Driver Violation Notification Service Feasibility Study

U.S. Department of Transportation
Federal Motor Carrier Safety Administration

July 2005

Foreword

The Driver Violation Notification (DVN) Feasibility Study analyzes the design of commercial driver history notification systems – sometimes called Employee/Employer Pull Notice (EPN) or Driver Pull Notice (DPN) programs – and their relationship to highway safety. The DVN systems provide the mechanism for addressing driver-based safety concerns by enabling regulatory agencies to notify employers of changes to a driver's Commercial Driver's License (CDL) record in a timely manner. Employers are not always notified about CDL driver convictions in a timely manner and, therefore, are unable to take immediate and appropriate corrective action. DVN programs attempt to address this basic problem.

This study focused on providing a time-efficient means for notifying employers when their CDL drivers are convicted of driving violations or experience CDL status changes. The DVN Study Team started by developing the concept of a "benefits window" associated with the time between a conviction for a driving violation and the time an employer becomes aware of the convictions and takes action to mitigate the potential negative consequences of high-risk driving behavior. The study illustrates how reducing the time between conviction and notification of an employer can provide opportunities for employers to take action to reduce these consequences.

Currently, ten states offer DVN programs, which provide the basis for assessing program design and success, and for establishing requirements for potential expansion to a national program. A key study component was the conduct of site visits to each of these states. The DVN Study Team conducted a five-stage research program, focused on determining whether an expanded DVN program would help meet the safety and productivity goals for both industry and government. This document presents an Executive Summary of the technical memoranda and analyses prepared for the five tasks of this project.

The report is primarily targeted towards commercial motor vehicle employers that can use these programs, and the states that can create these opportunities for timely notification of driver convictions.

This publication is considered a final report and does not supersede another publication.

Notice

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
In	inches	25.4	millimeters	mm
Ft	feet	0.305	meters	m
Yd	yards	0.914	meters	m
Mi	miles	1.61	kilometers	km
		AREA		
in^2	square inches	645.2	square millimeters	mm^2
ft^2	square feet	0.093	square meters	m^2
yd^2	square yards	0.836	square meters	m^2
Ac	acres	0.405	hectares	ha
mi^2	square miles	2.59	square kilometers	km^2
		VOLUME		
fl oz	fluid ounces	29.57	milliliters	ml
Gal	gallons	3.785	liters	l
ft^3	cubic feet	0.028	cubic meters	m^3
yd^3	cubic yards	0.765	cubic meters	m^3
		MASS		
Oz	ounces	28.35	grams	g
Lb	pounds	0.454	kilograms	kg
T	short tons (2000 lbs)	0.907	megagrams	Mg
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5(F-32)/9 or (F-32)/1.8	Celsius temperature	°C
		ILLUMINATION		
Fc	foot-candles	10.76	lux	lx
Fl	foot-Lamberts	3.426	candela/m2	cd/m2
		FORCE and PRESSURE or STRESS		
Lbf	pound-force	4.45	newtons	N
Psi	pound-force per square inch	6.89	kilopascals	kPa

APPROXIMATE CONVERSIONS FROM SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
		AREA		
mm^2	square millimeters	0.0016	square inches	in^2
m^2	square meters	10.764	square feet	ft^2
m^2	square meters	1.195	square yards	yd^2
ha	hectares	2.47	acres	ac
km^2	square kilometers	0.386	square miles	mi^2
		VOLUME		
ml	milliliters	0.034	fluid ounces	fl oz
l	liters	0.264	gallons	gal
m^3	cubic meters	35.71	cubic feet	ft^3
m^3	cubic meters	1.307	cubic yards	yd^3
		MASS		
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg	megagrams	1.103	short tons (2000 lbs)	T
		TEMPERATURE (exact)		
°C	Celsius temperature	1.8 C + 32	Fahrenheit temperature	°F
		ILLUMINATION		
lx	lux	0.0929	foot-candles	fc
cd/m2	candela/m2	0.2919	foot-Lamberts	fl
		FORCE and PRESSURE or STRESS		
N	newtons	0.225	pound-force	lbf
kPa	kilopascals	0.145	pound-force per square inch	psi

*SI is the symbol for the International System of Units. Appropriate rounding should be made to comply with Section 4 of ASTM E380.

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Project Background

The Driver Violation Notification (DVN) Feasibility Study analyzes the design of commercial driver history notification systems – sometimes called Employee/Employer Pull Notice (EPN) or Driver Pull Notice (DPN) programs – and their relationship to highway safety. The DVN systems provide the mechanism for addressing driver-based safety concerns by enabling regulatory agencies to notify employers of changes to a driver's Commercial Driver's License (CDL) record in a timely manner. Currently, ten states offer DVN programs, which provide the basis for assessing program design and success, and for establishing requirements for potential expansion to a national program.

The basic problem that DVN programs attempt to address is that employers are not always notified about CDL driver convictions in a timely manner and, therefore, are unable to take immediate and appropriate corrective action. One response in resolving this problem is to provide a time-efficient means for notifying employers when their CDL drivers are convicted of driving violations or experience CDL status changes. This action will enable the motor carriers (MC) to take timely corrective action to potentially reduce crash risks caused by at-risk drivers.

To solve this problem, the Federal Motor Carrier Safety Administration's Office of Research and Technology awarded a contract to the Science Applications International Corporation (SAIC) DVN Study Team, which includes the American Transportation Research Institute (ATRI), the American Association of Motor Vehicle Administrators (AAMVA), and the Commercial Vehicle Safety Alliance (CVSA). This study team developed the concept of a "benefits window" associated with the time between a conviction for a driving violation and the time an employer becomes aware of the convictions and takes action to mitigate the potential negative consequences of high-risk driving behavior. The DVN Study Team sought ways to *"close the window"* to gain potential safety benefits.

This activity has been labeled an "Employer Notification Service" or ENS to emphasize the fact that the *employer* is notified (not the driver) and the notification is *not* for *violations* but for *convictions* and *any other events that affect the driving status of the CDL holder* (including CDL withdrawals for any reason). The notification action is a *service* to employers that may be implemented through a variety of systems approaches. Figure 1 shows the DVN "benefits window" and illustrates how reducing the time between conviction and notification of an employer can provide opportunities for employers to take action to reduce high-risk driver behavior.

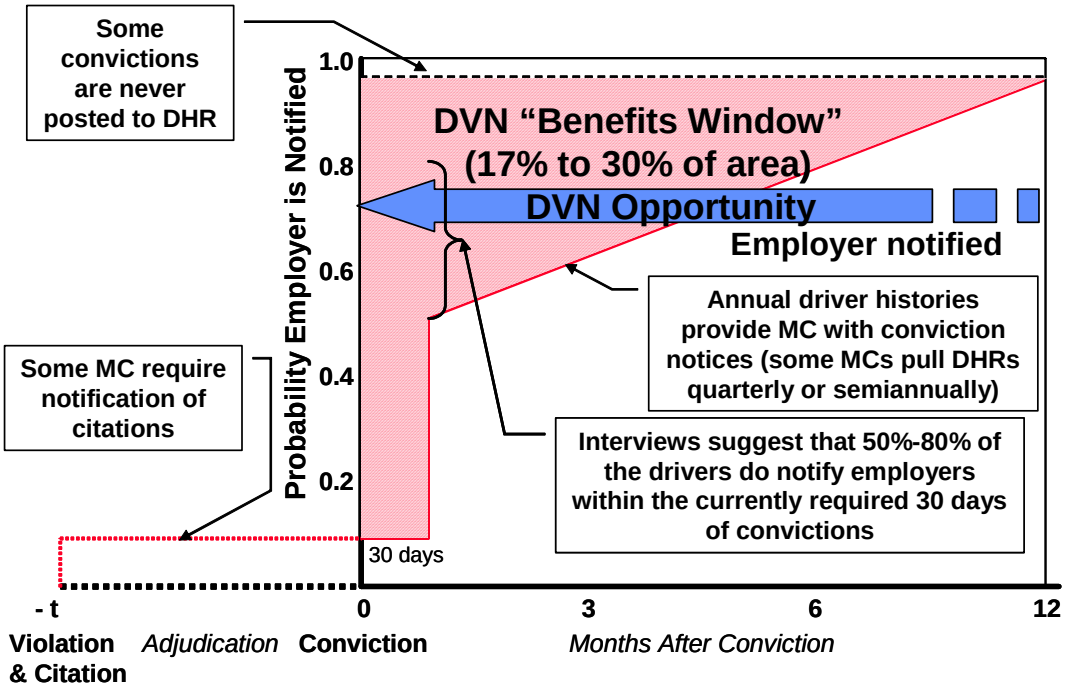

Figure 1. ENS "Benefits Window"

The DVN Study Team conducted a 5-stage research program, as illustrated in Figure 2. This study is focused on determining whether an expanded DVN program would help meet the safety and productivity goals for both industry and government.

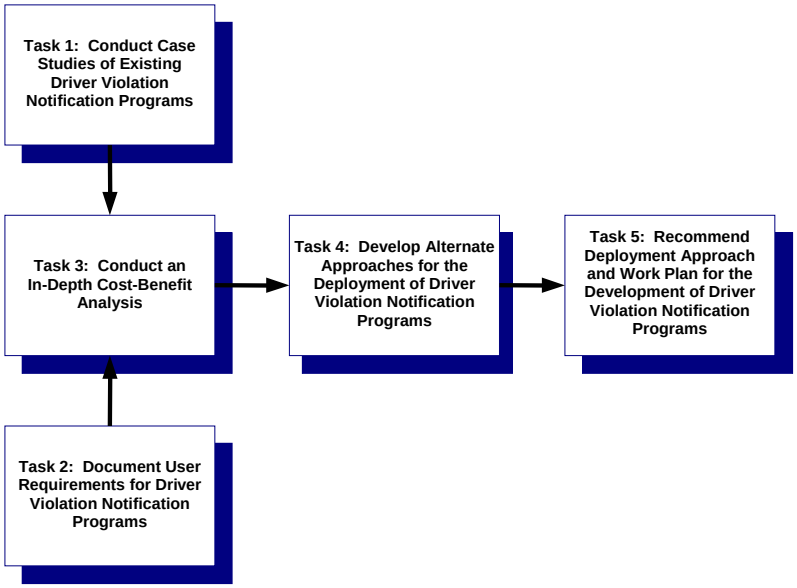

Figure 2. Overview for 5-Stage DVN Feasibility Study.

This document presents an Executive Summary of the technical memoranda and analyses prepared for Tasks 1 – 5 presented in Figure 2. The document is organized into five sections, with each section summarizing the findings and analyses conducted for the particular task.

A key study component was the conduct of site visits to ten states that are identified as already using a DVN-type program. In addition, site visits were conducted in four states that do not yet have DVN programs. The purpose of these visits was to:

- Meet with state agencies to document how existing DVN-type programs are operated and obtain information on their effectiveness.
- Collect information on the cost of each state's existing Motor Vehicle Record (MVR) program as well as other data on the DVN program's impact.
- Meet with state agencies to identify potential implementation issues (technical, programmatic, financial) that would need to be addressed in states without an existing DVN-type program so that a national program could be successfully deployed.
- Meet with the motor carrier industry in each state to obtain their views on existing programs and/or the need for an expanded (i.e., national) program.

The ten states identified as having existing DVN-type programs included Arkansas, California, Illinois, Michigan, Nebraska, New York, North Carolina, Oregon, Virginia, and Wisconsin. The four non-DVN states selected were Iowa, Kentucky, Maryland, and North Dakota. In selecting these states, the DVN Study Team considered states located within the same regional location as the original ten states included in the study (East Coast/Mid Atlantic, Mid West) and with similar characteristics (Rural, Urban, Border). The site visits were conducted in the fall of 2003. A summary of state visits is shown in Figure 3.

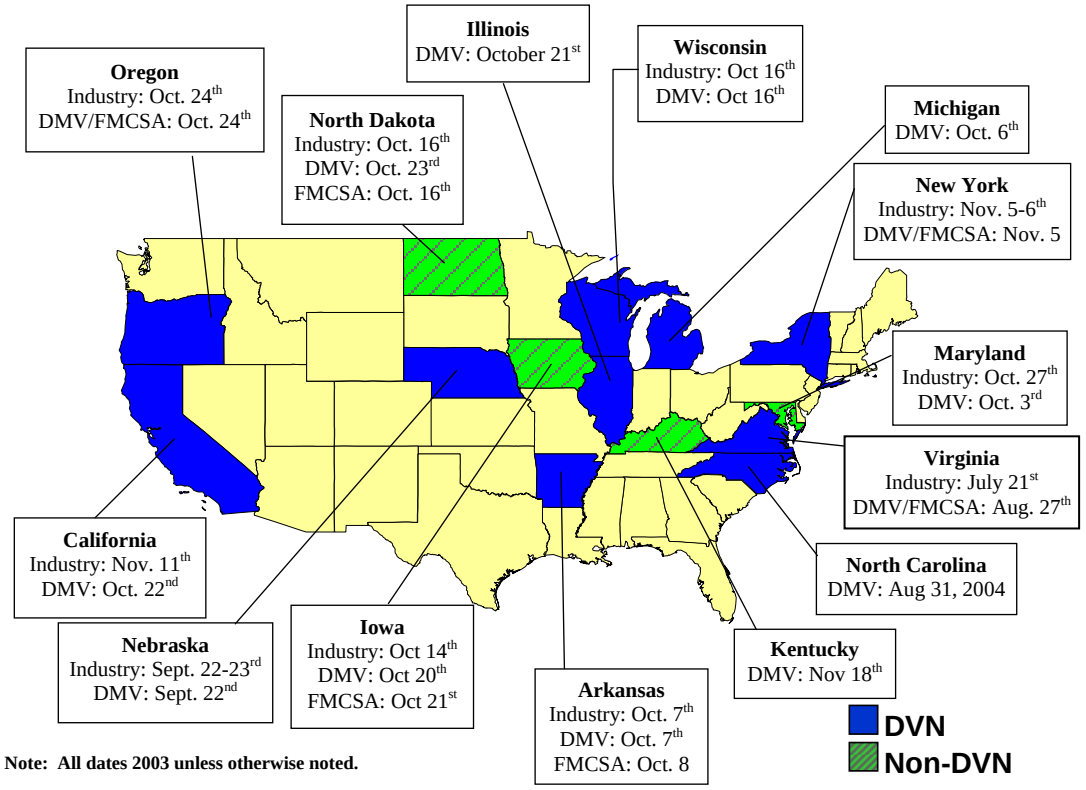

Figure 3. DVN and Non-DVN State Visits.

Task 1 – State Visits: Government Agencies

Task Overview and Data Collection

The DVN Study Team developed an interview guide that was used for the state visits. The interview guides included specific questions for DVN and non-DVN states. Each state was provided with a brief summary of the DVN Feasibility Study and a copy of the interview guide prior to the actual site visit. Interviews were scheduled by telephone and e-mail and interview participants were identified by each state prior to the site visit. Interviews were conducted with representatives from the agency or agencies in each state responsible for implementing the DVN program. In addition, interviews also were conducted with representatives from selected Federal Motor Carrier Safety Administration (FMCSA) division offices.

The DVN Study Team also participated in the Carrier Safety Committee meetings at the AAMVA International Conference in August 2003 and the CVSA Driver Committee meeting in October 2003. The DVN Study Team presented an overview of the DVN Feasibility Study at these two meetings to discuss issues and concerns identified by the two key stakeholder groups.

Summary of State DVN Programs

In general, state DVN programs are designed as employer programs, providing driver monitoring services to any employer whose employees operate motor vehicles as part of their jobs. Most states have limited participation by commercial motor carriers, but have significant participation from local governments. In many states, major customers are third-party service providers who monitor driver performance on behalf of the insurance industry

(ChoicePoint and Explorer) or the motor carrier industry (DAC and License Monitor). The programs are generally designed as voluntary programs with California being the only state that has mandatory participation for all California-issued commercial drivers' licenses (CDLs).

Several other states require that certain types of CDL or other license holders participate. The Illinois program, for example, is mandatory for all school bus drivers. The Virginia program is mandatory for school bus drivers and driver education instructors. The programs vary in size and with the exception of California, do not generally include more than 25 percent of a state's total number of licensed drivers (CDL and non-CDL).

States have used a variety of business models for implementing DVN programs. Some states offer the service directly through the Department of Motor Vehicles (DMV), including the New York License Event Notification System (LENS), the Oregon Automated Reporting Service, and the California Employer Pull Notice Program.

A number of states use vendor-contracted services to provide e-government services on behalf of government. Nebraska (Nebrask@ OnLine) and Arkansas (Information Network for Arkansas) contract with the National Information Clearinghouse, Inc., (NIC) to provide a wide range of e-government services, including a DVN program. The NIC recovers cost through a transaction fee. This fee includes any state-related services charges (such as Driver History Records [DHR] charges), as well as providing a mark-up percentage to cover NIC costs and profit.

In addition, a significant market has developed for third-party service bureaus that purchase DHRs. ChoicePoint and Explorer Information Services purchase DHRs and track driver history on behalf of the insurance industry. License Monitor, Inc., a New York company, established a master account with the New York DMV's LENS program and markets this service to the motor carrier industry. Although a major provider for other services, DAC offers a similar driver monitoring service to the motor carrier industry. All of these vendors (including the NIC e-government model and the service bureaus) offer on-line subscription services. Registration is conducted electronically, with customers providing a list of drivers/employees to be monitored, usually through batch processing. Vendors receive daily record updates from DMVs, and monitor DHRs on a daily basis.

In most states, changes in DHRs are based on judicial action. Most state court systems provide their respective DMVs with a daily update regarding convictions, which are then posted to driver records. Since many states have currently automated daily downloading processes, this data is transmitted electronically from the court system to the DMV legacy system, which automatically updates the driver history records. The DHR data update is generally performed via batch processing within 24 hours after being received from the court.

Currently, some states do have the capability to update DHRs on a real-time basis. A number of states, however, are not yet using or have not yet fully implemented an automated process. For these states, manual data entry processes may result in taking from several days up to more than a month to update DHRs based on court convictions. States generally give priority to processing CDL convictions and post out-of-state CDL convictions to the Commercial Drivers License Information System (CDLIS).

Table 1 presents a summary overview of state DVN programs included in the DVN Feasibility Study.

Table 1. DVN States – Program Summaries

State	Program Name	Why Program Was Started	Who Participates	Mandatory Participants	Who Provides Service	Number of Customers	CDLs Covered	Total CDLs in State	Average Notifications Per Month	Fee Structure	Enrollment Procedure
Arkansas	Driver Watch	Established by INA as part of e-government service	Motor carrier companies		Information Network for Arkansas – third-party e-government vendor (NIC)	20 motor carriers	50	128,000		♦ $50 annual enrollment ♦ $1/month per enrolled CDL ♦ $11 for DHR Issued	Online
California	Employer Pull Notice (EPN)	♦ Established in 1982 to pro-mote driver safety ♦ Mandatory for CA CDL drivers since 1989	Any employer with employees who operate motor vehicles in the course of performing their jobs; includes private and public sector drivers with and without CDLs. All CA CDL drivers must be enrolled.	CA CDL drivers	California Department of Motor Vehicles administers the program in-house	About 48,000 employers	All CDLs	928,882	About 75,000 notices per month are sent to *all* enrolled drivers, including non-CDL drivers who represent approximately 40% of the enrolled drivers.	♦ $5/driver to enroll ♦ $1 per notification (DHR)	Hard copy
Illinois	Safe Ride	Response to exposure by local newspaper on school bus drivers	School bus operators	School bus drivers	Secretary of State – Driver Services Department			526,139	245	♦ Annual permit fee – $4/driver ♦ School bus certification on CDL–$20	Fax Telephone Hard copy
Michigan	Subscription Service Program	State initiative in response to Commercial Vehicle Safety Act of 1987 notification requirement	♦ Insurance companies ♦ Explorer ♦ ChoicePoint ♦ TML-driver checks for car rental companies. ♦ General Motors ♦ U.S. Military	♦ Limousine drivers ♦ Driver Education teachers licensed by BDVR	Secretary of State-Bureau of Driver and Vehicle Records	♦ 1,187 commer-cial (paying) customers ♦ 930 govern-ment agencies	149,843			♦ $7 per record ♦ $8 for certified records	Online Hard copy[1]
Nebraska	Driver's License Rec-ord Search	Legislative Mandate	Explorer Information Services		Nebrask@OnLine – third party e-govern-ment vendor (NIC)					♦ $0.06 for every name submitted to	Online

[1]Type of enrollment and notification process used depends on customer's IT capabilities.

State	Program Name	Why Program Was Started	Who Participates	Mandatory Participants	Who Provides Service	Number of Customers	CDLs Covered	Total CDLs in State	Average Notifications Per Month	Fee Structure	Enrollment Procedure
Nebraska			ChoicePoint Werner Trucking Domino's Pizza Schools, law firms, and private detectives.							DMV through Nebrask@OnLine at www.nebraska.gov ♦ $3.00 for every MVR generated	
New York	License Event Notification Service (LENS)	♦ Expansion of critical driver program ♦ Y2K created opportunity to develop LENS	♦ Third-party service providers (ChoicePoint, Explorer, License Monitor)[2] ♦ New York City Taxi Commission ♦ Government agencies ♦ Private companies		DMV	687			♦ Accidents: 8403 ♦ Accident Prevention Course completion: 2,700 ♦ Conviction: 4,080 ♦ License expiration (both types of notices): 2,250 ♦ Restorations: 1,600 ♦ Suspensions and revocations: 4,000	Enrollment – ♦ 6/driver ♦ Minimum payment of $50 per account ♦ $1/notice generated	Online Hard copy
North Carolina	Transportation Notification System	Motor coach industry concerns about obtaining accurate reports from drivers on convictions	Pilot Project: 28 government agencies and seven motor coach companies are participating at DMV invitation	None	Division of Motor Vehicles, NC DOT	35	2,214[4]		32 to 35	None – pilot project	Online Hard copy
Oregon	Automated Reporting System (ARS)		♦ Any Oregon employer (public or private sector) that obtains permission from employees who drive as part of their employment for their employer	None	Oregon DMV	671, including both CDL employers and non-CDL employers	20,404	Over 400,000	About 500 (25/day) for both CDL and non-CDL drivers	♦ $70 account setup ♦ $2 per driver to add or remove a driver ♦ $3 per 'court print' record	♦ Qualify to receive driver information under driver privacy protection laws

[2]Master account holder – service provider to motor carrier industry.

[3]Based on May 2002 through May 2003 data.

[4]Pilot project includes CDL and non-commercial drivers.

State	Program Name	Why Program Was Started	Who Participates	Mandatory Participants	Who Provides Service	Number of Customers	CDLs Covered	Total CDLs in State	Average Notifications Per Month	Fee Structure	Enrollment Procedure
Oregon			to monitor their driving records ♦ This is a voluntary program for all participants							provided to account holder	♦ Complete hard copy enrollment form
Virginia		Legislative mandate	♦ Public school bus operators ♦ Mass transit companies ♦ Private school bus and day care facilities ♦ Commercial and private businesses (driver education instructors, motor carrier industry) ♦ Governmental entities	School bus operators and driving instructors	DMV	1,466			800	♦ $25 enroll-ment fee ♦ $9 per record ♦ No fee for public agencies	Hard copy
Wisconsin	Employer Notification Program	Legislative mandate		School bus operators and driving instructors	DMV	1,055 employers	70,054	250,000		♦ $20 annual enrollment fee ♦ $2 per driver added ♦ $5 per abstract.	Hard copy

State DVN Program Operational Components

The operational components of a state DVN program are summarized in the following subsections.

Enrollment

An employer enrolls with a state or a vendor, and provides the license numbers of all employees and drivers to be included in the program. States require that employers obtain a signed waiver from each enrolled employee to permit employers to receive driver history records. Most states provide employers with DHRs at the time of enrollment.

Driver History Monitoring

The DMV updates DHRs as conviction information is received from the judiciary. Information from a state's judiciary is provided both electronically and in hard copy. For states receiving information electronically, DHRs are updated within 24 hours. For states receiving information in hard copy, the process takes several days to a week, although priority is given to updating CDL DHRs.

Notification

When a change in a DHR is identified, notice is provided as follows:

- The DMV legacy system generates a notice of change in history or a complete DHR. The document generated is then printed in hard copy and mailed to the employer or sent electronically to an employer.
- Third-party vendors, who monitor DHRs on behalf of employers, insurance companies, or other businesses, are generally notified electronically. These vendors then notify the employer.
- If an employer receives a notice of a change in a DHR, the employer then has the option of obtaining a complete driver history for the employee/driver in question.

Account Updates

Employers are responsible for notifying a state DMV or a third-party vendor regarding any changes in employee/driver eligibility, including additions and deletions. If the account is not updated, most states or third parties will generate notices and bill an employer for those drivers/employees who may no longer be with the employer. Employers are generally provided with a periodic account statement (most commonly on an annual basis) that lists all drivers/employees included in the employer's account.

Flexible Enrollment

- *Electronic Enrollment*: Web-based applications for small- and medium-sized employers and batch file processing application for large-scale end.
- *Paper Enrollment:* Paper applications for smaller companies or companies with limited or no information technology capabilities, and walk-in, fax, or telephone enrollment using paper applications.

Driver Tracking

States assign each employer a unique identifier used to link individual drivers to a specific employer account. Employers are responsible for notifying DMVs regarding all driver additions and deletions.

Annual Account Update

States provide each program participant with an annual statement listing all drivers enrolled through a particular employer. Employers use this annual statement to update account records.

Account Audits

Some states periodically audit program participants to ensure that the information provided to the DMV (both at the time of application and ongoing information) is accurate, and that the employer is complying with program requirements.

Electronic Signature

States using electronic enrollment capabilities enacted legislation authorizing electronic signatures.

Signed Waivers Authorizing Driver History Pulls

Employers are able to obtain a DHR as part of the employment screening process. However, states require that employers obtain a signed waiver from each individual driver for whom an employer wishes to monitor that driver's history record.

Periodic Invoicing

States generally send an invoice to employers listing all account transactions over a specified period of time (e.g., monthly, quarterly). This helps employers match service charges with records received. The invoice also makes payment easier for employers by incorporating the service as a regular monthly obligation and the cost of doing business.

Electronic Notification

The notification method most preferred by employers is to receive an electronic notice for changes in a driver history record or to receive an electronic DHR copy.

Outreach

Several states have engaged in extensive outreach activities to promote their driver-monitoring programs. Some promotional activities include posting information on the Internet, participating in industry and association meetings to promote a driver-monitoring program, and mass mailings of printed material to potential customers.

Task 2 – State Visits: Motor Carrier Industry

Task 2 (b) of the Driver Violation Notification (DVN) Service Feasibility Study required that the DVN Study Team develop documentation regarding the motor carrier industry's DVN user requirements.

Data collection techniques supporting this task included focus groups, interviews, and a motor carrier survey. Data was collected in ten states currently using a DVN-type program. The DVN Study Team used the focus groups and interviews to obtain information on these existing programs and their effectiveness, to identify particular user requirements, and to identify lessons learned and best practices. Focus groups were conducted in Arkansas, California, New York, Oregon, Virginia, and Wisconsin. Telephone interviews were conducted with the state trucking associations in Michigan and Illinois, and an interview was conducted with the Nebraska state trucking association in person. The same data collection techniques were used to collect information in the four non-DVN states (Maryland, Kentucky, North Dakota, and Iowa) selected for the study, as well.

Focus group participants were recruited through the each state's trucking association. Focus group and interview guides for both DVN and non-DVN states were developed prior to state visits and/or interviews. Focus groups were conducted by two DVN Study Team members, with one member serving as facilitator and the other serving as scribe. The results of the focus groups and interviews were used to develop the survey instruments. Two surveys were developed: one for carriers in DVN states and one for carriers in non-DVN states. Surveys were distributed through the state motor carrier associations.

Study Findings

Both DVN and non-DVN participants expressed support for a national DVN program. The motor carriers understand the importance of safe performance as a good business practice. The carriers' understanding and practices related to safe performance are underscored by including certain safety criteria for hiring drivers and terms of employment. All participants indicated they pulled a motor vehicle record (MVR) at the time of hire and then at least once a year as Federally-mandated. A surprising number of carriers pulled additional MVRs more frequently, with the greatest frequency being quarterly.

Approximately two-thirds of the carrier participants had formal safety policies in place, ranging from severe penalties for violations to less restrictive disciplinary actions. Following are examples of typical safety policies:

- Termination would result from two moving violations in 1 year or three moving violations in 3 years.
- A driver may be required to report a citation within 24 hours, or the next business day that the driver may be on the schedule. Some motor carriers assign a point value to violations, and after accumulating a certain number of points, the driver is terminated.

DVN participants felt that the timeliness of the reports generated by their DVN programs had an impact on safety. Although not yet quantified, carriers do believe that participation in a DVN program allows them to learn about and respond to convicted violations much more quickly than is possible by receiving only the mandated annual MVR. Non-DVN participants were enthusiastic about the potential to decrease liability, while at the same time increase their safety level by participating in a DVN program. Overall, the majority of carriers felt DVN programs represented a "win/win" proposition.

Participants expressed concern that many drivers do not report either citations or convictions. The motor carriers have no way to identify any change in CDL status until the annual MVR pull. An additional concern is that drivers will report a citation or conviction, but the same event is not posted to the DHR in the state issuing the driver's CDL. Thus, while the driver has submitted the report as required by law, the DHR is not updated, and an employer is unable to verify the driver's report for an infraction or conviction.

User Requirements

Specific user requirements were identified through the data collection process.

DVN Program Structure

Motor carriers expressed a preference for a national program with a centralized registration and notification system. Carriers indicated that a decentralized program requiring registration in multiple jurisdictions would be complex and would not attract industry members.

Motor carriers also indicated a preference for a program that enabled them to register via the Internet, and that they preferred to receive e-mail notification to any type of paper notification.

DVN Notice Content

Motor carriers stated that they would prefer to receive a complete DHR rather than a notice stating that a DHR had changed and that the motor carrier needed to request a copy. The consensus was that receiving the information in one step rather than two or more steps would be more efficient and timely.

Motor carriers also stated that they would like to obtain information on citations as well as on convictions. In addition, motor carriers stated that they would like to receive information such as address changes, CDL expiration, and positive drug tests.

DVN Program Pricing and Payments

Participants were comfortable with the price structures of the New York and California programs. These programs were structured around a $5 per driver fee and a $1 per notice generated fee. These programs do not have an employer enrollment fee. Motor carriers stated that $10 per driver or higher would be priced too high, and preferred to be invoiced for account activity each month.

Motor carriers stated that the preference was a program providing a standardized billing process, such as a monthly invoice, rather than a system that required payment for each individual transaction. There was also a stated preference for paying invoices electronically, through such venues as credit card or electronic funds transfer.

DVN Program Participation

A considerable number of participants would prefer that a national program be mandatory to create a level playing field between all carriers.

The motor carriers indicated that there should be some type of incentive for enrollment in a DVN program. Incentives suggested included exempting an employer from having to do an annual MVR, possible premium reductions or a slowed rate of increase from insurance providers, or factoring program participation into a carrier's safety rating.

Motor carriers widely agreed that a nationwide DVN program would require a significant outreach effort to educate carriers and promote participation.

Data Integrity

Motor carriers expressed concern about data accuracy, specifically that DHRs provided by states might contain errors. The motor carriers want to ensure that a process is established to enable them to correct inaccurate information.

Additional concerns were expressed by the motor carriers regarding who has access to what data, and how that data will be used. The motor carriers want to ensure that data is not incorrectly used or that proprietary data about a company and its drivers is not made available to competitors.

Task 3 – Cost/Benefit Analysis

The Cost/Benefit Analysis detailed in the Task 3 Technical Memorandum was focused on determining the economic feasibility of expanding DVN programs on a nationwide basis. Task 3 draws upon results of previous tasks:

- The convictions notification processes, costs, and issues documented in the Task 1 report;[5] and the motor carrier user requirements for a DVN system;
- Their perceptions of effectiveness of current DVN and other state or third-party-based notification systems;
- Their standard safety management practices in dealing with employee convictions; and
- Their willingness to pay for notification of driver performance documented in the Task 2 report.[6]

The results from these two tasks provide valuable insights into current and desired DVN program capabilities, a baseline estimate of DVN program costs, an assessment of potential use of DVN notifications to enhance motor carrier safety programs, and a sense of what motor carriers and other DVN customers might reasonably expect to pay for timely driver conviction notification.

Available costs and benefits data for DVN programs are mostly estimated and anecdotal, often lacking insight into specific DVN program costs.[7] Motor carriers' perceptions of benefits are derived primarily from focus group and individual company interviews and are not intended to represent views of the entire motor carrier population. Nonetheless, these interviews and

[5]DVN-States and Non-DVN States, Task 1 Technical Memoranda Deliverables, "State DVN Processes and Best Practices;" and "Volume 2 – State Visit Case Studies." DRAFT January 2003, SAIC.

[6]DVN-States and Non-DVN States, Task 2 Technical Memorandum Deliverable, "Documentation of User Requirements for Driver Violation Notification Programs." DRAFT January 2003, SAIC.

[7]Task 1 described the difficulty most state agencies have in breaking out DVN-specific costs from the costs for overall program or departmental activities.

focus groups help frame the key issues for analysis of economic feasibility and identify potential deployment models for a national DVN program. Safety benefits, however, are derived from analysis of driver convictions and accident data contained in national data systems.

The benefit of a DVN program accrues during the 12 months following a driver's conviction. Results from Task 2 indicate that some portion of drivers report their violations (prior to conviction) to employers; other drivers report their convictions within the 30 days required by law. Together, this may account for between 50 and 80 percent of all convictions posted to DHRs being reported within 30 days of the conviction.

Employers learn of other convictions over the succeeding year during the required annual driver history review. The DVN "benefits window" is defined as the time between posting a conviction to a driver history and the time the employer learns of the conviction. This window specifically refers to the time after convictions are posted to DHRs, during which employers are typically unaware of the conviction, and less likely to take action to remove unsafe drivers from the road or to take other action to modify unsafe driving behavior.

The hypothesis for this analysis is that if conviction history is related to the likelihood of a crash, then eliminating or reducing the timeframe of the DVN "benefits window" will result in fewer crashes and associated injuries and fatalities. A DVN program can reduce the timeframe during which an employer is notified, which then reduces public exposure to poor driver behavior. This difference in notification time, combined with the differential in crash risk for drivers with convictions, can result in reduced crashes, injuries, and fatalities, as noted in Figure 4.

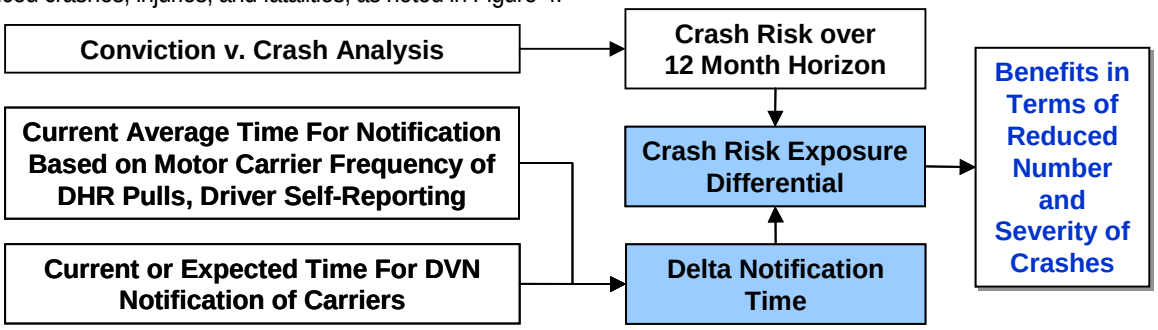

Figure 4. Overview of Benefit Assessment Approach

The cost assessment approach shown in Figure 5 examines costs from both public and private sector perspectives. This approach is derived by drawing on information from existing state DVN programs and national programs similar in scope to estimate design and implementation costs for a national DVN program. Assuming pricing would reflect program cost, these cost estimates are used to develop a ratio of cost per conviction notification for comparison with overall benefit per conviction notification.

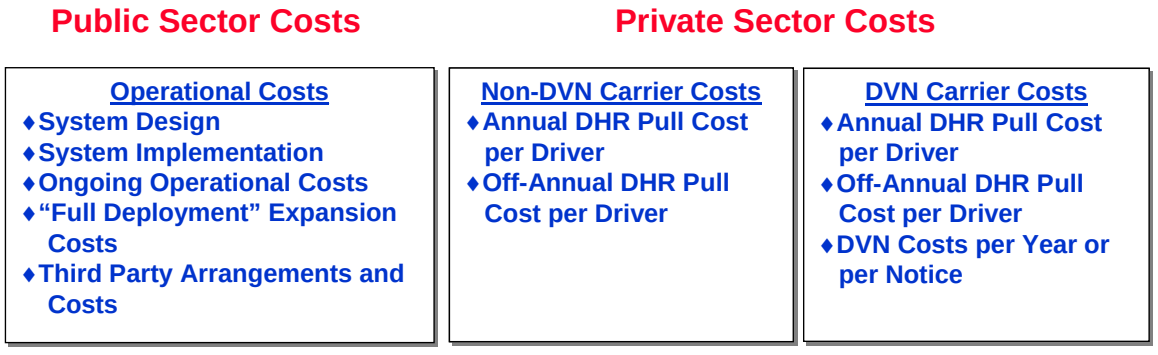

Figure 5. Overview of Cost Assessment Approach

Two analyses were conducted for this research effort. The first analysis used data from national commercial vehicle and CDL databases to assess the relationship between previous serious convictions or crash involvement for two sets of drivers involved in fatal crashes. The two sets were defined as drivers with a conviction or involvement in a crash within 1 year of the

fatal crash, and those in which the most recent conviction or involvement in a crash was more than 1 year prior to involvement in the fatal crash.

This analysis confirms the hypothesis that poor driving behavior as demonstrated by ***prior convictions and involvement in crashes increase the risks of involvement in future crashes***. This result was obtained by examining 14,491 fatal accidents reported in the Fatal Accident Reporting System (FARS) for the calendar years 2000 through 2002. The analysis examined the occurrence of previous serious driver convictions or crashes for incidents involving two driver populations: those with a crash or serious driving conviction within 1 year prior to involvement in a fatal crash and those without a crash or serious driving within 1 year of their involvement in a fatal crash. The analysis further established potential risk factors for the assumed maximum exposure window of 12 months, the maximum time period between a motor carrier's annual driver record pull as required by regulation.

This analysis shows that among drivers involved in fatal crashes, those with convictions, suspensions, or crashes within the 12 months prior to the fatal crash had overall driving records that were significantly worse than the drivers with no convictions, suspensions, or crashes within the prior 12 months. The results of this analysis are shown in Table 2.

Table 2. Driver History Versus Last Crash, Suspension, or Conviction

Last Crash, Suspension, Convictions within 1 Year of Fatal Crash	*Observations*	*Previous DWI Convictions*	*Previous Other Harmful MV Convictions*	*Previous Recorded Accidents*	*Previous Recorded Speeding Convictions*	*Previous Recorded Suspensions & Revocations*
Yes	5,007 (35%)	3.5%	49.2%	34.0%	54.1%	15.8%
No	9,484 (65%)	0.5%	9.6%	8.3%	11.3%	3.1%
Ratio		6.7	5.1	4.1	4.8	5.2

The second analysis conducted also used data from national CMV and CDL databases and is the key analysis used to define DVN benefits. This analysis examined relationships between prior conviction severity and severity of subsequent crashes; between crash risk given a conviction within 1 year of a crash event versus crash risk when there were no convictions during the year prior to the crash; and the distribution of crash events over a 12-month period following the last conviction prior to a crash occurrence. ***The analysis specifically defined the risk differential of crash involvement within the previously described "DVN Benefits Window."***

This analysis focused on identifying the difference in crash risk between drivers with no convictions in the prior 12 months and those having had a crash within 12 months of the most recent conviction. This analysis also examined the distribution of crashes over the 12 months subsequent to a conviction to define where in the DVN Benefits Window crashes occur. Further examination identified the relationship between the severity of convictions and the severity of subsequent crashes to assess relative crash risk based on severity of conviction.

The data sources used for this analysis included Motor Carrier Management Information System (MCMIS) driver and crash data, and the Commercial Drivers License Information System (CDLIS) conviction data. Records for a total of 129,306 drivers were examined for the time period of April 1, 2000 through May 31, 2003, and the analysis assumed that these drivers have been in the driver population throughout the analysis period.

Data for the entire sample of 129,306 drivers used in this analysis were examined for convictions occurring between April 2001 and March 2002 and 1 year of crashes, April 2002 to March 2003. This analysis shows a relationship between convictions and the likelihood that a driver experiences a crash during the subsequent 12 months. For those drivers with no convictions between April 2001 and March 2002, 2.17 percent had one or more crashes. For those drivers who had one or more convictions, 2.99 percent had one or more crashes, indicating that drivers with convictions have crashes at a rate that is about 37 percent higher than those without convictions. These results are statistically significant at the .0001 level.

To confirm these results, this same analysis was completed with the 129,306 drivers, using the 1-year period of convictions from April 2000 to March 2001 and the 1-year period of crashes from April 2001 to March 2002. Again, the analysis shows a relationship between convictions and the likelihood that a driver experiences a crash during the subsequent 12 months. For

those drivers without a conviction between April 2000 and March 2001, 1.86 percent had one or more crashes. For those drivers who had one or more convictions, 2.80 percent had one or more crashes, at a rate 50 percent higher than drivers without convictions. These results are also significant at the .0001 level. The overall lower conviction and crash rates in this earlier data may reflect the fact that some of the 129,306 drivers identified in the April 2003 data may not have been active drivers during the April 2000 to March 2002 period of this earlier analysis.

This analysis validates the relationship between a conviction and the likelihood that a driver is involved in one or more crashes in the 12 months subsequent to the conviction. The analysis showed that the fraction of drivers having one or more crashes within the 12-month period following a conviction is 0.029859. The same fraction for drivers with no convictions in the previous 12 months is 0.021745. The difference in these two fractions is 0.008114. This 0.008114 difference in crash likelihood within a 12-month period bounds the potential benefit of a DVN program compared to an annual driver record pull and the current state of intervention effectiveness by all motor carriers employing drivers in the sample size. This factor, multiplied by the number of convictions nationally, represents the maximum potential DVN benefits, in terms of reducing the number of drivers involved in crashes.

CMV facts defined on the FMCSA website note that there are between 3.0 million and 3.3 million employed CDL drivers in the United States.[8] If the likelihood of a conviction for these drivers is comparable to that found for the 129,306 drivers used in the analysis described above (0.280505 for drivers in the April 2001 to March 2002 period), the upper limit on crashes avoided can be estimated as follows:

> 3.0 million drivers × 0.280505 = **841,515 drivers with convictions per year** for all employed CDL drivers.[9]
>
> **841,515 drivers with** convictions × 0.008114 crash likelihood differential for drivers with convictions = **6,828 fewer drivers with crashes/year**

Assuming that these drivers would have had at most one crash in the 12-month period following a conviction, the associated reduction in loss of life and injuries can be estimated using findings from previous studies. An analysis of 5 years of large truck crash data (1996 through 2000) available from the Volpe Center shows that on average:

> 1.1 percent of crashes were fatal crashes with 1.17 persons killed per crash.
>
> 22 percent of crashes were injury-related with 1.46 persons injured per crash.

Applying these factors to the baseline for total crashes avoided based on total drivers with convictions translates to approximately 88 lives saved and 2,166 injuries avoided per year:

> 6,828 crashes avoided × 1.1% fatalities × 1.17 fatality/crash = **88 lives saved**.
>
> 6,828 crashes avoided × 22% crashes with injuries × 1.46 injuries/crash = **2,193 injuries avoided**.

However, since this estimate is based on total employed commercial drivers, including those who may not actually operate commercial vehicles as their primary occupation, this is an upper limit on the maximum potential safety benefits.

Based on the work of Zaloshnja, Miller, & Spicer for FMCSA in 2000,[10] the average cost of large truck crashes was estimated at: $3,419,202 for fatal crashes; $217,000 for injury-related crashes; and $11,300 for property-damage only crashes (in 1999 dollars). Using the Consumer Price Index to inflate these crash costs to 2004 dollars, the estimated costs of large truck crashes are:

- Fatal $3,800,700 per crash with one or more fatalities

[8]Accessed from: http://www.fmcsa.dot.gov/factsfigs/cmvfacts.htm.

[9]According to some estimates, about half of all convictions are in-state convictions and only about half of out-of-state convictions are actually reported to the issuing state. If this is the case, and approximately 215,000 out-of-state convictions are reported through CDLIS each year, the estimated total convictions of 841,515 per year is consistent with these estimates. See Appendix B for a review of an analysis of reporting out-of-state convictions via CDLIS.

[10]From: "Cost of Large-Truck and Bus-Involved Crashes, Final Report", for Federal Motor Carrier Safety Administration, Zaloshnja, Miller, & Spicer, 2000.

- Injury-Related $241,300 per crash with one or more injuries
- Property-damage-only $12,560 per crash with property damage only

Given the finding that the presence of a conviction does not significantly impact the severity of the crash, the following benefit calculation is used:

Total Baseline Benefit

= value of fatalities avoided + value of injuries avoided + value of property damage avoided

Upper limit on benefit

= (6,828 crashes avoided) × [(1.1% fatals x $3,800,700/fatal crash) + (22% injury-related x $241,300/injury crash) +

(76.9% property-damage-only × $12,560/property damage crash)]

= $714 million per year, or approximately $848 in avoided crash costs per conviction notification ($714 million/841,515 convictions).

The DVN Study Team recognizes that the statistical relationships and differential probabilities for crash occurrence are derived from a large sample of drivers and their motor carrier employers that represent the *status quo* for an important segment of the motor carrier industry. These statistical relationships are recognized in terms of current levels and timeliness of notification and levels of effectiveness of remedial safety management actions.

This notwithstanding, baseline benefits may not be realized because some motor carriers already learn of convictions shortly after they occur. Task 2 findings suggest that 50 to 80 percent of motor carriers receive voluntary notification of convictions and changes in CDL status within at least 1 month of occurrence.[11] This leaves the possibility of eliminating the 30-day delay for many motor carriers and, for other motor carriers, the additional 11-month window during which an annual driver record pull reveals a previously undiscovered conviction. Assuming the annual driver history reviews are uniformly distributed over the 12-month period following a conviction, the expected time between conviction and the employer's review of the driver history is about 6 months, with the likelihood of the employer learning of the conviction increasing linearly with each month (see Figure 1 for the DVN Benefits Window). The proportion of the area in Figure 1 that falls in the DVN Benefits Window is a reasonable discount factor to be applied to the baseline benefit to account for the fact that 50 to 80 percent of motor carriers learn of convictions within 30 days of the conviction. Using this approach, if motor carriers learn of 50 percent of the convictions within 30 days, the DVN Benefit Window is about 30 percent of the total area. If motor carriers learn of 80 percent of all convictions within 30 days, the DVN Benefit Window is about 17 percent of the total area.

Additionally, about two-thirds of the motor carriers providing information to this study have documented procedures for the remediation of poor driving behavior through the adoption of "best" driver management programs, which would enhance the overall effectiveness of a DVN program. However, the same could be said for the *status quo.* Therefore, this variable will be assumed to remain unchanged in this analysis.

Assuming that the DVN program benefits are achieved through more timely notification and that motor carriers use the notification with 100 percent effectiveness, the overall improvement in effectiveness of a DVN-enhanced safety management program can be estimated based on the expected percentage of motor carriers that would learn of convictions earlier than they do now.

Estimated realizable benefit

= (Baseline Benefits) × (discount factor for current conviction notification practices)

Using the baseline benefit of $835/conviction notice, the estimated realizable benefit is between $144 (reflecting a 17 percent DVN Benefit Window) and $255 (reflecting a 30 percent DVN Benefit Window) per conviction notice provided to motor carriers.

[11]Some motor carriers require reporting of *violations* as a condition of employment and are actually aware of the impending conviction before it actually occurs.

Using the estimated total annual convictions shown above of 841,515, a benefit range is calculated to fall between $121 million (841,515 × $144) and $214 million (814,515 × $255) per year in avoided crash costs, with a midpoint estimate of $168 million per year, *assuming motor carriers use this new information to correct driver behavior so that drivers with convictions are at no greater crash risk than the overall commercial driver population*. Therefore, given current conviction notification practices, DVN benefits range from a minimum of $121 million to a maximum of $214 million per year in potential crash avoidance benefits.

The same discount factors can be used to estimate the *minimum* lives saved and injuries avoided:

> Estimated number of lives saved
>
> = (Baseline lives saved) × (discount factor for current conviction notification practice).
>
> Estimated number of injuries avoided
>
> = (Baseline injuries avoided) × (discount factor for current conviction notification practices).

This estimate for total crashes avoided based on total convictions translates to approximately 15 lives saved (88 lives saved × 17%) and 373 injuries avoided (2,193 injuries avoided × 17%) per year based on conservative estimates of the potential benefit.

One component of DVN costs is the expense for developing or modifying information systems and the supporting personnel and other administrative costs to provide the capabilities for collecting conviction information. Other costs include assigning the convictions to drivers and their employers, and delivering conviction notification to authorized parties. All of these costs are first broken into system development and deployment expenses; then into the costs of ongoing operation and maintenance.

As previously noted, the level of cost accounting across the DVN provider states is variable and often inadequate for the specific assigning of costs to a DVN program, which may fall under the systems development and operations budgets of several other broader agency activities. For a DVN state-by-state estimation of costs, it is assumed that the "loaded" notification charges for the service fully reflect all recapture of initial system investment plus ongoing operational costs. With this in mind, data was considered complete enough to develop fully loaded DVN provisioning costs for the states of Michigan, New York, and Virginia.

These costs were developed using the DVN rate structures, numbers of participating companies and registered drivers, and levels of notifications issued by the states. Across these three states, the range of all-inclusive charges is $7.00 to $14.61 per notification. These charges are in addition to the costs associated with annual or sub-annual MVR pulls by carriers. It should be noted that these are representative of effectively pilot or relatively small deployments that are sub-optimized in terms of volume efficiencies. Even at these rates, given the level of conviction notifications observed through the CDLIS center and the minimum calculated potential benefits of more timely notification in terms of crashes avoided ($141 per notification), the following minimal benefit cost ratio is calculated:

> *Benefit ($144/notification): Cost ($14.61/notification) = 9.9:1 benefits over costs could be achieved over current practices, through a nationally deployed DVN program.*

On a macro-level, the implementation of the system, known as DRIVerS, is intended to combine the functions of the CDLIS, the Problem Driver Pointer System (PDPS) and the Driver License Reciprocity System (DLR). It is anticipated that DRIVerS will be a distributed database system with a central pointer file like CDLIS and encompass more than 200 million records. It is expected that this deployment will cost $7.8 million between the CDLIS central site and participating jurisdictions. Although encompassing many system improvements that could readily support a DVN process, experts suggest that this model for enhanced driver record management could be used as a potential maximum cost for the deployment of a national DVN capability.

Using this figure, a baseline cost of DVN deployment, assuming a 10-year system life and assuming minimum potential DVN benefits in cost avoidance of crashes, the following payback period and benefit/cost ratios for DVN deployment is calculated:

> Minimum Benefit / Maximum Cost Scenario: $121 million benefits/year versus $78 million investment, with a payback period of less than 1 year.

Benefit/Cost Ratio = $121 million / $7.8 million per year = 15.6

To date, neither state agencies nor motor carriers have measured DVN program benefits in a comprehensive manner. Stakeholders generally agree that more timely information on driver performance can reduce crash risk. For state licensing agencies, DVN programs are seen as an important information service to motor carriers. Motor carriers view more frequent review of driver records, whether through third-party service providers, carrier-initiated pulls with state licensing agencies, or enrollment in a state DVN as one of many tools in an overall effective safety management program. In this sense, DVN benefits increase when they are part of an overall systems approach to motor carrier safety management.

Achievement of the benefits of a DVN program is defined by current operational constraints and stakeholder opinions regarding what the functionalities of the program should include and what the market (the motor carrier end users of a DVN program) will bear in terms of pricing and trade-offs compared to current programs. These are well documented in the Tasks 1 and 2 deliverables. To summarize these concerns and recommendations, a DVN program must address:

- *Cost-Effectiveness:* Motor carriers have voiced a pricing preference of annual costs of $5 per driver fixed fee and a transaction fee of $1 per notification. Additionally, 75 percent of motor carriers providing input to the study are in favor of replacing the requirement of an annual driver record pull in favor of DVN exception-based reporting. The remaining 25 percent of carriers providing their input would be willing to maintain the annual driver record pull, in addition to participation in a DVN program.
- *Timeliness:* The benefits of a DVN program can only be fully realized through timely processing of "driver-involved events" and delivery of notification of the event to employers. The information is time sensitive – for every day that an "at risk" driver operates, safety is compromised.
- *Programmatic Effectiveness:* To fully realize the potential benefits of a DVN program, issues relating to full posting of all changes in driver status and convictions need to be available to motor carrier employers. Well documented efforts are underway to improve intra- and inter-jurisdictional reporting of driver performance and CDL status. Opportunity exists to leverage these efforts in the development of a national DVN program.
- *Resource Constraints:* The ability to develop and offer new motor carrier services is constrained by current levels of state funding, either through investment in the active pursuit of new information services or the potential loss of legacy services currently providing revenue for agencies. These issues need to be mapped to the goals and likely implementation scenarios for a DVN program to effectively manage change with a minimum amount of disruption to the status quo, while maximizing attainment of potential DVN-related benefits.

Task 4 – Develop Alternate Approaches

System Objective

The objective of the CDL Employer Notification Service (ENS) established by the DVN Study Team, as derived from the findings of Tasks 1 through 3, is to e*nable the jurisdiction of record to provide accurate and timely information to authorized entities concerning pertinent changes in the CDL status and history of a driver.* This objective statement serves as guidance for developing deployment alternatives and includes terms that must be understood consistently.

Definitions

- *Jurisdiction of Record:* The jurisdiction responsible for maintaining the driver history record. This is typically the jurisdiction's motor vehicle agency.
- *Information:* Notification that a conviction or withdrawal has been posted or that a change in CDL status has occurred.

- *Authorized Entity:* The entity receiving the "notification" information must be authorized by the CDL holder to receive the information from the state agency. In the case of third parties (insurance companies, service bureaus), this may require both an employee and employer authorization. If no employer or extended contractual relationship exists (an owner/operator that works for multiple customers), the "entity" to be notified is the state agency with oversight responsibility for CDL driver performance.
- *Pertinent Changes:* Changes in the CDL status that directly affect the legal right to operate a commercial vehicle or are directly related to driver performance (e.g., moving violations, crashes).
- *CDL Status:* Licensed, Eligible, Not Eligible, Reported Deceased.
- *CDL History:* A chronological series of events and related information including convictions, accidents, withdrawals, previous CDL numbers, personal information, restrictions, endorsements, permits, CDL, and non-CDL license status.

Functional Requirements

The functional requirements for an ENS are derived from interviews conducted with DVN and non-DVN states and with motor carriers. All of the requirements identified in these interviews are mutually supportive and, in some cases, are contradictory. They are all listed here as a reference point for evaluating alternative designs.

Jurisdictional Deployment Consideration

The state DMVs and law enforcement agencies interviewed offered suggestions based on their own state's experience with DVN program or based on how they felt their system could be improved. In non-DVN states, the suggestions are based on what they believe would be needed for an effective employer notification service. The primary requirements include:

- Electronic (e.g., batch file or web-based) enrollment and changes to simplify administrative functions.
- Flexibility based on employers' Information Technology (IT) capabilities (e.g., paper-based enrollment and notification option) to permit broad participation in the program.
- Electronic signatures for authentication and verification to ensure accuracy, authorized access, and confidentiality.
- "Positive" CDL tracking so that every CDL is associated with an authorized 'entity' to be notified.
- Provide for annual (or periodic) account audit/update to detect unreported changes and assess system performance.
- Provide for authorization for access to CDL driver history to protect driver privacy to the extent now provided under FMCSA regulations and state laws.
- Provide for periodic billing and payment to avoid costly transaction-based invoicing (unless the transaction costs can be processed electronically and seamlessly).
- Provide for electronic funds transfer to reduce administrative cost and ensure accuracy.
- Use electronic notification of CDL convictions and CDL driver status changes to reduce time delays between conviction or status change events and employer notification.
- Employ effective outreach/enrollment/marketing strategy so that the program is as comprehensive as possible.
- Single point of entry for enrollment and update to reduce the number of interfaces for both state agencies and motor carriers.

- Tracking changes in employment so that drivers with high-risk driving behavior can be identified more easily.
- Error resolution process to catch and correct errors to protect drivers and motor carriers from inaccuracies in the data.
- Compatibility with legacy systems to facilitate implementation and operations.

Motor Carrier Deployment Considerations

Motor carriers also offered their perspectives on how an ENS should operate. Motor carriers, however, are not homogeneous and, as might be expected, did not all agree on every aspect of the service. Further, many of the motor carriers interviewed were regional carriers, and some operate in only a few states. These carriers may benefit less from a national program than would those entities that operate nationwide. The most important requirements that most carriers agreed upon include the need for:

- Consistent standards for enrollment and notification data on a national basis for uniformity in reporting and administrative efficiency.
- Timely notification (within 30 days of conviction) so that motor carriers can take appropriate action.
- A single national "portal" for enrollment, update, and notification interactions so that carriers do not need to interact with every state DMV or licensing agency.
- A price structure consistent with current notification system costs that reflect reasonable costs for deploying and operating the systems.
- Flat fees per transaction or a monthly subscription fee that reflects the number of drivers enrolled and the level of activity associated with those drivers.
- Notification delivery via email, fax, or, in some cases, U.S. Postal Service so that all motor carriers can participate regardless of the level of technology they employ.
- Access to a complete DHR when a notification event occurs so that motor carriers can view recent convictions in the context of the driver's total driving history and take action that reflects this more informed perspective.

Work Breakdown Structure

These functional requirements determine the basis functions that the ENS must provide. Figure 6 provides a Work Breakdown Structure (WBS) that shows how these functional requirements might be implemented in a national system. The individual functional elements depicted in Figure 6 are described in greater detail below.

Deployment Alternatives

The DVN Study Team considered several approaches for meeting the functional requirements described. The DVN Study Team sought to balance effectiveness with system complexity and ease of implementation when addressing the ENS system functional requirements. The options considered range from the ad hoc current jurisdiction-based approach, where each jurisdiction determines how best to notify employers, to a national system that provides a full driver history record each time an employer is notified. The operational concepts cut across two dimensions of scope and standardization. Scope refers to the size of the program: individual jurisdiction, multi-jurisdictional/regional, or national; control refers to the extent to which the notification system adheres to standards beyond that of a single jurisdiction. These approaches are summarized briefly below and illustrated graphically in sections that follow.

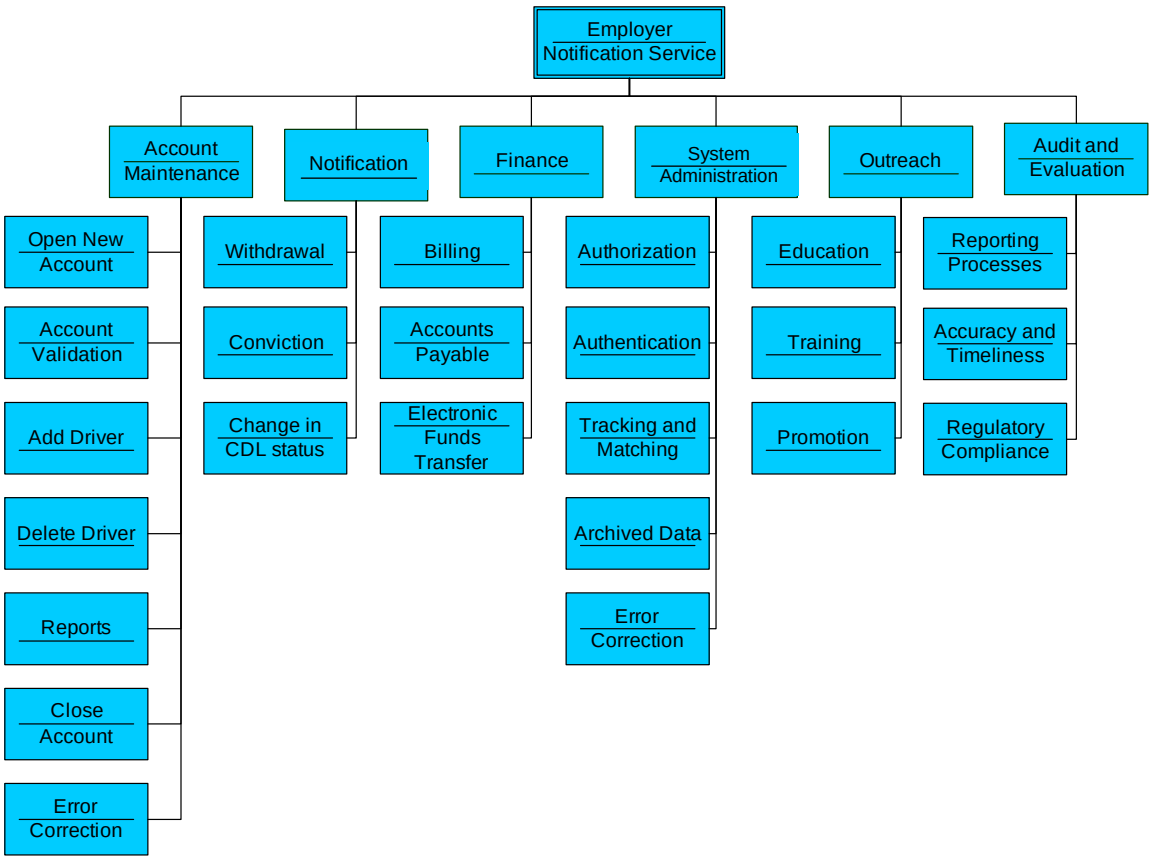

Figure 6. ENS Work Breakdown Structure

Jurisdictional-Based Alternatives

- *As Is*: Let each jurisdiction determine whether or not to offer an employer notification service, which employers to include, and how best to provide it.
- *Ad hoc*: Through either regulation or incentives (or penalties), require or motivate jurisdictions to offer an ENS without specifying how it should be done. Specify how the program will be assessed for compliance purposes.
- *ENS Standards*: Provide national standards to guide deployment and operation. Require each state to offer an ENS, but let each jurisdiction develop its own program.

Multi-Jurisdictional Alternatives

- *Decentralized*: Groups of jurisdictions agree to exchange enrollment and notification data via an agent that interacts with employers. Each jurisdiction continues to provide DHRs to employers upon request.
- *Centralized*: Groups of jurisdictions provide CDL status and history information to a designated repository that interacts with employers directly so that individual jurisdictions do not have to deal directly with employers.

National System Alternatives[12]

- *Decentralized*: All jurisdictions exchange enrollment and notification data via an agent that interacts with employers. Each jurisdiction continues to provide DHRs to employers upon request.
- *Centralized*: All jurisdictions provide CDL status and history information to a central repository that interacts with employers.

Federal System Alternatives

- *Decentralized*: All jurisdictions exchange enrollment and notification data via FMCSA or its agent, which interacts directly with employers.

Recommended Approach – Employer Notification Service National Pointer System

In assessing the alternative approaches for the deployment of an expanded ENS system, the DVN Study Team used the following criteria. The intent was to identify the alternative that best meets the national need for improved safety in what the DVN Study Team determined to be the most cost-effective manner, and had the most support from the states included in the study.

- Would the proposed system be:
  - Compatible with current jurisdictional systems?
  - A burden on jurisdictions to deploy and participate?
- What are the institutional requirements (legal, administrative, etc.)?
- Which approach is the most responsive to motor carrier needs and preferences (timeliness, accuracy, accessibility)?
- Which proposed alternative has:
  - Consistency across jurisdictions and motor carriers?
  - Flexibility to accommodate different users (manual, electronic)?
  - Greatest ease of maintaining accurate employer/employee linkages (adding, deleting, updating)?
- What content should be included in notification?
- What is the required authorization/authentication capability?
- Which alternative offers the greatest degree of accountability for "orphan" CDLs (those not associated with an employer or employers)?
- How would the system interface with existing third-party services?
- What are the requirements for access to supporting technologies (hardware, software, communications)?

The DVN Study Team determined that a decentralized ENS national pointer system represents the best alternative to meet these criteria. While the proposed system does have some disadvantages, the DVN Study Team recommends this approach as the most effective for the development and deployment of a national ENS system. The advantages and disadvantages of the proposed alternative ENS national pointer system are summarized as follows:

[12]The "national" alternatives might well be extended internationally to include Canadian and Mexican drivers should those nations choose to participate in a larger ENS program.

Advantages

- Minimum impact on state DMVs systems and procedures.
- Minimum impact on state DHR revenue generation.
- Avoids many privacy issues that may require legislation.
- Provides single interface for both employers and state DMVs.
- Can accommodate multiple interfaces (electronic, paper, fax, etc.).
- Could be integrated with other national systems (CDLIS).

Disadvantages

- Does not provide full DHR; employers or agents would still request DHR from state DMV.
- Notification information alone may be inadequate for employers to take further action.
- Does not provide standard DHR format, definitions, and content.
- Depends on timely response from state DMVs to provide DHR to employers.

Process Flow

A proposed conceptual design for the ENS national pointer system is presented in *Figure 7* and *Figure 8*. The first figure presents the conceptual design for employer registration. The second presents the conceptual design for employer notification.

Employer Registration (see Figure 7)

- Employer establishes Notification Account:
  - With National Pointer System or with Agent or Designated Third Party which establishes account with National Pointer System.
  - CDL information submitted by employer:
    - Employees to be monitored by CDL number.
    - Jurisdiction issuing CDLs to employees in program.
  - Graphic includes three boxes that represent DMVs, but no information is sent to the state in order to set up accounts with the National Pointer System

Employer Notification (see Figure 8)

- DMV in jurisdiction issuing CDL receives information:
  - Judiciary for in-state convictions posted.
  - CDLIS for out-of-state convictions posted.
    - Jurisdiction of Record mails conviction information to the DMV state.
- Driver history for CDL holder is updated at the DMV.
- DMV generates the CDL change notice with information if history change includes:
  - CDL withdrawal.
  - CDL conviction.

- Change in CDL status.

- Notice is sent to National Pointer System.
- National Pointer System directs the notice that the driver's record has changed to:
  - Employer.
  - Agent/designated third party who provides notice to employer.
- Driver History Request submitted by Employer or Agent to DMV that issued CDL.
- DMV generates driver history record and sends to requesting employer or agent.

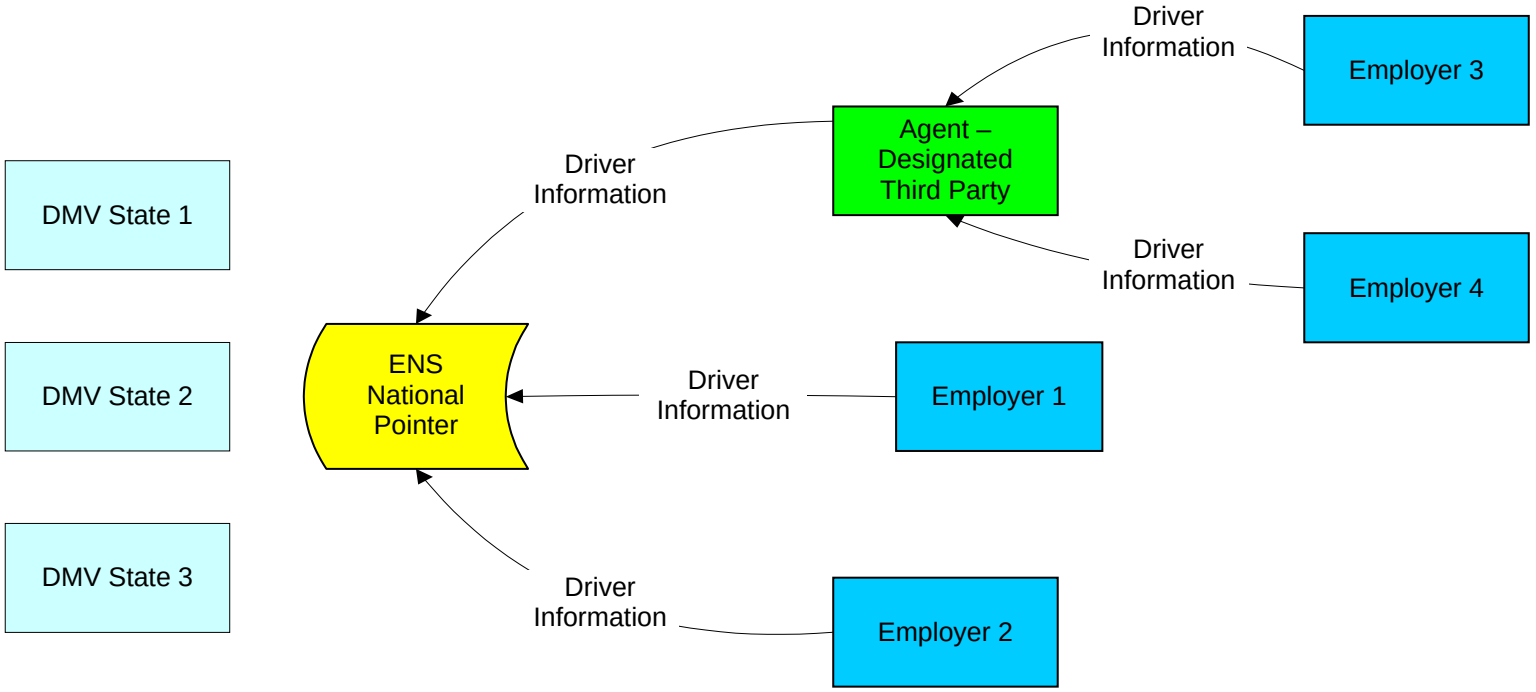

Figure 7. Primary Conceptual Design – Employer Registration

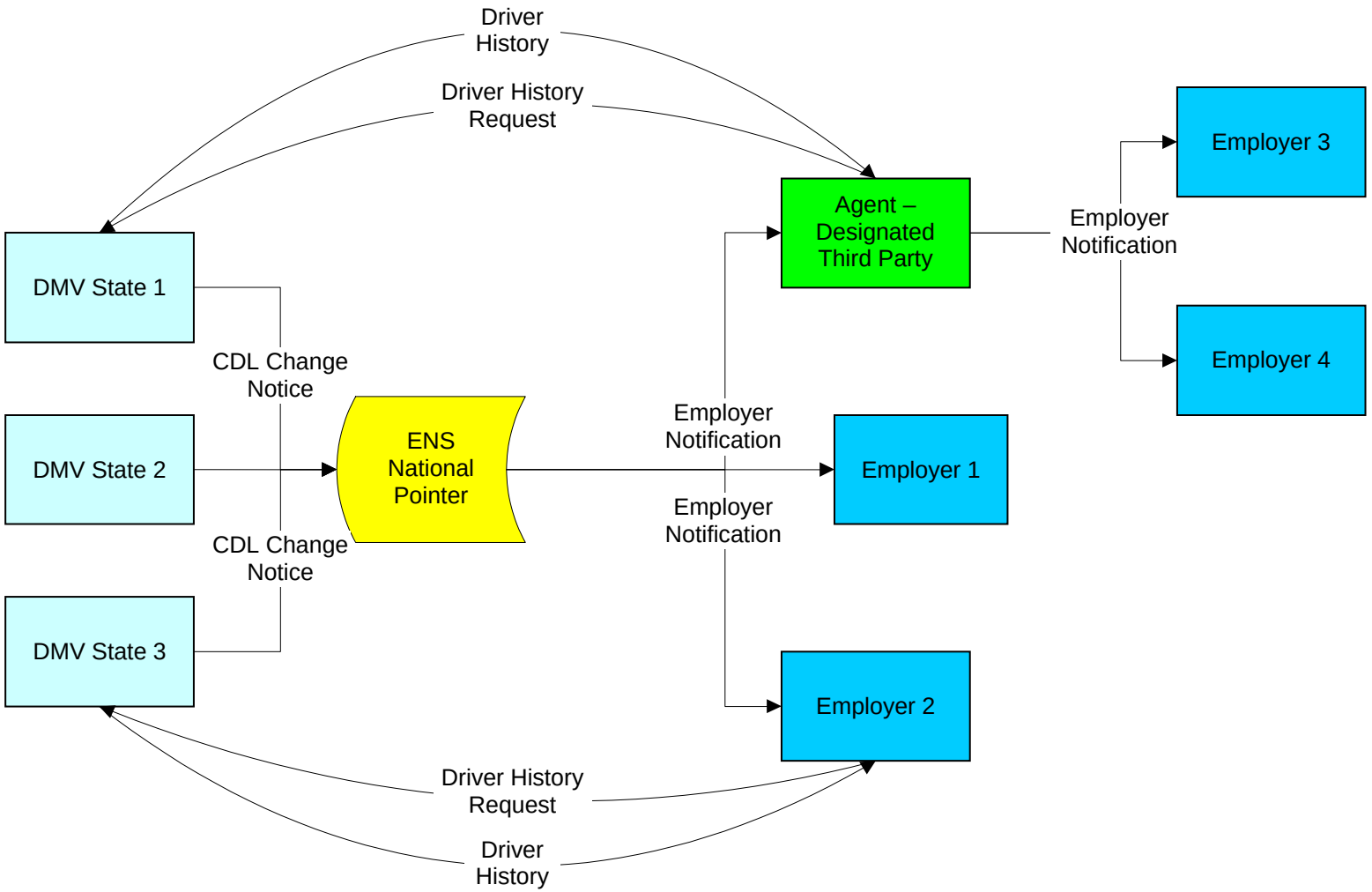

Figure 8. Preliminary Conceptual Design – Employer Notification Process

Task 5 – Recommended Deployment Approach

Task Overview

The recommended deployment approach presented in the Task 5 Technical Memorandum was developed using the findings of the preceding four tasks of the study, in particular, the preferences stated by government and industry stakeholders as identified through Tasks 1 and 2. The development of the particular deployment approach was done using the following criteria:

- Is the approach acceptable to state agencies, motor carriers, and commercial vehicle drivers?
- Are the expected deployment and operating costs to states and motor carriers prohibitive?
- What is the availability of existing infrastructure to support deployment?
- Does the proposed approach ensure that violation and conviction information is provided to motor carriers in a timely manner?
- Does the proposed approach create the capability to quickly and carefully identify, isolate, and correct errors in CDL violation and conviction records based on primary sources (judicial records)?
- Are the key issues that would limit or deter state and motor carrier participation adequately addressed by the proposed approach?
- What would be anticipated participation rates and time needed to enroll motor carriers?

The recommended deployment approach also takes into consideration the TEA-21 requirement that FMCSA conduct a pilot program that meets the objectives specified in Section 4022 of the legislation:

(a) PILOT PROGRAM

> *(1) IN GENERAL — The Secretary shall carry out a pilot program in cooperation with one or more States to improve upon the timely exchange of pertinent driver performance and safety records data to motor carriers.*
>
> *(2) PURPOSE — The purpose of the program shall be to*
>
> > *(A) Determine to what extent driver performance records data, including relevant fines, penalties, and failures to appear for a hearing or trial, should be included as part of any information systems under the Department of Transportation's oversight;*
> >
> > *(B) Assess the feasibility, costs, safety impact, pricing impact, and benefits of record exchanges; and*
> >
> > *(C) Assess methods for the efficient exchange of driver safety data available from existing State information systems and sources.*
>
> *(3) COMPLETION DATE — The pilot program shall end on the last day of the 18-month period beginning on the date of initiation of the pilot program.*

(b) RULEMAKING — After completion of the pilot program, the Secretary shall initiate, if appropriate, a rulemaking to revise the information system under section 31309 of title 49, United States Code, to take into account the results of the pilot program.

Recommended Deployment Approach

The driver violation notification program model that best matches the criteria discussed in the preceding section and that meets the requirements identified by states and the motor carrier industry is the National Pointer Employer Notification System. Key design features of this recommended approach include:

- A nationwide system that would allow a DMV to post a notice of a change in a driver's history record to the National Pointer System, which would in turn direct the notice to the driver's employer. The notice would be posted for both in-state postings and postings received from out of state.
- Public domain ownership of the system, with system operation done through either the Federal government (for example, FMCSA) or through an association representing public agencies involved in motor carrier regulation and/or credentialing (for example, AAMVA).
- Jurisdictions maintaining control of their CDL data files and information and providing driver history information through the nationwide system.
- A single portal for program registration with nationwide coverage. Motor carriers would register with the national program and would in turn receive driver violation notifications from all states.
- Web-based, batch processing and/or manual processes to enable access to all motor carriers irrespective of size or technical capability access to program services.
- A flexible approach that enables multiple business strategies to fund ongoing operation of the driver violation notification program. This reflects the different business models that have been used by states to provide existing DVN services (state funded program, vendor provided e-government program) and by motor carriers to access these services (direct registration, use of service bureaus and third-party vendors).

Benefits of Conducting a Pilot Project

While a national pointer system offers a viable approach for developing a nationwide DVN system, there are a number of issues identified during the study that will need to be addressed prior to the development of a national system. Given this, and the requirements of TEA-21 for a pilot project, the SAIC Team recommends the following for consideration as a deployment approach for a DVN program:

- The pilot program that addresses the requirements of TEA-21 should be implemented prior to a decision to implement a nationwide DVN program.
- The pilot program would be used as a vehicle for testing and addressing implementation issues identified during Tasks 1 and 2, as summarized in Table 3.
- The pilot program would also be used as a means to expand on data collected during the feasibility study and to fill in data gaps identified during the feasibility study, in particular cost data and cost/benefit analysis.
- An evaluation would be conducted to assess the effectiveness of the pilot program in meeting the purposes stated in TEA-21.
- The results of the pilot program would be used to develop: a system architecture and high-level design for a national program; a prototype system that has been field tested and can be used to develop a production level system; cost estimates for a national program; an implementation plan and schedule, and a proposed business model and organizational structure including recommendations on system ownership and system operation.

Pilot Project Goals and Objectives

A key component of the pilot project will be to establish goals and objectives against which actual performance can be measured. This will enable performance measures to be developed and the types and sources of data necessary for assessing performance to be identified. These goals and objectives must also accurately reflect the same as established by FMCSA for a DVN program and the TEA-21 requirements. The SAIC Team has developed a set of five pilot project goals and objectives that are designed to meet the FMCSA and TEA-21 requirements, as follows:

Goal #1 – Identify the potential safety impact of DVN Program:

1. Objective #1 – Assess changes in motor carrier safety management programs.
2. Objective #2 – Assess changes in driver behavior.
3. Objective #3 – Identify changes in motor carrier performance and/or safety rating before and after DVN program participation.
4. Objective #4 – Identify changes in crash rates before and after project, differentiating between causation factors and severity of crashes.

Goal #2 – Assess motor carrier demand for DVN services:

1. Objective #5 – Assess motor carrier perceptions on need for service.
2. Objective #6 – Identify factors that encourage a motor carrier to participate in the program:
    a. Type of information provided.
    b. Timeliness of information provided.
    c. Cost of service.
    d. Reliability of service.

Goal #3 – Assess states' perception of DVN services:

1. Objective #7 – Determine how DVN can be used as a tool by enforcement community.
2. Objective #8 – Assess potential fiscal impact of DVN program.
3. Objective #9 – Assess how DVN services are integrated into ongoing state motor carrier services.
4. Objective #10 – Assess states' perception on safety impact.

Goal #4 – Identify implementation issues that impact potential nationwide program deployment:

1. Objective #11 – Effectiveness of alternative business models.
2. Objective #12 – Assess information systems and technology-related issues:
    a. Data exchange requirements within states and between states.
    b. Software modifications and/or development.

Goal #5 – Develop a Working Prototype System

1. Objective #13 – Develop software and interfaces necessary for supporting a prototype system.
2. Objective #14 – Test the Prototype System with two or more states.
3. Objective #15 – Test the Prototype System with inter- and intrastate motor carriers.

Table 3. Implementation Issues

Implementation Issues	Pilot Project Test
Issue #1 – Loss of MVR Pull Revenues. States are concerned about losing revenues from MVR programs if a DVN program is implemented and the annual MVR pull requirement is eliminated or phased back. The sale of MVRs represents a major revenue source for states.	Currently, data on revenue generated from motor carrier driver history record sales is not disaggregated from overall records. The pilot project should develop an estimate of revenues generated by sales of these records to the motor carrier industry. The pilot project should also test pricing options for DVN services to determine the level of pricing required to achieve a full off-set of lost revenues should the annual pull requirement be eliminated. This analysis should also look at price sensitivity with respect to industry to determine what level of pricing potentially deters program participation.
Issues #2 – Lack of Perceived Demand. The states do not perceive a strong need for this DVN program. Their rationale appears to be based on the fact that there is no strong demand from customers (industry or the enforcement community) for this service.	As a component of the pilot project, a needs assessment should be conducted to determine potential industry demand for this service. In addition, a similar assessment should be conducted with law enforcement personnel to assess their views on how a DVN program would provide benefit or be integrated into their ongoing programs (i.e., include DVN participation as a factor in compliance reviews).
Issue #3 – Need for a State DVN Champion. The agencies visited during the course of the study, while in support of safety and safe highways, are not charged with highway safety as their core mission or business. Establishing a DVN project is an additional technical/administrative requirement that does not have a direct impact on their core business. A successful national DVN program will need state champions who are able to obtain management support and the allocation of technical and financial resources to support program development and deployment.	Pilot project states should be required to designate a lead agency responsible for overall DVN program management, establish a steering committee comprised of all stakeholder groups to oversee the pilot project, and establish a memorandum of understanding that establishes the role of each participating stakeholder.
Issue #4 – Lack of State Resources. The states lack the funds and technical resources needed to implement a new program or significantly expand their existing programs. A number of states are facing budget cuts and layoffs and other projects (Patriot Act and HazMat endorsement) have received priority from management. Establishing a DVN is not a state priority. A concern expressed by the states was the need for federal funding to support a DVN program.	The pilot project should include an assessment of what level of funding states would need in order to implement a DVN program. This assessment would take into account variations by state with respect to size, industry structure, and other variables that would impact costs.
Issue #5 – Need for a National Program. The states would prefer to see a national system or database as the core of a DVN program. States do not want to have to build interfaces to exchange data directly with other jurisdictions, and believe that a national clearinghouse would enable states to keep their existing systems (in particular, for those states with a DVN/DVN-type program) while facilitating the exchange of data. A consideration for a national program, however, is that some states expressed concern about a “one-size-fits-all” approach.	A component of the pilot project should be the development of design alternatives for a national program. The design alternatives would include assessments of types of data to be exchanged (notice or full driver history record), methods for data exchange, identification of authoritative sources for data, required standards, and other related system development issues.

Implementation Issues	Pilot Project Test
Issue #6 – Linking Drivers with Companies. The most significant technical concern identified by the states was how to track drivers and link them to companies. Given the high rate of driver turnover, many states seem to feel that linking drivers to companies would be a difficult task.	The pilot program would test alternative methods for tracking drivers and linking drivers with companies.
Issue #7 – Small Companies and Owner-Operators. An additional concern along the same line was how this service would be provided to smaller trucking companies and owner-operators where the owner or owner-operators may be driving and not receive notice in a timely manner. In addition, how would the program work for companies that employ owner-operators – who would ultimately be responsible for registering the owner-operator, monitoring performance, and receiving notice?	The pilot project would assess alternative means for providing DVN services to small companies and owner-operators.
Issue #8 – Authoritative Data Source. Several states have indicated concern about having a third-party vendor serve as the authoritative source for data. The states prefer a model where the states or a national clearinghouse could serve as an authoritative source for data on changes in driver history.	This issue should be included in the development of design alternatives for a potential national program.
Issue #9 – Outreach. Several states have developed significant outreach and education programs in support of their programs. Those states that have not, either through the state or through a third party vendor, had significant success in enrolling motor carriers in their programs.	The pilot program should provide outreach in three areas: ♦ Education: Why ENS improves safety ♦ Training: How ENS works ♦ Promotion: Participation in employer state association meetings

Proposed Pilot Project – State Participation

The SAIC Team recommends that FMCSA consider including both states with an existing DVN program and non-DVN program states in the pilot project. The SAIC Team further recommends that FMCSA consider the following in identifying states with existing programs to participate in the pilot study:

- The DVN states included in the feasibility study have used several different business models for implementing DVN services, including state-developed systems (such as Virginia and New York) and vendor-developed systems (Arkansas and Nebraska using NIC). The pilot project could, therefore, be used both to test the effectiveness of DVN programs and the use of different business models for providing program services.
- Baseline data has already been collected from each of these states, and existing DVN program activities have been documented.
- The state motor truck associations participated in the feasibility study through the Task 2 focus groups and surveys. This prior experience can be used to help gain industry support for the pilot project.
- These states are familiar with the feasibility study and employer notification programs and would thus not require significant time to plan and prepare for participation in a pilot project.

In identifying potential non-DVN states, the SAIC Team recommends that FMCSA consider:

- *Geographic Location:* States that are in the same geographic location as DVN states. This will enable the pilot test to identify data exchange capabilities between states that are along existing truck routes.

- *Industry Mix:* Selecting states that have a representative mix of trucking industry operations by type of carrier and intra- as well as inter-state will enable the testing of a wide range of technical issues (enrollment processes, linking drivers to motor carriers, accessibility to smaller motor carriers as well as owner-operators).
- *Involvement of State Trucking Associations:* Based on the success of industry involvement in Phase I, including state trucking associations in the pilot test will help with testing industry outreach, recruitment of pilot test participants, and evaluating the effectiveness of the pilot test.

Proposed Pilot Project – Stakeholder Groups

In addition to the participating states, the DVN Study Team recommends that AAMVA, ATRI, and CVSA continue as partners during the Pilot Project. As is noted in the Task 1 Technical Memorandum, DVN programs at present are run by motor vehicle agencies whose core business is the licensing and registration of drivers and vehicles, not safety enforcement. CVSA's participation will provide a venue whereby the enforcement community can be involved in the pilot project. In addition, CVSA will be able to provide the national perspective needed to determine the potential of a national DVN program. As was done with Task 2 of the feasibility study and ATRI, CVSA would be able to conduct a national survey of enforcement personnel to determine their views on how a DVN program could be of benefit.

AAMVA would lead the development of design alternatives for a national DVN program. This would include the assessment of funding needs and authoritative data sources and recommendation of an organizational structure for supporting a national program.

As with the feasibility study, ATRI will assist with coordinating industry outreach and data collection. In particular, ATRI would lead the assessments of linking motor carriers and drivers, and how small companies and owner-operators can participate in a DVN program. To this end, ATRI would establish relationships with the state trucking associations in participating states to assist with testing industry outreach methods – informational mailings, presentations at association meetings, and association membership access to DVN information in order to evaluate motor carrier views on the value of a DVN program.

FMCSA will serve as the sponsor for the pilot project and will be responsible for overall management and direction of the project, and will work directly with participating states. AAMVA, CVSA, ATRI, and the state motor carrier associations will support the pilot project activities under the general direction of FMCSA.

Appendix 1 – Project Deliverables

Note: The following project deliverables are provided under a separate cover.

- Task 1 Deliverable: Technical Memorandum – State DVN Processes and Best Practices
- Task 2 Deliverable: Technical Memorandum – Documentation of User Requirements for Driver Violation Notification Programs
- Task 3 Deliverable: Technical Memorandum – DVN Cost-Benefit Analysis
- Task 4 Deliverable: Technical Memorandum – Alternative Approaches for the Deployment of Driver Violation Notification Programs (also available in briefing format)
- Task 5 Deliverable: Technical Memorandum – Recommended Deployment Approach and Work Plan for the Development of DVN Programs
- Final Report Briefing to FMCSA Senior Management

Appendix 2 – Driver Violation Notification Feasibility Study Acronym List

Acronyms	Titles
AAMVA	American Association of Motor Vehicle Administrators
ATRI	American Transportation Research Institute
CDL	Commercial Drivers License
CDLIS	Commercial Drivers License Information System
CVSA	Commercial Vehicle Safety Alliance
DHR	Driver History Record (same as MVR for purposes of this study)
DMV	Department of Motor Vehicles
DRIVerS	Driver Record Information Verification System
DVN	Driver Violation Notification
ENS	Employer Notification Service
FMCSA	Federal Motor Carrier Safety Administration
MC	Motor Carrier
MVR	Motor Vehicle Record (same as DHR for purposes of this study)
SAIC	Science Applications International Corporation

U.S. Department of Transportation
Federal Motor Carrier Safety Administration

Report No.FMCSA-RT-05-003

For more information on the Federal Motor Carrier Safety Administration, check our website at www.fmcsa.dot.gov