective)

Other Projects Considered

The work group also considered the following ITS/CVO related projects:

CVO Traveler Information: The objective of this project is to enhance efficiency of motor carrier operations and reduce traffic congestion by providing information that will improve motor carrier routing and dispatching. The project will develop specific strategies for packaging and delivering CVO traveler information in forms that will permit commercial vehicle operators to make the optimum use of this information in a relatively seamless manner.

CVO Incident Management: The objective of this project is to develop incident management systems that can help reduce the number of CVO related incidents and enable public safety and traffic management officials to respond more quickly when incidents occur. Methods that will be part of the project include hot-spot identification, intermodal hazardous material incident response and on-board monitoring systems.

After some consideration and discussion, the work group decided not to include and schedule these projects in the ITS/CVO business plan. The work group noted the importance of these projects to CVO operations and safety. However, it was determined that the projects would be better addressed as part of the ITS traveler information and ITS incident management business plans that the department is currently preparing. Members of the ITS/CVO work group are involved in the preparation of the traveler information and incident management business plans, to ensure that the special needs of CVO will be addressed in those plans.

Comments from Motor Carrier Advisory Committee

A subcommittee of the Motor Carrier Advisory Committee reviewed the business plan and participated in a discussion of potential impacts of the projects on carrier operations. The comments received from the subcommittee were summarized as follows:

- There is a need for enforcement efforts, both for safety reasons and to keep a level playing field. If there is no enforcement of credentials, size

and weight, those carriers who aren't inclined to follow the rules will have an unfair advantage in the marketplace.

- Enforcement requirements need to be less time-consuming for carriers.
- Automatic clearance that would allow "legal" trucks to bypass weigh stations and mobile enforcement vehicles would result in time/cost savings to carriers. Similarly, when automatic braking system testers are approved by FHWA, this technology could significantly reduce the time required for safety inspections.
- Key carrier issues for automated clearance are: The clearance systems must be interoperable....one transponder good for all consortia. There should be private and public sector representation on the consortia boards, similar to the way Help, Inc. operates. Cost of participating (transponders, bypass transactions, etc.) should be reasonable.
- Carriers need faster turnaround for credentials (IFTA, IRP and O/O). If electronic credentialing can be accomplished at a reasonable cost to carriers, it would be beneficial. It would get the drivers and vehicles on the road with minimal delays. Carriers are looking forward to having staggered IRP renewal schedules with the new IRP system.
- Before joining an automated clearance consortium, the state should put together a proposal and ask Wisconsin Motor Carrier Association to poll its membership to gauge support. If the carriers support it, the WMCA board could discuss the possibility of sharing membership costs.
- Highest priority projects for carriers would be new IFTA and IRP systems, new O/O system and automated clearance at weigh stations.

5.3 Ranking of Projects

The ITS/CVO work group rated the relative priority of business plan goals and projects. The three business plan goals were ranked as follows:

First priority (tied):

- Goal 2: Increase the efficiency and effectiveness of CVO enforcement.
- Goal 3: Enhance safe and efficient movement by commercial vehicle operations.

Second priority:

- Goal 1: Provide efficient application, processing and delivery of motor carrier credentials.

The work group also noted that development of the credentials systems associated with Goal 1 was essential to accomplishing Goals 2 and 3.

As a second step, the work group rated each project based upon its potential for successful implementation in the next 4-5 years and its potential to help

us achieve the goals of the business plan. The work group discussed the rankings, considered the priorities identified by the Motor Carrier Advisory Committee and agreed upon a priority ranking. The list of priority projects was discussed with WisDOT senior management and further refined.

The list of projects by priority ranking follows in Figure 6. The work group identified the six projects with the highest ranking as high priority projects for implementation by WisDOT during the next four to five years. It should be noted that the remaining four lower priority projects may serve to support the successful implementation of the high priority projects. For example, deploying automatic braking system analyzers could add to the efficiency and effectiveness benefits of deploying automated clearance at SWEFs.

Figure 6. Priority Ranking of ITS/CVO Business Plan Projects

Priority Ranking	High Priority	Project Number and Title	Lead Agency
1 (tied)	*	Project #4: Complete Department Long-Range SWEF Plan	DSP / DTID
1 (tied)	*	Project #6: Deploy Mainline Automated Clearance Technology at Permanent SWEFs	DSP
2	*	Project #1: Assessment of Information Technology Needs	DMV / DSP / DBM
3	*	Project #3: Develop a New Oversize/Overweight Permit Processing System	DMV
4	*	Project #2: Electronic Access for Carriers to IFTA and IRP Processing Systems	DMV
5	*	Project #5: Join Regional/National Mainline Automatic Clearance Systems Consortia	DSP
6		Project #8: Deploy Mobile ITS/CVO Enforcement Technologies to Augment SWEFs	DSP
7		Project #7: Join IFTA and IRP Clearinghouses	DMV
8		Project #9: Deploy Automatic Brake System Diagnostic Analyzers at SWEFs	DSP
9		Project #10: Negotiate Border/Regional SWEF Agreements	DSP

6.0 Organization and Management Approach

6.1 Coordination of Projects and Plan Updates

The Department of Transportation, through its Secretary's Office, Division Administrators, ITS Steering Committee, and continuing ITS/CVO work group, will coordinate the scheduling and funding of all projects with the designated lead agencies. The lead agencies identified in the project descriptions will manage the projects and be responsible for coordination with other agencies, contractors and industry representatives. The ITS/CVO work group will continue to meet regularly to monitor plan implementation and to update the business plan as needed. The work group will also coordinate the next steps in the process, such as development of project plans for CVISN deployment.

Employee training on the new systems will be the responsibility of the lead agency, primarily through vendor contracts. Recently, DMV employees were trained to use the new COVERSft fuel tax processing system by the vendor, R.L. Polk Company, as provided in the vendor contract. WisDOT plans to use this model for the other ITS systems and equipment implemented during the next several years. It is anticipated that most, if not all, systems and products will be purchased from vendors, and that initial employee training will be provided by the vendor per contract. As new employees join the department's CVO programs, existing staff will be responsible for providing on-the-job training on these systems and equipment. Additionally, WisDOT will have employees participate in FHWA-sponsored training on project planning for ITS/CVO projects.

Outreach to the motor carrier community will be an important component of many of the projects, particularly those involving new credentialing systems and automated clearance by enforcement personnel. The department's long-range goal is to encourage as many carriers as possible to participate in these new ITS programs. To achieve this goal, the department will work with its Motor Carrier Advisory Committee, the Wisconsin Motor Carrier Association, and the Wisconsin Road Builders Association to make carriers aware of the new technologies and systems. Recognizing that not all carriers are affiliated with these three groups, WisDOT will also prepare press releases and send special mailings directly to IRP and IFTA licensees. In the past, the department has conducted statewide training sessions to educate carriers about significant program changes, such as the initiation of the IFTA program in Wisconsin. Lead agencies within WisDOT will continue to use this method to reach and educate carriers about the new ITS technologies that will be available to carriers.

Outreach will also be coordinated with the department's overall ITS program. WisDOT's Office of Public Affairs (OPA) is developing a marketing strategy to present a recognizable "brand name" for Wisconsin's ITS efforts, similar to Minnesota's 'Guidestar' or Virginia's 'Smart Travel'. OPA will develop various printed and audiovisual materials to acquaint the public and specific constituent groups with the department's ITS activities. Plans are being made with the Wisconsin FHWA office to offer the FHWA ITS awareness training module this spring for state and local agencies plus stakeholders.

Several state legislators have expressed interest in the ITS program. Over the next several months, legislators will receive briefings from WisDOT staff on the department's ITS activities, and may receive an abbreviated version of the FHWA ITS awareness training. These outreach efforts will provide a basis for future interactions between lawmakers and WisDOT's legislative liaisons as ITS-related bills and proposals come before the state legislature.

The ITS/CVO work group, with its membership from all affected WisDOT divisions, is well-suited to coordinate the monitoring and updates of the plan. However, due to the inter-divisional nature of the plan, it is especially important that there be high-level department support for the program. To maintain this support, it is recommended that the work group report to the WisDOT administrators 3 to 4 times each year to inform them of the progress made and to seek their direction and support for future activities.

Carriers will be involved in the monitoring and updating process through WisDOT meetings with organized groups (such as the Motor Carrier Advisory Committee and the Wisconsin Motor Carriers Association's technology committee), and written and verbal contacts with motor carrier customers. Input on the safety aspects of the plan will be sought from such groups as WisDOT's internal Traffic Safety Council and the Traffic Safety Partners Coalition, a group of local traffic safety professionals and activists that works in partnership with WisDOT on safety programs.

6.2 Project Timing

To develop a structured approach to project implementation, the ITS/CVO work group discussed the appropriate timing and scheduling of the recommended projects. The following section presents a timeline for the completion of each project. Figure 7 illustrates the duration and sequencing of the projects during the time period of 1997 through 2001.

Schedule and Milestones

Project 1: Assessment of Information Technology Needs

- Develop RFP by 7/31/98.
- Hire consultant and convene work group by 12/1/98.
- Complete Wisconsin CVISN blueprint and determination of IT resources needed for ITS/CVO projects by 6/1/99.

Project 2: Electronic Access to IFTA and IRP Processing Systems

- Install COVERSft (IFTA) system by 7/1/97. (completed 7/25/97)
- Vendor to install necessary software for electronic transactions by 9/97. (completed)
- Convert data in current IRP system for transfer to COVERS IRP system by 9/1/98.
- Install COVERS IRP system by 9/1/98.
- Select method(s) to provide credentialing interface and electronic funds transfer by 1/1/99.
- Provide electronic access for carriers to IFTA and IRP by 6/30/99.

Project 3: O/O Permit Processing System

- Move current processing system to LAN environment (in progress) by June, 1998.
- Prepare budget issue paper by June, 1998.
- Completion of bridge data entry for automated bridge analysis system (in progress) by 1999.
- Assuming funding approval, develop RFP or RFI by August, 1999.
- Release RFP or RFI by Fall, 1999.
- RFP award by March, 2000.
- Vendor provides scope of necessary adjustments and linkages by June, 2000.
- Build system, install, beta test and implement by July, 2001.

Project 4: Long-Range SWEF Plan

- Reconvene WisDOT SWEF Committee after approval of ITS/CVO Business Plan, by June, 1998.
- Present completed plan by December, 1998.

Project 5: Join Automated Clearance Systems Consortia

- Invite service vendors to present their systems by March, 1998. (completed)
- Meet and discuss with WMCA technology committee. (in progress)
- Prepare comparative information packet for discussion with WisDOT management and carrier community by October, 1998.
- Select service vendor(s) by December 31, 1998.

Project 6: Mainline Automated Clearance at SWEFs

- In conjunction with completion of long-range SWEF plan and negotiation of regional SWEF agreements, determine SWEFs at which mainline automated clearance will be deployed, by 12/31/98.
- Construct or reconstruct SWEFs with above-ground equipment by 12/31/99.
- Install highway systems by 12/31/00.

Project 7: IFTA and IRP Clearinghouses

- Install COVERSft (IFTA) system by July, 1997. (completed)
- Participate as pilot state for IFTA Clearinghouse development from August, 1997. (in progress)
- Vendor to install necessary software by October, 1997 (completed)
- Join IFTA Clearinghouse by July, 1998.
- Install COVERS IRP system by September, 1998.
- Join IRP Clearinghouse by July, 1999.

- Project 8: Deploy Mobile ITS/CVO Enforcement Technologies

- Deploy pen-based / mobile data computers with ASPEN, I.S.S., MCREGS and SAFER software systems by 6/30/99.
- Deploy portable weigh-in-motion by 12/31/00.
- Deploy portable AVI by 12/31/01.

Project 9: Automatic Braking System Diagnostic Analyzers at SWEF

- Timing contingent on FHWA approval of this technology.
- Deploy at SWEFs by December, 2000.

Project 10: Negotiate Regional SWEF Agreements

- Participate in GCM Corridor Study's CVO safety enforcement reengineering project. (underway as of November, 1997)
- Identify other contacts/projects/sources to use as negotiating conduit during 1998, and ongoing.
- Identify WisDOT negotiating team by June, 1998.
- Commence negotiations by 1998. (ongoing process)

Figure 7. ITS/CVO Project Duration and Sequencing

	1997 JFMAMJJASOND 1998 JFMAMJJASOND 1999 JFMAMJJASOND 2000 JFMAMJJASOND 2001 JFMAMJJASOND
2. Electronic Access to IFTA and IRP	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
3. O/O System	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
7. IFTA/ IRP Clearinghouses	XXXXXXXXXXXXXXXXXXXXXXXXX
10. Regional SWEF Agreements	XXXXXXXXXXXXXXX (ongoing)
5. Automated Clearance Consortia	XXXXXXXXXXX
1. Assess IT Needs	XXXXXXXXXXXXXXX
4. SWEF Plan	XXXXXXX
6. Automated Clearance @ SWEF	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
8. Mobile ITS/CVO Enforcement	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
9. Brake System Analyzers @ SWEF	XXXXXXXXXXXX

6.3 Costs, Funding and Return on Investment

The ITS/CVO work group developed cost estimates for each project, based upon experience with comparable projects and information gathered from states that currently participate in similar activities. Because ITS technologies are relatively new, experience with implementation costs is somewhat limited. It is anticipated that the costs will be refined through such efforts as project #1 (assessment of information technology needs) and through project planning.

Benefits associated with each project are not always quantifiable. Therefore, this analysis focuses on the expected return on investment for each project for both the state and motor carriers, including those returns that are difficult to quantify.

Costs and Return on Investment

1. Assessment of Information Technology Needs

Public

One-time costs: $100,000 for IT consultant

Return on investment: Planning in advance for systems that will meet CVISN standards will eliminate potentially costly system revisions/conversions in the future. Determination of IT resources required will assist in budgeting for staff hours or contractor fees.

Private

No direct costs to carriers were identified. However, interstate carriers will benefit from the development of Wisconsin CVO systems that are interoperable with those of other jurisdictions.

2. Electronic Access to IFTA / IRP Systems

Public

One-time costs: $75,000 to develop and install credentialing interface

New annual costs: $150,000 for vendor IRP system (including system maintenance), which is already budgeted for the 1997-99 biennium. $7,500 for annual maintenance of credentialing interface.

Return on investment:

The new processing systems and electronic access for carriers will allow DMV to implement program changes that will result in cost and staff savings and improved customer service. Examples are the following:

- $32,000 annual savings in overtime, unscheduled hours and limited term employee assistance due to change to staggered IRP renewals.
- $57,000 in additional interest annually on IRP fees deposited in the state transportation fund by more timely completion of annual renewals after change to staggered IRP renewals.
- $77,200 annual savings in plate production and mailing costs due to change to non-expiring IRP plates.
- As carriers begin submitting electronic applications and tax returns, and self-issuing credentials, DMV will be better able to meet increasing demand for IRP and IFTA credentials in a timely manner, without staffing increases.

The National Governors' Association's 1998 study *State Fiscal Implications of ITS/CVO Deployment* (hereafter referred to as the NGA Study) estimated the expenditures and revenues associated with state implementation of ITS/CVO programs. Looking at electronic credentialing in 8 case study states, NGA found positive savings-to-expenditure ratios ranging from 2.08:1 to 7.55:1 for all except one state with very low volume of processed applications.

Private

The ATA Foundation's 1996 study *ITS/CVO Qualitative Benefit/Cost Analysis* (hereafter referred to as the ATA Benefit/Cost Study) estimated the potential impact of electronic credentialing systems on carriers. The study found that for medium and large carriers, the benefits of reduced labor costs outweighed the costs of equipment necessary to participate in electronic credentialing. Benefit/cost ratios were estimated as follows:

- 1.1 : 1 for small (1-10 unit) carriers
- 4.2 : 1 for medium (11-99 unit) carriers
- 19.8 : 1 for large (> 99 unit) carriers

Additionally, a recent Western Highway Institute study of a one-stop electronic credentialing system found significant improvements in turnaround times. IRP supplements were received in 33 minutes (vs. 99 minutes for the manual method). Permanent IRP credentials were received in just over 1 day as opposed to several weeks for the manual method.

3. O/O Permit Processing System

Public

One-time costs: Estimated $1 million for development and implementation of system.

New annual costs: Estimated $40,000 for system maintenance.

Return on investment:

It is estimated that if electronic transmission were required for single-trip permits that did not require DTID review, 90 percent of single-trip permits could be self-issued. The result would be a significant avoidance of staffing costs in an environment in which the single-trip permit workload has been increasing 7 percent annually. The proposed system would also allow Wisconsin to keep technologically current with surrounding states, leading to opportunities for multi-jurisdiction permitting partnerships. Additionally, the new system would reduce WisDOT exposure to liability in the following ways:

- Route check accuracy will improve. The current antiquated system was responsible for routing that resulted in at least one accident in the past 5 years, at a cost to WisDOT of $10,000 for vehicle damage.
- Increased efficiency in processing single-trip permits would allow WisDOT to reduce the maximum allowable vehicle size for multiple-trip permits. As a result, some of the tallest vehicles previously covered by multiple-trip permits would be required to apply for a single-trip permit, resulting in a minimum savings of $20,000 annually due to avoided bridge hits by overheight vehicles. The actual cost of damage arising from serious bridge hits from overheight vehicles (those with both multiple and single-trip permits, as well as those without permits) was more than $500,000 in the past three years.
- Reduced human error and improved system routing capability would help protect the state against potential liability claims of $250,000 per involved employee if accidental death or dismemberment should occur due to a routing error.

Additionally, as noted previously, the NGA Study estimated positive savings-to-expenditure ratios for states with at least moderate volumes of applications.

Private

The above-noted information from the ATA Benefit/Cost Study regarding electronic credentialing also applies to the O/O system project. It should also be noted that with the proposed new system, permit applicants will no longer need to submit a complete route for approval. Since they will only need to submit their origin and destination points, carriers will spend less time preparing their permit applications.

Based upon information from carriers who apply for O/O permits, each day of delay in receiving a permit causes the carrier to incur an estimated $600-$800 in delay costs, such as lodging for drivers, lost job opportunities, etc. With 24 hour a day availability and self-issuance, carriers can avoid these costs that they currently face when O/O permit issuance is backlogged beyond the target 6 hour turnaround time - - currently, a common occurrence.

4. Long-Range SWEF Plan

Public

One-time costs: Minimal travel expenses for meetings.

Return on investment: A long-range SWEF plan will provide a valuable guide for the more efficient and effective use of DOT resources for CVO enforcement. The plan may call attention to the needs and benefits of CVO enforcement, potentially shifting more resources to ITS/CVO and mobile enforcement. On a practical level, the plan will be useful for budgeting and long-range maintenance planning.

Private

No direct costs or benefits to motor carriers were identified.

5. Join Automated Clearance Consortia

Public

One-time costs: Travel costs for outreach efforts.

New annual costs: Because the Advantage CVO and MAPS Inc. programs do not currently assess a membership fee, the Help, Inc. model was used to estimate costs. To join Help, Inc., the state would pay $30,000 annually for a full membership, or $10,000 per year for an associate membership. It is assumed that Wisconsin would begin with an

associate membership, and perhaps move to a full membership after deployment of automated clearance in the state.

Return on investment: DOT would gain access to regulatory and enforcement information to improve its CVO enforcement program. This project is a necessary first step to gain the benefits that will accrue from mainline automated clearance systems.

Private

If Wisconsin chose to join Help, Inc., a state membership would allow two seats on the board - - one for WisDOT and one for the carrier community. Since carriers would be represented on the board, there would be potential for sharing of the annual membership fee between the public and private sector.

6. Automated Clearance at SWEFs

Public

One-time costs:
Help, Inc: $175,000 per site @ 10 sites = $1,750,000
MAPS, Inc: $350,000 per site @ 10 sites = $3,500,000

New annual costs:
Help, Inc: $17,500 maintenance per site x 10 = $175,000
MAPS, Inc: $35,000 maintenance per site x 10 = $350,000

Return on investment:

The NGA Study found the case study states' savings-to-expenditure ratio for automated clearance to be limited, much less than 1:1. It should be noted that NGA's focus was a narrow one, looking only at direct savings to states. WisDOT conducted a more expansive analysis of potential benefits to the state.

WisDOT estimates that DSP's current level of enforcement captures about 2 percent of the non-compliant CVO traffic. Mainline weigh-in-motion usage will allow DSP to focus enforcement efforts on non-compliant carriers, resulting in an estimated capture rate of 3 percent of non-compliant traffic. A 50 percent increase in the capture rate would have the following impacts:

- Annual SWEF enforcement revenues will increase an estimated $2,200,000 (or 50 percent).

- Wisconsin will experience an estimated $2,750,000 increase in annual deterred pavement damage due to illegally overweight vehicles being stopped at SWEFs. This assumes a 50 percent increase in the current WisDOT estimate of $11 million annual deterred pavement damage, or $5.5 million. SWEFs are assumed to account for approximately 49.7 percent of deterred damage, consistent with the percentage of CVO miles travelled on Interstate and National Highway Systems.
- A 1997 WisDOT study estimated that approximately 520 crashes, 650 injuries and 6 fatalities are avoided annually due to Wisconsin's current motor carrier enforcement efforts. The associated societal cost savings were estimated at between $27 and $61 million annually. Increasing the ability of SWEFs to focus on unsafe carriers can be expected to further decrease crashes and increase the associated cost savings over time.

Private

The ATA Benefit/Cost Study predicts a positive benefit/cost ratio for carriers who participate in automated clearance systems, if their drivers are paid on the basis of hours worked. For all fleet sizes, the study predicted labor cost savings would outweigh the costs to participate. The study estimated the following benefit/cost ratios:

A range of 3.3:1 to 6.5:1 for small (1-10 units) carriers
A range of 3.7:1 to 7.4:1 for medium (11-99 units) carriers
A range of 1.9:1 to 3.8:1 for large (> 99 units) carriers

It should be noted that the study assumed the carrier would pay for the transponder (an estimated $33 capitalized over 3 years). However, in Help Inc.'s PrePass automated clearance program, the carrier is provided with a transponder at no charge, and is billed a $.99 fee for each bypass transaction. Depending on the number of bypass transactions the carrier would pay for during an average year, the annual cost may be higher or lower than purchasing a transponder.

With regard to market potential, the ATA study estimates that 33 percent of small carriers, 40 percent of medium carriers and 74 percent of large carriers might be expected to participate in automated clearance systems.

7. Join IFTA and IRP Clearinghouses

Public

One-time costs: None for IFTA Clearinghouse. An estimated $3,500-5,000 for IRP Clearinghouse.

Return on investment: Participation in the clearinghouses will allow more timely sending and receipt of transmittals (of information and fees) among jurisdictions with considerably less staff time to monitor and process them. It is estimated that it currently takes 1 FTE to process the IRP and IFTA transmittals, which would be done virtually without staff involvement if DOT joins the clearinghouses. This would free up that staff person to handle processing of customer applications instead.

Private

No direct costs or benefits have been identified for motor carriers.

8. Mobile ITS/CVO Enforcement

Public

One-time costs:
- Mobile data computers (MDC): $8,800 @ 70 units = $616,000 (already budgeted for 1997-99 biennium)
- Conversion of computers for enforcement purposes: Estimated at $65,000 ($25,000 for linkage to WisDOT mainframe systems and $40,000 or .5 FTE for programming)
- Portable WIM and vehicle: $40,000 per unit @ 10 units = $400,000
- Portable AVI: Using Help, Inc. model, assume no cost to state

New annual costs:
$3,000 per PWIM for maintenance @ 10 units = $30,000
$900 per MDC for maintenance @ 70 units = $63,000

Return on investment:

As noted earlier, the NGA Study found the case study states' savings-to-expenditure ratio for automated clearance to be much less than 1:1. Because NGA's focus was a narrow one, looking only at direct savings to states, WisDOT conducted a more expansive analysis of potential benefits to the state of mobile ITS technologies.

Mobile weigh-in-motion and AVI usage will allow DSP to focus enforcement efforts on non-compliant carriers. It is estimated that will result in a 50 percent increase in the capture of non-compliant traffic (from 2 percent to 3 percent) through mobile enforcement activity on intrastate and bypass routes. The increased capture rate would have the following impacts:

- Annual mobile enforcement revenue will increase an estimated $1,700,000.
- Wisconsin will experience an estimated $2,750,000 in annual deterred pavement damage due to illegally overweight vehicles being stopped at mobile enforcement units. (This assumes a 50 percent increase in the current WisDOT estimate of $11 million annual deterred pavement damage, or $5.5 million. Mobile enforcement is assumed to account for approximately 50.3 percent of deterred damage, consistent with the percentage of CVO miles travelled on bypass routes, off the Interstate and National Highway systems.)
- As with SWEF enforcement efforts, introducing ITS technologies into mobile CVO enforcement would lead to greater focus on unsafe carriers, with associated decreases in crashes over time.

Private

The benefits and costs to carriers would be similar to those identified in project 6 (deploying automated clearance at SWEFs).

9. Automatic Braking System Analyzers at SWEFs

Public

One-time costs: $23,000 per unit x 10 units = $230,000

New annual costs: $2,300 per unit maintenance x 10 units = $23,000

Return on investment: Faulty brakes are the second most significant CVO safety concern (following operator-related problems). Automated braking systems will reduce the time for a brake inspection from 20 minutes to 30 seconds, allowing inspectors to do more brake inspections than they can currently handle. Because of the parallel usage of automated clearance systems, the brake inspections can be focused on carriers with poor safety records. The advanced testing systems are also safer for the inspectors, who would no longer need to physically access the underside of the truck.

Private

There are no start-up costs identified for carriers for automated brake system analyzers. However, carriers may benefit from the use of this technology. The ATA Benefit/Cost Study estimated that the average annual cost of driver time for roadside safety inspections per vehicle (@ $14.49 per hour) is $30 for small carriers, $28 for medium carriers and $11 for large carriers. Reducing the brake inspection time by 19.5

minutes would equal a reduction of $4.71 in driver time costs per vehicle inspected for those carriers who pay drivers by hours worked. Additionally, the ability of enforcement to conduct more brake tests will have safety benefits for both commercial vehicle operators and the traveling public.

10. Negotiate Regional SWEF Agreements

Public

One-time costs: Minimal; travel costs for negotiating team.

Return on investment: All states would benefit from a coordinated approach to SWEF operation and conceptual agreement on SWEF location. More CVO enforcement resources could be made available to WisDOT if the FHWA agrees to provide a special allocation to compensate Wisconsin for its enforcement efforts related to trucks travelling to/from the Illinois-Indiana-Ohio tollway corridor.

Private

No direct costs to carriers were identified. However, carriers may benefit from a better coordinated regional approach to the location and operation of SWEFs, in terms of less time spent being checked at these facilities.

Summary of Costs, Funding Sources and Return on Investment

On the following pages, Figure 8 summarizes the estimated costs and return on investment for each project. Also listed are potential funding sources identified by the ITS/CVO work group.

Using the maximum estimated cost for each project, the total cost to implement the entire package of ITS/CVO projects is estimated as follows:

One-Time Costs:	$5,951,000 total cost
	$ 616,000 already budgeted
	$5,335,000 still needed
New Annual Costs:	$693,500 total cost
	$150,000 already budgeted
	$543,500 still needed

As the ITS/CVO planning process continues, the estimated project costs will be refined.

Due to the uncertainties in the ISTEA reauthorization process, it is difficult to estimate the amounts of federal transportation funding that will be available during the next few years. When a federal reauthorization bill is passed by Congress, federal funding sources for ITS/CVO projects can be more clearly identified. At this point, it is anticipated that federal CVISN funding will be available to states in two steps. In the first step, project planning grants estimated at $100,000 would be available, beginning in 1999, to states that successfully completed their ITS/CVO business plans. After successful completion of project plans, states would be eligible for the second step - - CVISN implementation funds, estimated at $2 million per state. Given this timeline, it appears that CVISN funding for project implementation would not be available to Wisconsin until 2000.

The IT needs assessment (project #1) is a high-priority item that needs to be undertaken in the near future, before CVISN funds will become available. From the work group's research and discussions, it appears that other states will need to carry out similar projects to prepare for project planning and CVISN implementation. Since Wisconsin's efforts in this project may provide a model to other states in the future, it may be worthwhile to investigate whether USDOT model/seed implementation funds might be available to cover some or all of the project costs.

WisDOT has begun to identify issues to be considered for inclusion in the state's 1999-2001 biennial budget. The budget process is a necessary first step to seek funding approval for major projects to be undertaken during the time period of 7/1/99 through 6/30/01. The ITS/CVO work group identified the following 3 projects that, by virtue of scheduling and level of funding required, were recommended as '99-'01 state budget issues:

- Project 3: OS/OW Routing and Processing System
- Project 6: Deploy Automated Clearance at SWEFs
- Project 8: Deploy Mobile ITS/CVO Enforcement

It was later determined that project 6 would be eligible for state and federal improvement funds.

Although other projects may have been ranked as higher priority, they were not recommended as budget issues because funding will likely come from division operating budgets and/or the scheduling of the project does not fall within the 1999-2001 biennium. The lead divisions are preparing documentation of the 3 recommended budget issues to assist the department in determining whether they will be included in the WisDOT's budget submission.

The ITS/CVO work group has also explored the possibility of the motor carrier industry contributing financially to ITS/CVO project implementation, especially in those cases where the industry stands to benefit significantly from the project. This topic has been discussed with members of the Motor Carrier Advisory Committee and the Wisconsin Motor Carriers Association. Specific proposals discussed with industry thus far include sharing the annual cost for an automated clearance consortium membership, and initiating a temporary surcharge on OS/OW permits to help fund the automated routing and permitting system. Industry representatives are open to considering these proposals, although no commitments have been made at this time. WMCA's technology committee suggested that carrier contributions be discussed on a case-by-case basis, looking at a benefit/cost analysis of each project. Discussions with the industry groups will continue, to determine appropriate and equitable methods for industry contributions.

Figure 8. Summary of Estimated Costs, Potential Funding Sources and Estimated Return on Investment for ITS/CVO Projects

	1. Assessment of IT Needs	2. Electronic Access to IFTA and IRP for Carriers	3. OS/OW Routing and Processing System	4. Complete Long-Range SWEF Plan	5. Join Automated Clearance Consortia
Est. Costs (one-time; new annual)	$100,000 one-time cost	$75,000 one-time cost & $157,500 new annual costs ($150,000 of new annual already budgeted for '97-'99)	$1,000,000 one-time cost & $40,000 new annual costs	Minimal travel costs during plan preparation	Help, Inc: $10,000 (assoc.) or $30,000 (full) new annual membership costs MAPS Inc: no memb. fees
Potential Funding Sources	FY 98 operating budgets (DMV & DSP); USDOT model/seed implementation funds; Federal ITS funds	FY 99 DMV operating budget; DMV's current ISTEA grant; Motor carrier contribution	99-01 State budget; ISTEA 2; CVISN; State and federal improvement; Motor carrier contribution; Maintenance & Traffic funds	FY 98-99 division operating budgets	FY 99 division operating budgets (joint DSP & DTID); Motor carrier contribution
Estimated Return on Investment	State: • Eliminate potentially costly system revisions in future. • Assist with budgeting and planning for IT staff or contractors. Carriers: • No direct costs or benefits identified. However, interstate carriers will benefit indirectly from the interoperability of WisDOT CVO systems with those of other jurisdictions.	State: • $165,000 in savings from process improvements made possible by new IFTA and IRP systems. • Electronic submission of applications/reports and credential self-issuance will allow WisDOT to reduce backlogs while meeting increasing demand. • Per NGA Study, most states can expect to see a positive savings-to-expenditure ratio from electronic credentialing. Carriers: • Per ATA Study, electronic credentialing can have positive benefit/cost ratios for carriers with over 10 units. • Improved efficiency • Motor Carrier Advisory Comm. members indicate that if access costs are reasonable, electronic IFTA and IRP credentialing would be beneficial to carriers.	State: • Self-issuance of some permits will help WisDOT handle increasing workload in a timely manner. • Help protect WisDOT from liability claims that could reach $250,000 per involved employee per incident. • Est. $20,000 annual savings due to fewer bridge hits. • Per NGA Study, most states can expect to see a positive savings-to-expenditure ratio from electronic credentialing. Carriers: • Per ATA Study, electronic credentialing can have positive benefit/cost ratios for carriers with over 10 units. • Avoidance of $600-800 per day delay costs due to permit processing backlogs. • Motor Carrier Advisory Comm. members believe an automated routing system will improve efficiency of O/O vehicle transport.	State: • Plan will provide guide for more more efficient and effective use of CVO enforcement resources. • Focus attention on CVO enforcement needs and benefits. • Useful information for long-range maintenance planning. Carriers: • No direct costs or benefits to carriers identified. However, carriers will experience indirect benefits due to well-planned SWEF system.	State: • Joining consortia lays groundwork for benefits from deployment of automated clearance systems. • WisDOT gains access to regulatory and enforcement info to improve its CVO enforcement program. Carriers: • Depending on consortia, Wis. carriers could have representation on the board. If this is the case, industry could share in the membership costs and gain the benefits of participation in setting policies and procedures for the consortia. • Motor Carrier Advisory Comm. members feel joining a consortium would be beneficial to carriers, if they have board representation, if costs are reasonable, and if transponders would be interoperable with other consortia.

Figure 8. Estimated Costs, Potential Funding Sources and Estimated Return on Investment for ITS/CVO Projects (continued)

	6. Deploy Automated Clearance at SWEFs (tied for #1 priority)	7. Join IFTA and IRP Clearinghouses (#7 priority)	8. Deploy Mobile ITS/CVO Enforcement (#6 priority)	9. Brake Systems Analyzers at SWEFs (#8 priority)	10. Negotiate Regional SWEF Agreements (#9 priority)
Est. Costs (one-time; new annual)	Help Inc: $1,750,000 one-time & $100,000 new annual costs MAPS: $3,500,000 one-time & $350,000 new annual costs	$5,000 one-time cost (IRP)	Help Inc: $1,041,000 one-time costs (of which $616,000 already budgeted) & $93,000 new annual costs	$230,000 one-time cost & $23,000 new annual cost	Minimal travel costs (ongoing)
Potential Funding Sources	FY99 DSP/DTID op budgets; CVISN; State & federal improvement funds; Mtr carrier contribution	FY 99 DMV operating budget; CVISN funds	FY99 DSP op budget; 99-01 State budget; MCSAP; ISTEA 2; Operations testing funds; Motor carrier contribution	MCSAP; 01-03 State budget; State & fed improvement funds; Operations testing; Motor carrier contribution	Division operating budgets
Estimated Return on Investment	State: • Mainline WIM will increase capture rate for non-compliant vehicles by 50%, with an estimated annual SWEF enforcement revenue increase of $2.2 million. • Increased capture rate from SWEF enforcement will also result in deterred pavement damage estimated at $2.75 million annually. • Improved effectiveness of SWEF program will result in avoided traffic crashes, with associated societal benefits. • NGA Study found low ratio of direct savings-to-expenditures in states with electronic screening. Carriers: • ATA Study predicts positive benefit/cost ratios for fleets of all sizes for participation in automated clearance. • MCAC members indicated this project could have efficiency & equity benefits.	State: • Clearinghouses will allow more timely sending and receipt of fee and information transmittals • Electronic transmission will free up an estimated 1 FTE for other processing duties. Carriers: • No direct costs or benefits identified for carriers.	State: • Electronic clearance will allow State Patrol to focus enforcement on non-compliant carriers, resulting in an estimated 50% increase in the capture rate for non-compliant carriers, and an estimated $1.7 million annual increase in mobile enforcement revenue. • Increased capture rate from mobile enforcement will also result in deterred pavement damage estimated at $2.75 million annually. • NGA Study found low ratio of direct savings-to-expenditures in states with electronic screening. Carriers: • ATA Study predicts positive benefit/cost ratios for fleets of all sizes for participation in automated clearance.	State: • New devices will reduce time need for brake inspection from 20 minutes to 30 seconds, allowing more vehicles to be checked for this significant safety problem, and resulting in less crashes. • Because of parallel use of automated clearance, brake inspections can be focused on carriers with poor safety records. • New testing systems are safer for inspectors - - no need to physically access underside of truck. Carriers: • No direct costs identified for carriers. However, ATA Study identified labor cost savings to carriers with reduction in time spent on safety inspections.	State: • Regional coordination of SWEF operation and conceptual agreement on SWEF locations would increase effectiveness of CVO enforcement efforts in region. Carriers: • No direct costs or benefits identified. However, a better coordinated regional approach to SWEF location and operation could improve efficiency for carriers.

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APPENDIX A

RESULTS OF FOCUS GROUPS AND PRIORITIZATION WORKSHOP

EXCERPT FROM:
I- 90/94 INTERCITY CORRIDOR STUDY
ITS STRATEGIC DEPLOYMENT PLAN

2.3 Focus Group Meetings

On April 15 and 16 1996, focus group meetings were held in Madison and Eau Claire to solicit input from a wide range of corridor users and operations agencies on transportation problems and potential ITS projects identified through the Prioritization Workshop. A list of the participants in the focus groups is found in Appendix B.

At the focus group meetings, WisDOT staff and members of the BRW consulting team gave an overview of ITS, provided a summary of the IH 90/94 ITS Intercity Corridor Study, discussed the direction of the study and the transportation problems and potential ITS solutions identified to date in the study. Focus group participants then separated into one of six small groups based on their area of interest, (Commercial Vehicles, Institutional, Traveler Information, Traffic Control, Incident Management and Public Transportation. *In both Madison and Eau Claire, participants formed three small groups with each group discussing two topics.*

Focus group participants were asked to identify obstacles they felt could hinder the study from achieving its vision. Participants also reviewed and discussed transportation problems and possible ITS projects from the prioritization workshop and compiled their own list of top problems and possible ITS projects for the IH 90/94 corridors. After the small group discussions, each group reported back to the full group. Summarized below are the obstacles that focus group participants felt could hinder the IH 90/94 ITS Intercity Corridor Study from achieving its vision:

Funding *(4 Mentions)*
Competing Priorities Between and Within Agencies *(2 Mentions)*
Need for Leadership *(2 Mentions)*
Process *(2 Mentions)*

The Following Obstacles Were Each Mentioned Once:

Deciding Where to Start
Infrastructure
Interagency Relationships
Interstate Cooperation
Lack of Standard Vehicle-to-Roadside Communication
Public Acceptance
Maintaining the Integrity of the Existing System
Uniqueness of Incidents
Establishing Private/Public Partnerships
Changing Technology

The top problems and possible ITS solutions identified through the focus group meetings are presented on Tables 2-1 and 2-2, and compared with those also identified through the prioritization workshop process.

Table 2-1
Top Problems from Focus Group Meetings

Problems	*Identified Through:* Prioritization Workshop	Focus Group
Problems from Workshop & Focus Group:		
Congestion	X	X
Construction Projects	X	X
Coordination at Accident Scenes	X	X
Coordination for Freeway Closures	X	X
Current Travel/Road Condition Information	X	X
Effectiveness of Law Enforcement	X	X
Emergency Service Response Time	X	X
Information on Available Transit Services	X	X
Lack of Layover Facilities	X	X
Lack of Alternate Route Information	X	X
Limited Incident Information to Users in Advance	X	X
Time Delays at Weigh Stations	X	X
Uniformity in Design Standards	X	X
Uniformity of CMS Messages	X	X
Problems from Focus Group Only:		
Lack of Consistency in Planned Responses		X
Sharing of Information Between Agencies		X
Cumbersome Payment System for Transit		X
Inability to Regulate Traffic Flow		X
Integration of Different Information Systems		X
Lack of Alternate Routes		X
Enforcement/Travelers Have Different Incident Management Needs		X
Minnesota Scales Require All Buses to Stop		X
Security at Incident Sites		X
Underutilized Transit Vehicles		X

Table 2-2
Project Ideas from Focus Group Meetings

	Identified Through:	
Project Ideas	**Prioritization Workshop**	**Focus Group**
Ideas from Workshop & Focus Group:		
Active Warning Sign	X	X
Alternate Route Signage	X	X
Automate Safety Inspections	X	X
Automatic Road Condition Warning	X	X
Commercial Vehicle Pre-Clearance	X	X
Develop Incident Management Plan	X	X
Expand Use of Cell Phones	X	X
Guidelines for Institutional Coordination	X	X
Information Kiosks for Travelers	X	X
Locate Origin of Cell Calls	X	X
Permanent HAR Statewide	X	X
Portable CMS	X	X
Private Sponsorship of CMS	X	X
Ramp Meters	X	X
Uniform Standards for CMS Messages	X	X
Weigh-in-Motion Scales	X	X
Ideas from Focus Group Meetings Only:		
Coordinate Multiple Use of All Transit Vehicles		X
Electronic Toll Collection at Beloit		X
Mail Commercial Violations		X
More Coordination Between All Transit Sectors		X
Provide Plastic "Debit Card" for Transit Fare Payment		X
Uniformity in Enforcement		X

2.4 Recommended ITS User Services and Project Ideas

The results from the prioritization workshop, focus groups and input from the Technical Team produced an updated list of ITS user services and potential projects to address the identified needs found in the IH 90/94 Corridors. Two matrices were then developed and used to help identify the potential projects/ITS user services with the greatest likelihood of adequately addressing the critical, underlying transportation issues facing the IH 90/94 Corridors. The first matrix compared each potential project with the overriding factors identified in the prioritization workshop. A second matrix compared each potential project with the problems identified in both the prioritization workshop and focus group meetings.

The potential projects and user services were then reviewed by the consulting team and Technical Team to identify those with the strongest relationship to the overriding factors and identified problems. The results of this process are contained in the *IH 90/94 User Service Plan* prepared for the Technical Team in May, 1996.

The recommended list of projects and ITS user services is based on the following:

- *All potential projects address at least one identified problem in the IH 90/94 Corridor;*
- *All potential projects relate to at least one overriding factor established through the prioritization workshop;*
- *All potential projects address a combination of 11 or more problems/overriding factors;*
- *All potential projects require current, new or emerging technology for deployment;*
- *All potential projects are based within the State of Wisconsin; and,*
- *All ITS user services contain at least one recommended project idea.*

The recommended ITS User Services for the IH 90/94 Corridors from the prioritization workshop and April, 1996 focus groups are:

En-Route Driver Information
Travel Services Information
Traffic Control
Incident Management
Pre-Trip Travel Information
Public Transportation Management
Commercial Vehicle Electronic Clearance
Automated Roadside Safety Inspections
Emergency Notification and Personal Security

Table 2-3 includes a listing of recommended project ideas sorted by ITS User Service and Infrastructure Component.

Table 2-3
Recommended Project Ideas
sorted by
ITS User Service and Infrastructure Component

Freeway Management
- Traffic Control
  - *Expand use of changeable message signs.*
  - *Active warning signs.*

Commercial Vehicle Operations
- Automated Roadside Safety Inspections
  - *Automate safety inspections.*
- Commercial Vehicle Electronic Clearance
  - *Add weigh-in-motion scales.*
  - *Purchase credentials in advance.*

Incident Management
- Incident Management
  - *Incident clearance plan.*
  - *Develop incident management plan.*
  - *Locate origin of cell calls.*
  - *Expand use of cell phones.*
  - *Install GPS on vehicles.*

Emergency Management Services
- Emergency Notification and Personal Security
  - *Mayday system for motorists in need.*

Regional Multimodal Traveler Information
- En-Route Driver Information
  - *Expand use of changeable message signs.*
  - *Statewide highway advisory radio.*
  - *Cellular call to motorists.*
  - *Automated interactive kiosks.*
  - *Automatic road condition warning.*
  - *Weather & incident information to motorists.*
  - *Portable travel time report system.*
  - *Active warning signs.*
- Travel Services Information
  - *Automated interactive kiosks.*
- Pre-Trip Travel Information
  - *Add to 1-800 ROADWIS system.*
  - *Travel information on a home page.*
  - *Weather & incident information to motorists.*
- Public Transportation Management
  - *Automated schedule information.*

APPENDIX B

DMV MOTOR CARRIER BUSINESS PROCESS REENGINEERING (BPR) BRAINSTORMING SESSION RESULTS

JULY 17, 1995 MOTOR CARRIER BPR BRAINSTORMING SESSION SUMMARY		
DATE	#	SUGGESTION
7/17	1	Permanent plate/ stickers for fleets (would like to eliminate stickers though)
7/17	2	3rd party permit data input or transmitted electronically issue permits too. (Multiple methods) Same item as #10.
7/17	3	Instant plate cab card issuance (walk in)
7/17	4	Fax with credit card issuance (can combine with #3)
7/17	5	Combine I/F IRP and registration data bases, also cross reference to fuel tax
7/17	6	SP needs on-line access to all data bases
7/17	7	Consolidate all data on a single data base.
7/17	8	Have History of MC data by carrier
7/17	9	Ability to get registration at Fleet Farm
7/17	10	Tax reporting and reg renewal via computer directly by carrier.
7/17	11	Eliminate no-shows for CDL road tests by requiring a pre-payment or a penalty
7/17	12	Default settings on screens
7/17	13	Decentralize heavy truck services to DMV BFS
7/17	14	Graphic routing information on system
7/17	15	Integration of entire MC and SP systems
7/17	16	On-line access and self-issue for renewal and new units and supplementals (same as #s 2 & 10)
7/17	17	Eliminate non-use signing registration renewal card
7/17	18	EFI (ACH) along with credit card
7/17	19	IRP fees calculated by unit and or fleet (separate trucking and power units)
7/17	20	Automated oversized/overweight permit information routing
7/17	21	Compatibility with other states
7/17	22	One document satisfy IRP, fuel and operating authorization requirement
7/17	23	Eliminate Agriculture emergency process (6-10 times every year -rotting crops)
7/17	24	Security controlled access
7/17	25	Unique identification for carriers
7/17	26	Make system cost effective- do not raise registration fees
7/17	27	Earlier notification for registration renewal (school bus program 60 days)
7/17	28	Multi-year renewal for OS/OW permits for inter/intra state non government carriers
7/17	29	Staggered IRP
7/17	30	On-Line 24 hour self-issuance of OS/OW permits
7/17	31	Eliminate SSRS (Single State Registration System) (replace birgo stamps)
7/17	32	On-line MC accounts at carrier and fleet levels
7/17	33	Key on unit number
7/17	34	Eliminate need for returning cab cards when deleting a unit (destroy returns)

JULY 17, 1995 MOTOR CARRIER BPR BRAINSTORMING SESSION SUMMARY (continued)		
DATE	#	SUGGESTION
7/17	35	Allow fleet to fleet plate transfers
7/17	36	Simplify and standardize criteria for OS/OW permits
7/17	37	Tighten up registration of 3rd party sales (reduce LAF plates)
7/17	38	Create an automated audit system for IRP and IFTA
7/17	39	Permanent cab cards
7/17	40	SSRS additions handled like IRP "- 1 piece of paper" (only if SSRS does not get eliminated)
7/17	41	Multiple levels of inquiry on system
7/17	42	Enforcement able to make descriptive entries on system (with permits, especially OS/OW) e. routing
7/17	43	$50 trailer plate needs an easier issue process
7/17	44	Local permits issued on -line and recorded on DOT system (at point of issue)
7/17	45	DOT # or authorization # on all vehicle 10,000lb or greater on DMV data base
7/17	46	Eliminate weight stickers for IRP; emboss on plate, or just keep in system
7/17	47	IFTA temporary automatically generate a IFTA decal; automatic generation of permanent IFP decals based on temporary application (by request)
7/17	48	Integrated financial system (1 check for all fees)
7/17	49	Real-time routing (like #20)
7/17	50	Transporters in vehicles
7/17	51	Straighten out Idaho reporting -IRP
7/17	52	IVHS (look at #53)
7/17	53	On-line inquiry to pre-clear vehicles instead of needing to stop vehicles (AVI)
7/17	54	Weigh-in-motion AVI
7/17	55	Inquiry by route
7/17	56	Simple ad-hoc reports for analysis
7/17	57	Integrate med card with CDL renewal (timeline question)
7/17	58	Eliminate automated HVUT (feds)
7/17	59	personalized plates for carriers (including color and animal)
7/17	60	Attach unit # to Wisconsin account #
7/17	61	Change state law to allow registration of controlled gross weight truck and trailer
7/17	62	Flexible system to accommodate small and large carriers
7/17	63	Lessee/Lessor relationships, self defined fleets
7/17	64	Titling issues : on-line 3rd party
7/17	65	Reconvene groups in a few months (cyclical) One month's noticed would be desirable
7/17	66	Reinstate July as Expiration for School Buses (weather issue)

APPENDIX C

ADDENDUM:
DISCUSSION PAPER FOR WISDOT ADMINISTRATORS

DISCUSSION PAPER: ITS / CVO BUSINESS PLAN 5/8/98

An interdivisional WisDOT team has prepared a business plan to determine how intelligent transportation systems (ITS) technologies can improve the department's regulatory and enforcement programs for commercial vehicle operations (CVO). Numerous states in seven regional consortia are preparing similar business plans as part of the national ITS/CVO mainstreaming initiative. Wisconsin is a member of the Great Lakes Mainstreaming Consortium, and its business plan will become part of the Great Lakes regional business plan being prepared by the Kentucky Transportation Center. The goals of the mainstreaming initiative are to incorporate ITS/CVO technologies into state and regional transportation planning, and to coordinate ITS/CVO activities among agencies and states.

The ITS/CVO work group developed the business plan in coordination with the Department's ITS Steering Committee and Motor Carrier Advisory Committee. This paper summarizes the major findings and recommendations of the plan, and identifies actions (budgetary and program) that need to be taken in the next few years to implement the plan.

The CVO issues and solutions identified by the work group fall into two areas - - deskside (credentials administration) and roadside (safety, weight, size and credential enforcement). The ten projects recommended in the business plan are summarized (as to priority ranking, lead division(s), estimated costs and estimated return on investment) in Figure 1 at the end of this paper.

Deskside issues and Recommendations

In reviewing current CVO deskside programs and input from both internal and external stakeholders, the following issues were identified:

- WisDOT faces an increasing CVO credential workload with decreasing staff resources, causing backlogs and delays to motor carriers. A number of process improvements that would increase efficiency (e.g., staggered IRP renewals, permanent IRP plates, submitting applications electronically) are not supported by the Department's current processing systems.

- Routing of oversize/overweight vehicles is done by manual processes that are slow and prone to human error.

The recommended strategy to address these issues is to further automate the credentialing processes, beginning with those that are the most complex and affect the most carriers: International Fuel Tax Agreement (IFTA), International Registration Plan (IRP) and Oversize/Overweight Vehicle Permits. The major goal is to open the processing systems to

electronic access by carriers, which will reduce paperwork and keying, and allow carriers to self-issue some credentials. Another objective is to achieve electronic sharing of information with other jurisdictions, particularly with the IFTA and IRP programs that currently require extensive production and sharing of paper documents with other jurisdictions.

To implement this strategy, the following deskside projects (listed in priority order) are recommended:

New Oversize/Overweight (OS/OW) Routing and Processing System: This project will build upon the current effort to develop a LAN-based processing system (OPUS), by adding automated routing and bridge analysis capabilities. Besides improving processing and routing procedures, the new system will allow carriers to electronically submit applications and self-issue some permits.

Electronic Access to IFTA and IRP Systems for Carriers: This effort will establish an electronic link for carriers to the department's new vendor-supplied IFTA and IRP processing systems, allowing electronic submission of reports and applications, and self-issuance of some credentials.

Join IFTA and IRP Clearinghouses: Joining the clearinghouses will allow the department to electronically exchange registrant information with other IFTA and IRP member jurisdictions, replacing the current paperwork flow.

Roadside Issues and Recommendations

Review of current CVO roadside program activities and stakeholder input identified the following issues to be addressed:

- The department's CVO enforcement program is handling an increasing truck volume with static or decreasing staffing levels. The screening methods currently used do not automatically identify non-compliant carriers. As a result, mostly "legal" carriers are stopped, which decreases the carriers' productivity and does not make the best use of enforcement officers' time. Additionally, safety inspection methods currently in use are time-consuming, limiting the number of carriers that can be checked for safety violations.

- Carriers not in compliance with weight, size and safety regulations use alternate routes to avoid being stopped at safety and weight enforcement facilities (SWEFs) on major truck routes.

- The department's CVO enforcement efforts in southern Wisconsin are of critical importance to Wisconsin and the region, given the large volume of trucks traveling to and from Wisconsin along the Illinois, Indiana, Ohio, Pennsylvania and New York tollway corridor, where there are virtually no SWEFs.

The recommended strategy for addressing these issues is to maintain a strong deterrent to CVO non-compliance, while increasing the efficiency and effectiveness of enforcement efforts. Reducing non-compliance has many benefits for the state, including preventing pavement damage by illegally overweight vehicles, protecting public safety, and ensuring that fees and taxes due Wisconsin are paid.

Both permanent SWEFs and mobile enforcement are essential to maintaining the strong deterrent to CVO non-compliance. SWEFs are an efficient method of checking the high volume of truck traffic on major highway corridors. Mobile enforcement is needed to address the non-compliant carriers on bypass routes, as well as to provide enforcement in areas that do not have SWEFs.

Recommended methods to increase the efficiency and effectiveness of CVO enforcement efforts start with completion of the department's long-range SWEF location and development plan, as well as coordination with other states on basic concepts of SWEF location and operation. Implementing electronic screening technologies at both SWEFs and mobile sites, as well as automated brake system testers at SWEFs, will help to make the best use of enforcement officers' time in checking CVO traffic.

The long-range SWEF plan will address a number of critical questions, such as which specific locations will be the first to implement electronic screening, and what CVO enforcement methods will be used in southeastern Wisconsin. Two SWEFs (Racine and Kenosha) currently serve the busy I-94 corridor in southeastern Wisconsin. These facilities check the heavy volume of truck traffic headed into Wisconsin from the Chicago area and headed outbound from the Milwaukee and Fox Valley areas. The long-range plan will assess the CVO enforcement alternatives for this important travel corridor and make recommendations for long-term enforcement strategies.

The Gary-Chicago-Milwaukee (GCM) Corridor Study provides a forum for Wisconsin, Illinois and Indiana to share ideas about coordinated CVO enforcement efforts. Initial discussions led to a consensus among the three states on the following:

- the need for permanent enforcement facilities complemented with mobile enforcement
- the value of locating facilities near state borders to check inbound truck traffic
- the desire to coordinate hours of operation among enforcement facilities
- interest in sharing data on carriers, particularly on out-of-service drivers/vehicles

Through GCM discussions, Illinois and Indiana officials indicated they are not interested in negotiating multi-state agreements on facility construction/reconstruction. It should be noted that two Illinois organizations - - Illinois DOT and the Illinois Tollway Authority - - participated in the discussions. The tollway authority is generally not involved in development or operation of SWEFs. Pavement damage on tollways due to

illegally overweight vehicles is generally addressed after the fact by increased toll fees to cover the costs of repair and reconstruction.

Work group members have begun contacting other states in the region to assess their interest in establishing multi-state SWEF agreements. These contacts did not include any attempts to negotiate SWEF funding agreements with other states. The work group looked at Wisconsin's overall level of effort in weighing and inspecting trucks as compared to other states in our region. FHWA statistics for federal fiscal years 1996 and 1997 reveal the following:

State	Trucks weighed in FFY 96	Trucks safety inspected in FFY 97
Illinois	11,364,145	89,680
Indiana	4,364,386	88,051
Iowa	1,017,758	55,199
Michigan	4,706,057	47,704
Minnesota	1,434,372	27,996
Ohio	5,024,477	67,540
Wisconsin	1,497,886	25,247

Wisconsin does not, on an overall basis, rank among the most active states in our region in CVO enforcement. Therefore, it is unrealistic to expect that other states in our region would agree to help fund Wisconsin's CVO enforcement efforts, to compensate Wisconsin for checking truck traffic headed to and from the Illinois-Indiana-Ohio tollway corridor.

However, there does seem to be interest in establishing memoranda of understanding (MOU) with adjacent states to promote the concept of each state checking inbound truck traffic at its border with surrounding states. The strategy would lessen or eliminate the need to check outbound truck traffic where there is a corresponding inbound facility in the adjacent state. Officials from Minnesota, Iowa, and Indiana have expressed interest in such an agreement. Michigan does not have a fully functional SWEF on its border with Wisconsin, so there is no basis for a conceptual MOU. Illinois DOT is willing to review a draft MOU, but has not expressed support of the effort. A draft MOU is being developed and will be sent to the appropriate officials in surrounding states for comment and action.

To implement the recommended roadside strategy, the following projects (listed in priority order) are included in business plan:

Complete Long-Range SWEF Plan: Resume and complete this planning effort, which was placed on hold during development of the ITS/CVO business plan. Identify key corridors for truck travel and crashes, and set forth a strategy for SWEF location, construction, reconstruction and rehabilitation.

Deploy Mainline Automated Clearance at SWEFs: With guidance from SWEF plan, design and configure SWEFs with equipment that will allow trucks to be electronically screened for size, weight, credential and safety violations.

Join Automated Clearance Consortia: The department will join one or more multi-state consortia to coordinate operation of electronic screening of trucks.

Deploy Mobile Automated Clearance: State Patrol districts will be supplied with equipment to electronically screen trucks while doing mobile enforcement on bypass routes or in areas without SWEFs.

Deploy Automatic Brake Testers at SWEFs: After approval of these devices by FHWA, provide them to State Patrol districts to conduct more effective brake tests in a fraction of the time it takes to conduct brake tests with current methods.

Negotiate Border/Regional SWEF Agreements: The department will work with surrounding states to coordinate SWEF operations and reach conceptual agreement on SWEF locations. This effort will coordinate with the completion of the long-range SWEF plan, and dialog will continue on an ongoing basis.

Coordination of Deskside and Roadside Systems

An important component of ITS/CVO planning is the question of how the proposed new deskside and roadside systems will work with each other. Carrier information collected during the credentialing process is essential for effective CVO enforcement. In dealing with interstate carriers, information also needs to be shared with other agencies and states, plus various national systems and clearinghouses, making it essential that the systems be designed according to national standards. To ensure that the systems are well-coordinated, significant involvement by information technology (IT) professionals familiar with ITS/CVO will be required. The following project is recommended:

Assessment of Information Technology Needs: The department's current and proposed CVO computer systems will be inventoried and a blueprint developed to ensure that they are designed to link with each other and to meet national CVISN standards for ITS/CVO systems. Each ITS/CVO project in the plan will be reviewed to estimate the effort required by an IT professional to complete any computer system tasks. The department will then determine if this IT expertise will be developed in-house or provided by a hired consultant.

Budget and Program Actions

Figure 2 at the end of this paper presents the timeline for each project, and identifies needed funds, potential sources of funding, and projects that will require budget issue papers for the 1999-2001 state biennial budget.

It should be noted that federal CVISN funds may be available in the future for some of the projects. FHWA anticipates that after federal reauthorization is accomplished, in early 1999 they will begin awarding $100,000 project planning grants to states that have successfully completed their ITS/CVO business plans. As states complete their project plans, which explain in detail how the projects will be implemented, they will be eligible for CVISN implementation grants of approximately $2 - 3 million. The first CVISN grants will probably not be awarded until 2000.

Additionally, the Wisconsin Motor Carrier Association (WMCA) has been asked to provide input from its members on the use of ITS/CVO technologies and the possibility that the trucking industry could contribute some of the costs to implement these technologies in Wisconsin. Members of the work group met with WMCA's technology committee on April 7, and a follow-up meeting has been scheduled to continue discussion on these issues. The technology committee members are willing to discuss carrier contributions to ITS/CVO projects on a case-by-case basis, looking at the costs and benefits associated with each project. Although this opens the door to possible funding from the carrier community, it is unlikely that such funds will be available in the immediate future.

The work group recommended the following ITS/CVO projects as budget issues for the 1999-2001 state budget:

- Deploy Automated Clearance at SWEFs
- Deploy Mobile ITS/CVO Enforcement
- OS/OW Routing and Processing System

It has since been learned that automated clearance at SWEFs is eligible for federal and state improvement funds.

Program actions that need to be taken during the remainder of calendar year 1998 to implement the ITS/CVO projects are the following:

- Hire a consultant and conduct the ITS/CVO information technology needs assessment. *(DMV, DSP and DBM lead)*
- Complete installation of the new IRP processing system. *(DMV leads)*
- Begin work on an electronic credentialing interface for the IFTA and IRP systems. *(DMV leads)*
- Complete design and implementation of LAN-based OS/OW processing. *(DMV leads)*
- Reconvene SWEF Plan work group and complete plan. *(DSP and DTID lead)*
- Discuss potential automated clearance consortia internally and with motor carrier community, and decide which/whether to join. *(DSP leads)*

- Begin planning for deployment of automated clearance at SWEFs. *(DSP leads)*
- Begin discussions with IRP clearinghouse. *(DMV leads)*
- Continue installation of mobile data computers in State Patrol vehicles. *(DSP leads)*
- Negotiate agreements with other states regarding SWEF location and operation. *(DSP leads)*

The information technology needs assessment will provide guidance for many of the other ITS/CVO projects that involve new or revamped computer systems. Therefore, it is important that the needs assessment project begin as soon as possible, preferably during 1998. Obtaining funds for this effort is an immediate concern.

Implementation Structure

Because the ITS/CVO program is multi-divisional, it is especially important that the involved divisions continue to communicate and that the program continues to receive high-level support in the department. To effectively carry out the business plan projects, the following structure is recommended:

- The ITS/CVO work group continues to meet regularly to monitor plan implementation and ensure that lead agencies are proceeding with the approved projects. The work group will be responsible for updating the plan as needed.

- The work group will report to the WisDOT division administrators 3 to 4 times each year to inform them of progress made and difficulties encountered, and to seek direction for future activities.

Figure 1. ITS/CVO Projects: Priority Ranking, Lead Divisions, Estimated Costs, and Estimated Return on Investment

	1. Assessment of IT Needs (#2 priority)	2. Electronic Access to IFTA and IRP for Carriers (#4 priority)	3. OS/OW Routing and Processing System (#3 priority)	4. Complete Long-Range SWEF Plan (tied for #1 priority)	5. Join Automated Clearance Consortia (#5 priority)
Lead Div.	DMV, DSP and DBM	DMV	DMV	DSP and DTID	DSP
Estimated Costs (one-time; new annual)	$100,000 one-time cost	$75,000 one-time cost and $157,500 annual cost for system contract and maintenance ($150,000 already budgeted for '97-'99)	$1,000,000 one-time cost and $40,000 annual maintenance cost	Minimal travel costs during plan preparation	Help, Inc/Prepass: $30,000 (full) or $10,000 (assoc.) annual membership costs MAPS Inc.: no direct membership costs yet
Estimated Return on Investment	State: • Eliminate potentially costly system revisions in future. • Assist with budgeting and planning for IT staff or contractors. Carriers: • No direct costs or benefits identified. However, interstate carriers will benefit indirectly from the interoperability of WisDOT CVO systems with those of other jurisdictions.	State: • $165,000 in savings from process improvements made possible by new IFTA and IRP systems. • Electronic submission of applications/reports and credential self-issuance will allow WisDOT to reduce backlogs while meeting increasing demand. • Per NGA Study, most states can expect to see a positive savings-to-expenditure ratio from electronic credentialing. Carriers: • Per ATA Study, electronic credentialing can have positive benefit/cost ratios for carriers with over 10 units. • Improved efficiency • Motor Carrier Advisory Comm. members indicate that if access costs are reasonable, electronic IFTA and IRP credentialing would be beneficial to carriers.	State: • Self-issuance of some permits will help WisDOT handle increasing workload in a timely manner. • Help protect WisDOT from liability claims of up to $250,000 per involved employee per incident. • Est. $20,000 annual savings due to fewer bridge hits. • Per NGA Study, most states can expect to see a positive savings-to-expenditure ratio from electronic credentialing. Carriers: • Per ATA Study, electronic credentialing can have positive benefit/cost ratios for carriers with over 10 units. • Avoidance of $600-800 per day delay costs due to permit processing backlogs. • MCAC members believe automated routing will make O/O vehicle transport more efficient.	State: • Plan will provide guide for more efficient and effective use of CVO enforcement resources. • Focus attention on CVO enforcement needs and benefits. • Useful information for long-range maintenance planning. Carriers: • No direct costs or benefits to carriers identified. However, carriers will experience indirect benefits due to well-planned SWEF system.	State: • Joining consortia lays groundwork for benefits from deployment of automated clearance systems. • WisDOT gains access to regulatory and enforcement info to improve its CVO enforcement program. Carriers: • Depending on consortia, Wis. carriers could have representation on the board. If this is the case, industry could share in the membership costs and gain the benefits of participation in setting policies and procedures for the consortia. • Motor Carrier Advisory Comm. members feel joining a consortium would be beneficial to carriers, if they have board representation, if costs are reasonable, and if transponders would be interoperable with other consortia.

Figure 1. ITS/CVO Projects: Priority Ranking, Lead Divisions, Estimated Costs, and Estimated Return on Investment (continued)

	6. Deploy Automated Clearance at SWEFs (tied for #1 priority)	7. Join IFTA and IRP Clearinghouses (#7 priority)	8. Deploy Mobile ITS/CVO Enforcement (#6 priority)	9. Brake Systems Analyzers at SWEFs (#8 priority)	10. Negotiate Regional SWEF Agreements (#9 priority)
Lead Div.	DSP	DMV	DSP	DSP	DSP
Estimated Costs (one-time; new annual)	Help Inc./Prepass: $1,750,000 one-time cost and $175,000 annual maint. cost MAPS Inc.: $3,500,000 one-time cost and $350,000 annual maint. cost (ests. do not include roadway work)	$5,000 one-time cost for IRP. No one-time costs for IFTA. No annual fees for either.	Help Inc/Prepass: $1,081,000 one-time costs (of which $616,000 already in '97-'99 budget) and $93,000 annual maintenance cost MAPS Inc.: do not offer mobile set-up currently	$230,000 one-time cost and $23,000 annual maintenance cost	Minimal travel costs (ongoing)
Estimated Return on Investment	State: • Mainline WIM will increase capture rate for non-compliant vehicles by 50%, with an estimated annual SWEF enforcement revenue increase of $2.2 million. • Increased capture rate from SWEF enforcement will also result in deterred pavement damage estimated at $2.75 million annually. • Improved effectiveness of SWEF program will result in avoided traffic crashes, with associated societal benefits. • NGA Study found low direct savings-to-expenditure ratio in states with automated clearance. Carriers: • ATA Study predicts positive benefit/cost ratios for fleets of all sizes for participation in automated clearance. • MCAC members indicated this project could have efficiency & equity benefits.	State: • Clearinghouses will allow more timely sending and receipt of fee and information transmittals • Electronic transmission will free up an estimated 1 FTE for other processing duties. Carriers: • No direct costs or benefits identified for carriers.	State: • Electronic clearance will allow State Patrol to focus enforcement on non-compliant carriers, resulting in an estimated 50% increase in the capture rate for non-compliant carriers, and an estimated $1.7 million annual increase in mobile enforcement revenue. • Increased capture rate from mobile enforcement will also result in deterred pavement damage estimated at $2.75 million annually. • NGA Study found low direct savings-to-expenditure ratio in states with automated clearance. Carriers: • ATA Study predicts positive benefit/cost ratios for fleets of all sizes for participation in automated clearance.	State: • New devices will reduce time need for brake inspection from 20 minutes to 30 seconds, allowing more vehicles to be checked for this significant safety problem, and resulting in less crashes. • Because of parallel use of automated clearance, brake inspections can be focused on carriers with poor safety records. • New testing systems are safer for inspectors - - no need to physically access underside of truck. Carriers: • No direct costs identified for carriers. However, ATA Study identified labor cost savings to carriers with reduction in time spent on safety inspections.	State: • Regional coordination of SWEF operation and conceptual agreement on SWEF location would increase effectiveness of CVO enforcement efforts in region. Carriers: • No direct costs or benefits identified. However, a better coordinated regional approach to SWEF location and operation could improve efficiency for carriers.

Figure 2. ITS/CVO Projects: Budget and Program Actions

	1. Assessment of IT Needs	2. Electronic Access to IFTA and IRP for Carriers	3. OS/OW Routing and Processing System	4. Complete Long-Range SWEF Plan	5. Join Automated Clearance Consortia
Project Timing	Develop RFP summer, 1998. Hire consultant and convene work group by December, 1998. Final product by June, 1999.	New IFTA and IRP systems being installed. Work on credentialing interface to begin in summer, 1998, with completion by 6/30/99.	LAN-based processing environment now being designed, with installation anticipated by 7/1/98. If funding approved, begin work on automated routing component in mid-late 1999, with completion by 7/1/01.	Reconvene SWEF work group after completion of ITS/CVO business plan. Complete SWEF plan by 12/98.	Service providers have presented their systems. Prepare comparison info for internal briefings and talks with carriers by June, 1998. Select service vendor(s) and begin negotiating contract(s) by 6/30/98, with completion by 9/30/98.
Funds Required	$100,000 for consultant services.	$75,000 to develop and install credentialing interface and $7,500 for annual maintenance of interface.	$1,000,000 to develop, test and install automated routing system and $40,000 annual maintenance costs.	Minimal: in-state travel and printing.	Help, Inc/Prepass: $30,000 (full) or $10,000 (assoc.) for annual membership. MAPS Inc: no direct membership costs yet
'99-'01 Budget Issue Paper?	No	No	Yes	No	No
Potential Funding Sources	• FY 1998 operating budget (joint DMV and DSP) • USDOT model/seed implementation funds • Federal ITS funds	• FY 1999 DMV operating budget • DMV's current ISTEA grant • Motor carrier contribution	• '99-'01 state budget • Federal CVISN funds • ISTEA 2 • Temporary (1-2 yr.) surcharge to carriers for each OS/OW permit issued. • Federal and state improvement funds • Maintenance/Traffic funds	• FY 1998 and 1999 division operating budgets	• FY 1999 division operating budgets (joint DSP and DTID) • Contribution from motor carrier industry

Figure 2. ITS/CVO Projects: Budget and Program Actions (continued)

	6. Deploy Automated Clearance at SWEFs	7. Join IFTA and IRP Clearinghouses	8. Deploy Mobile ITS/CVO Enforcement	9. Brake Systems Analyzers at SWEFs	10. Negotiate Regional SWEF Agreements
Project Timing	Begin planning now in conjunction with other projects (joining consortia, completing SWEF plan, negotiating agreements w/other states). Deploy at 3 SWEFs (Utica, W. Salem, Hudson) in FY 1999. Deploy at 7 adt'l SWEFs (locations TBD) in FY 2000.	Currently in IFTA clearinghouse pilot; expect to join officially after conclusion of pilot in 7/98. Begin discussion with IRP C/H after installation of new IRP system in 7/98. Join IRP C/H by 7/1/99.	Mobile data computers (MDC) being installed, w/completion by 6/30/99. Connect MDC to WisDOT mainframe systems during FY 1999. Phase in electronic screening equipment during FY 2000 and FY 2001.	Dependent upon approval of this technology by FHWA. Estimate installation at SWEFs by 12/31/01.	Currently discussing SWEF coordination possibilities as part of GCM study and contacting other states to develop MOU. Expand discussions in conjunction with SWEF plan.
Funds Required	Help Inc/Prepass: $1,750,000 to deploy at 10 SWEFs ($175,000 per site) and $175,000 annual maintenance cost ($17,500/yr. per site). MAPS Inc: $3,500,000 to deploy at 10 SWEFs ($350,000 per site) and $350,000 annual maint. cost ($35,000/yr. per site)	$5,000 development and installation cost to join IRP C/H.	• $65,000 in consultant/staff time and CPU to connect MDC to WisDOT systems • $63,000 annual maint. for MDCs. • Deploy portable WIM and AVI in DSP districts: Help Inc/Prepass: $400,000 for 10 units ($40,000/unit) plus $30,000 added annual maint. costs ($3,000/unit)	$230,000 for deployment at 10 SWEFs ($23,000/unit) and $23,000 added annual maintenance cost ($2,300 per unit)	Minimal travel costs (ongoing)
'99-'01 Budget Issue Paper?	No	No	Yes; for consultant/staff time, WIM and AVI hardware, and annual maintenance costs	No.	No.
Potential Funding Sources	1st 3 deployments: • FY 1999 op. budgets (joint DSP and DTID) • Carrier contribution 7 adt'l deployments plus annual maintenance costs: • '99-'01 state budget • CVISN funds (deployment) • State and federal improvement funds • Carrier industry contribution	• FY 1999 DMV operating budget • CVISN funds	• FY 1999 DSP operating budget (system linkage) • '99-'01 state budget • Carrier industry contribution • MCSAP funds • Operations testing funds • ISTEA 2 funds • CVISN funds	• MCSAP funds • '01-'03 state budget • State and federal improvement funds • Operations testing funds • Carrier industry contribution	• Division operating budgets.