Electronic Screening Coordination Assessment

Prepared for:

North/West Passage Freight Task Force

Prepared by:

North/West Passage Electronic Screening Coordination Assessment

The North/West Passage (NWP) is a multi-state operations-focused partnership initiated in 2002 between the Departments of Transportation (DOTs) of Idaho, Minnesota, Montana, North Dakota, South Dakota, Washington, and Wyoming. With I-90 and 94 serving as their major passenger and commercial vehicle corridors, these states share similar operational challenges due in part to extreme weather conditions. This Electronic Screening (E-Screening) Assessment, which focuses on Washington, Idaho, and Montana, documents the current state of e-screening systems, and identifies needs, issues, and opportunities for e-screening.

Acknowledgements

Opinions and limitations

Unless otherwise indicated, the opinions herein are those of the authors and do not necessarily reflect the views of the North/West Passage.

Cover image source: iStock

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Acronyms / Abbreviations

ALPR	Automated License Plate Readers
AVI	Automatic Vehicle Identification
AWSS	Automated Weigh Station Screening System
CDL	Commercial Driver's License
CMS	Changeable Message Sign
CMV	Commercial Motor Vehicle
CSA	Compliance, Safety, and Accountability
CVIEW	Commercial Vehicle Information Exchange Window
CVSA	Commercial Vehicle Safety Alliance
DOT	Department of Transportation
E-Screening	Electronic Screening
FMCSA	Federal Motor Carrier Safety Administration
HOS	Hours-of-Service
IFTA	International Fuel Tax Agreement
ISS	Inspection Selection System
IRP	International Registration Plan
ID	Idaho
ITD	Idaho Transportation Department
ITD	Innovative Technology Deployment
LPR	License Plate Reader
MDT	Montana Department of Transportation
MT	Montana
NAS	North American Standard
NLETS	National Law Enforcement Telecommunications System
NWP	North/West Passage
OS/OW	Oversize/Overweight
SAFER	Safety and Fitness Electronic Records
SMS	Safety Measurement System
UCR	Unified Carrier Registration
US	United States
USDOT	United States Department of Transportation
VIN	Vehicle Identification Number
WA	Washington
WIM	Weigh-in-Motion
WSDOT	Washington State Department of Transportation

1 Introduction

1.1 Introduction

In 2019, over 13 million large trucks were registered in the United States.[1] These vehicles are critical nodes in the economy, moving people and goods across the country. However, due to their size, it is especially important to ensure that these vehicles are operating safely.

To verify compliance with federal and state safety regulations, commercial motor vehicles (CMVs) are inspected at weigh stations or inspection sites. Historically, CMVs were required to pull over at weigh stations for manual verification of driver and vehicle credentials. However, beginning in the 1990s, new technology has made it possible for trucks to be electronically screened and evaluated on the highway mainline or weigh station ramp. This is often referred to as electronic screening, or e-screening. E-screening allows compliant vehicles to avoid lengthy inspections, reducing drive time and improving the efficiency of freight movements by truck.

1.2 Federal and State Roles

The US Department of Transportation (USDOT) has two major roles related to CMV regulations. It establishes certain CMV regulations, including hours-of-service (HOS) and Commercial Driver's License (CDL) certification. It also plays a role in the enforcement of CMV regulations through the Federal Motor Carrier Safety Administration (FMCSA).[2] Among other responsibilities, FMCSA maintains and improves federal safety information systems, many of which are crucial for state inspection processes. These systems include the Safety and Fitness Electronic Records (SAFER), Inspection Selection System (ISS), and Aspen. A longer list, along with descriptions of each can be found in **Appendix A**.

States work within the confines of federal regulations and systems but have significant leeway in CMV regulation. States can establish their own regulations, install and maintain their own e-screening technologies, manage their own enforcement staff, and partner with bypass service providers of their own choosing. Moreover, the duty of inspecting CMVs to ensure compliance largely falls on states. About 95 percent of CMV inspections are conducted by state inspectors.[3]

Because each state establishes its own set of regulations and enforces them in its own way, e-screening systems and inspection processes often lack uniformity between and even within states. For example, Washington, Idaho, and Montana all utilize different combinations of e-screening providers and set their own e-screening thresholds. This patchwork of systems and regulations can be a burden on drivers and reduces the efficiency of trucking.

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[1] USDOT, FMCSA, Pocket Guide to Large Truck and Bus Statistics, 2021, https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/2022-01/FMCSA%20Pocket%20Guide%202021.pdf

[2] USDOT, FMCSA, About Us, https://www.fmcsa.dot.gov/mission/about-us

[3] USDOT, FMCSA, Pocket Guide to Large Truck and Bus Statistics, 2021.

1.3 Purpose of this Assessment

The North/West Passage (NWP) Freight Task Force *Electronic Screening Coordination Assessment* focuses on three of the consortium's seven member states: Washington, Idaho, and Montana.

This assessment seeks to increase collaboration across NWP states, improve e-screening harmony, and minimize the number of stops and redundancies that trucking operators and state agencies encounter during multi-state truck movements

Stakeholder input was collected in two ways:

- **Consultations:** The research team held individual consultations with each state department of transportation (DOT) and trucking association to help identify e-screening systems and inspection protocols within each state. A consultation with FMCSA also shed light on federal regulations and systems.

- **Roundtables:** A total of three roundtables, attended by each of the three state DOTs, were held to introduce the project and discuss e-screening processes (December 2021), verify information about the current state of e-screening gathered through desk research (January 2022), and present findings (June 2022).

> **Stakeholders Engaged:**
>
> - Idaho Transportation Department
> - Idaho Trucking Association
> - Montana Department of Transportation
> - Montana Trucking Association
> - Washington Department of Transportation
> - Washington Trucking Association
> - Federal Motor Carrier Safety Administration

This report summarizes the current state of e-screening practice in these three states. This includes an overview of each state's e-screening systems and inspection protocols, as well as identified needs and issues. A synthesis of this information helps to identify potential opportunities for improved coordination across state borders.

2 Current State of E-Screening in Washington, Idaho, and Montana

2.1 Overview

Consultations with trucking associations identified that e-screening systems are highly valued. Stakeholders reported that drivers appreciate these systems because they save drivers time, and carriers value them because they cut costs. Currently, about 13 percent of interstate carriers participate in a bypass program.[4] E-screening benefits states by providing more robust real-time safety information and allowing states to focus their efforts on carriers and vehicles that need it most.

This chapter begins with an overview of general e-screening processes and then details e-screening in the NWP, including e-screening technologies and systems, bypass determinants and thresholds, types of inspections conducted, and ongoing state e-screening efforts.

> **E-Screening Definition**
> For the purposes of this assessment, the term e-screening describes the following processes:
> - E-screening for **sorting commercial vehicles from** a weigh station or inspection facility, typically on the mainline
> - E-screening for **processing at** a weigh station or inspection facility, often on the ramp to the facility

2.2 General E-Screening Processes

Simple Bypass Process

Figure 2 illustrates the typical bypass process. As a CMV approaches a weigh station, an onboard transponder, Changeable Message Sign (CMS), or mobile application communicates identifying information with roadside sensors (as shown in Figure 1). This information is fed into the state's chosen screening service and reviewed against data from state and federal systems to inform the decision on whether to allow the vehicle to bypass the weigh station (green light) or require the vehicle to enter the weigh station for further inspection (red light). States establish different rules for granting a bypass. Section 0 provides further detail on state-determined thresholds.

States partner with different screening system providers, such as PrePass and Drivewyze, among others (see Section 2.4 for more information on e-screening programs). Often, these providers use different transponders, electronic sorting signs, and mobile apps. Other technologies, such as license plate readers (LPRs) and USDOT number readers, are also being used to make screening services more accessible (see Section 2.3 for more information on e-screening technologies).

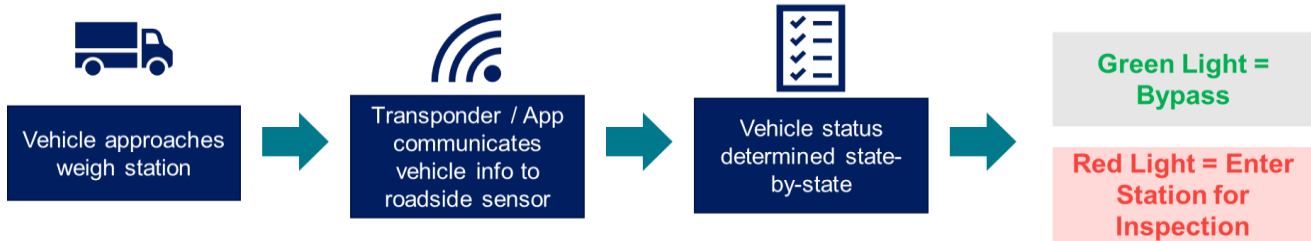**Figure 1: Roadside Sensors Near Huetter, ID**

Source: Google Maps Streetview

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[4] FMCSA Report to Congress, Safety and Efficiency Effects of Replacing Transponders with License Plate Readers to Screen Trucks at Inspection or Weigh Stations, 2020, https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/2020-06/Transponder%20Based%20Weigh%20Station%20Technology%20Report%20Enclosure%20FINAL%20June%202020.pdf

Figure 2: General Screening Process

Source: CPCS

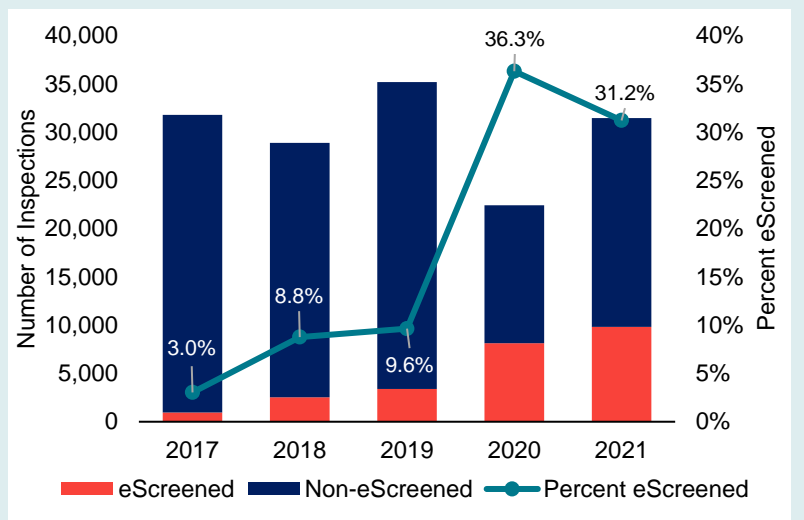## Electronic Screening for More Complex Inspection Selection Process

E-screening technologies can help to further streamline the inspection selection process, either on the mainline or weight station ramp, and are increasingly being incorporated in e-screening processes. For example, the 360SmartView system, provided by Auxilium, Inc. for use in Montana, uses advanced technologies on weigh station ramps (e.g., weigh-in-motion scales, USDOT number readers, LPRs, and tire pressure sensors) to gather vehicle information that informs quick decisions about which trucks need to be pulled over for a detailed inspection and which can be dismissed. This electronic process, which is illustrated in Figure 4, saves time by automating parts of the inspection process and reducing the need for officers to manually obtain information about or inspect each CMV.

Many states also develop CVIEW systems which allow officers to collect and exchange data with federal databases (see Appendix A for more information). Electronic inspection technologies such as these, which will

Growth of E-Screening for Inspections in Montana

The Montana Department of Transportation data shows that the use of e-screening during vehicle inspections has increased in recent years. Figure 3 shows that, in Montana, e-screening was used in 3% of inspections in 2017 but by 2021 this number had risen to over 31%. It is reasonable to suppose that similar trends are occurring in other states.

Figure 3: Montana Inspections (2017-2021)

Source: CPCS analysis of MDT data.

also be incorporated in CVSA's Level VIII Inspections, are quickly gaining traction. FMCSA is beginning to explore opportunities to advance e-inspection at the federal level. This will also require advancements in onboard technologies in CMVs themselves.

Figure 4: 360SmartView Streamlined Electronic Inspection Process
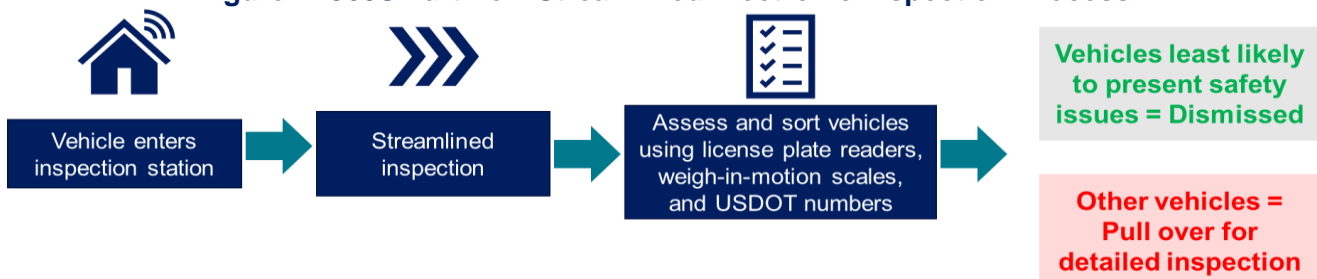
Source: CPCS

2.3 E-Screening Technologies

This section provides an overview of key technologies that enable e-screening for bypass and inspection.[5]

Figure 7 shows the fixed weigh stations where the e-screening technologies are located in Washington, Idaho, and Montana. It is important to note that many states are incorporating virtual weigh stations which perform the same functions as other sites minus the ability to physically pull over and manually inspect a vehicle. The use of virtual sites can provide a state with additional screening capacity. Their placement on known inspection bypass routes can help discourage inspection evasion and travel on local roads not built to support truck traffic.

- **Transponders:** Small electronic devices attached to the inside of a vehicle's windshield (Figure 5) with a unique serial number that is associated with the carrier's USDOT number and the vehicle identification number (VIN) in state and federal databases.

- **Applications:** Software on a mobile device that shares vehicle information specific to a CMV record in state and federal databases.

- **License Plate Readers (LPRs):** Specialized high-speed cameras mounted alongside roadways to capture license plate numbers.

- **USDOT Number Readers:** Specialized cameras mounted alongside roadways to capture USDOT numbers on CMVs.

- **Variable/Changeable Message Signs:** Digital roadside signs that direct trucks to bypass or pull into a weigh station

- **Weigh-in-Motion (WIM) Scales:** Sensors that measure the pressure of vehicle tires as they pass over to determine the vehicle's weight (Figure 6). Some WIM scales are operated without an officer present; these are called virtual WIM scales.

- **Over-Height Vehicle Detection Systems:** Sensors mounted over roadways that detect when vehicle heights are above the legal limit.

- **Tire Anomaly Screening System:** Sensors in the roadway that measure vehicles' tire configuration and pressure.

- **Thermal Brake Imaging:** Infrared cameras that measure the temperature of vehicle brakes to identify potential brake defects.

Figure 5: Transponder

Source: WSDOT, PrePass

Figure 6: WIM Scale

Source: Intercomp, https://www.intercompcompany.com/its-enforcement-scales/in-ground-weigh-in-motion/wim-platform

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[5] WSDOT, Transponder program and benefits, https://wsdot.wa.gov/travel/commercial-vehicles/transponder-weigh-station-e-screening/transponder-program-benefits | MBWorld, Thermal Imaging Shows How Brake Rotors Bake, 2017, https://mbworld.org/articles/thermal-imaging-shows-brake-rotors-heat-use/?msclkid=49bda053d06b11ec8d838cc9f492aee1

Figure 7: Weigh Station E-Screening Technologies
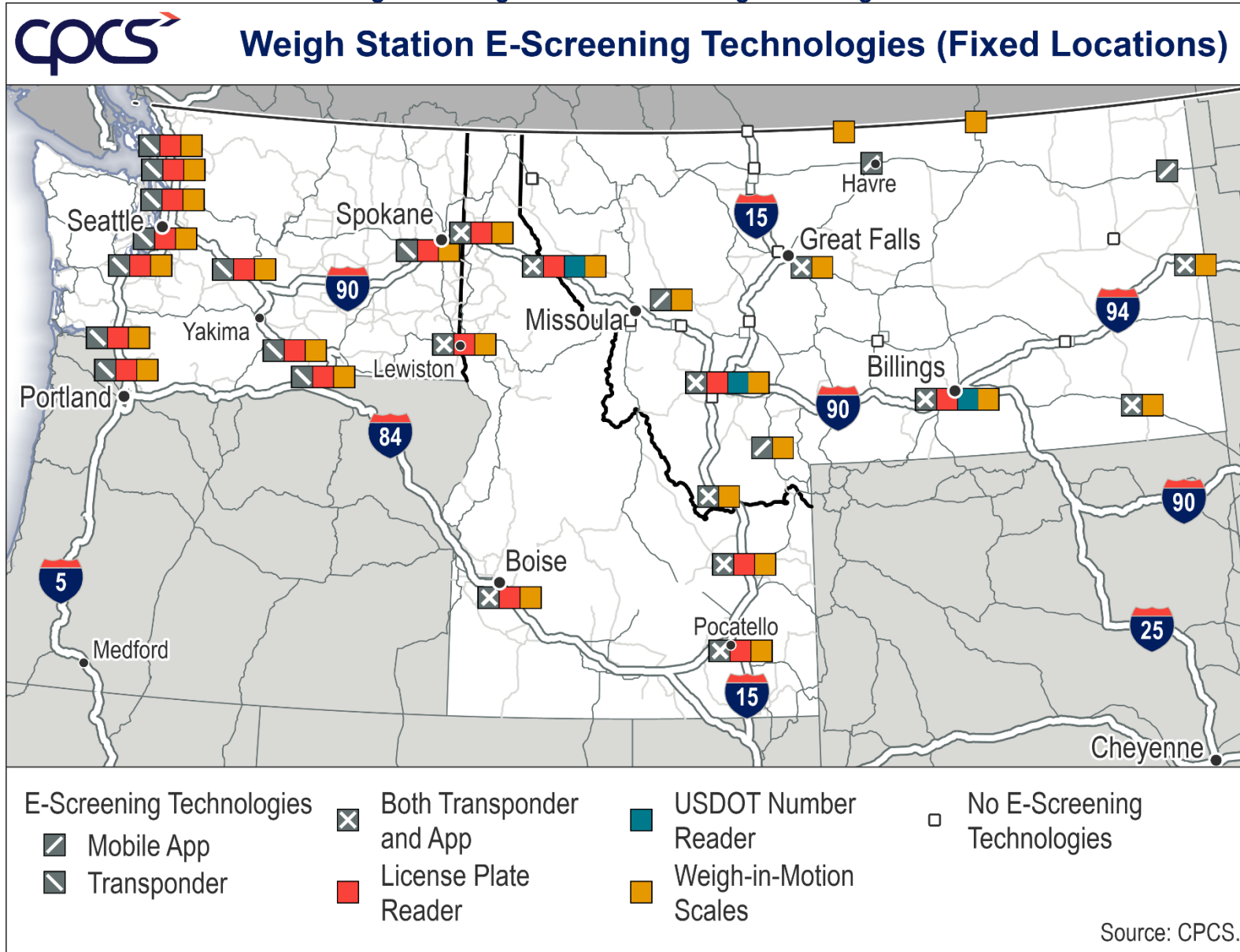
Selecting E-Screening Technologies: License Plate and USDOT Number Reader Systems

In June 2020, FMCSA released a report to Congress entitled "Safety and Efficiency Effects of Replacing Transponders with License Plate Readers to Screen Trucks at Inspection or Weigh Stations." In addition to the standard transponder or app-based bypass services, license plate or USDOT number readers can be used to identify commercial vehicles for e-screening. Figure summarizes the differences between the technologies identified in the report.

Figure 8: Comparison of Screening Technologies

	Transponder	Mobile Application	LPR / USDOT number reader
Accuracy	>99%	81.5-99%	80-85%
Eligibility	Carriers must meet minimum safety performance to participate in widely used programs	Carriers must meet minimum safety performance to participate in widely used programs	No requirements
Participation	13% of total interstate carrier population		Any CMV
Other	Sorting decision communicated via transponder	Sorting decision communicated via app	Variable message signs needed to communicate sorting decision
Overall benefits	High accuracy	High accuracy	More accessible, can be integrated with other e-screening technologies like WIM

FMCSA concluded that there are no clear benefits to *replacing* transponder or app-based screening systems with LPRs/USDOT number readers, as the former systems provide the benefit of high accuracy (low rate of error) to high-performing carriers. However, the report suggests that LPRs and USDOT number readers are valuable e-screening technologies to be used in addition to other systems, especially since these readers allow participation from the many CMVs not enrolled in other bypass services. States have reported that LPR and USDOT number reader accuracy is improving, though weather events reduce this accuracy.

Source: FMCSA Report to Congress, Safety and Efficiency Effects of Replacing Transponders with License Plate Readers to Screen Trucks at Inspection or Weigh Stations, 2020, https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/2020-

2.4   E-Screening Programs

Washington, Idaho, and Montana use five main e-screening systems: PrePass, Drivewyze, Washington's screening system, and 360SmartView. Figure 9 uses a map to display the fixed weigh stations where these e-screening systems are located.

Figure 10 outlines some of the differences between these systems. Also shown in this figure is FMCSA's solution for the Commercial Vehicle Safety Alliance (CVSA) defined Level VIII – North American Standard Electronic Inspection. This Level VIII process is in development, and may not be widely available for several years, but is noted here for the important role it may provide to states in the future.

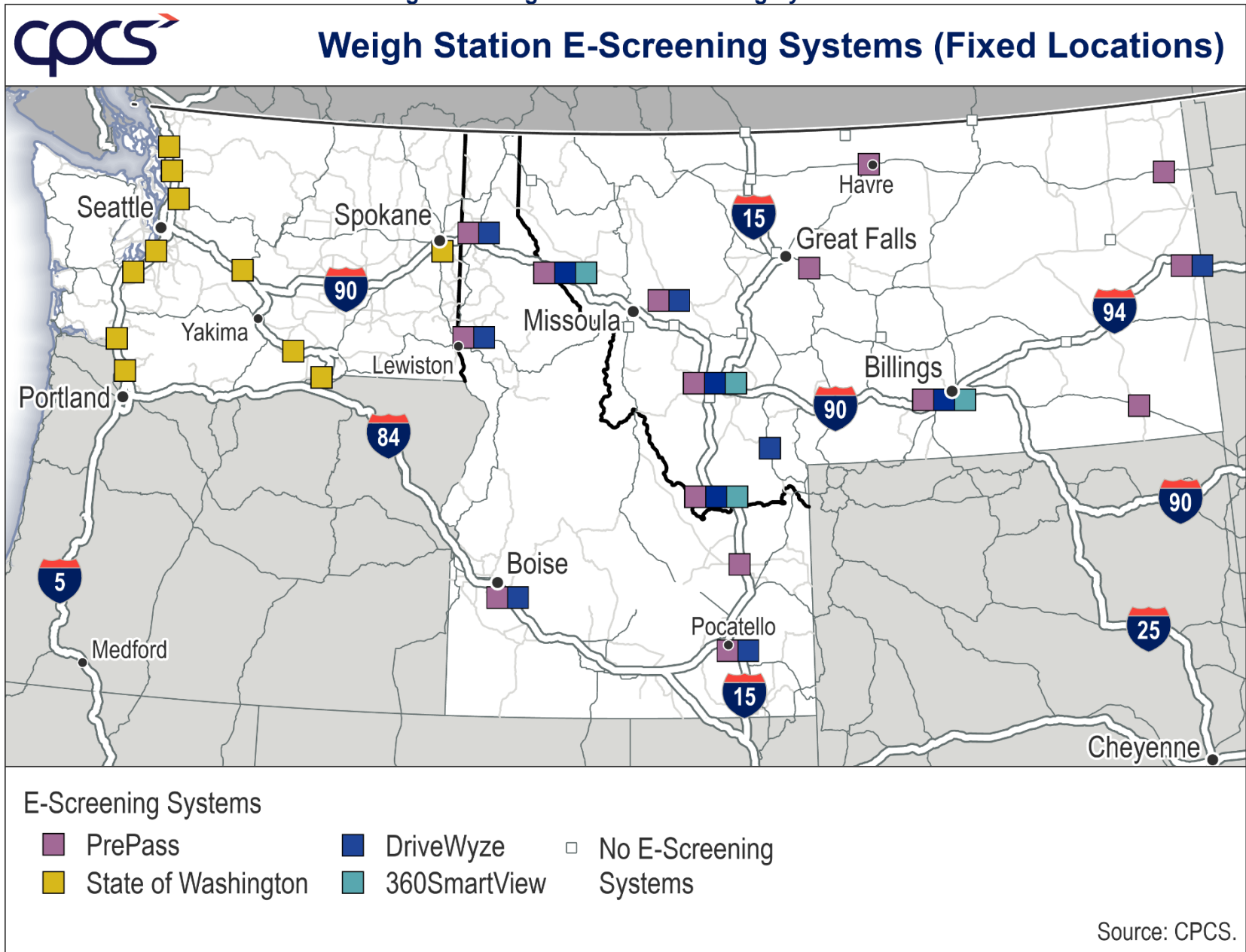**Figure 9: Weigh Station E-Screening Systems**

Figure 10: E-Screening Systems Overview

System	Services	Technology	Compatibility	User Cost	NWP States
PrePass	• Weigh station bypass • Data dashboard	Transponder or app	N/A	No initial cost; flat or seasonal rate. Standard cost of $17.65 per month per truck	ID, MT
Drivewyze Preclear	• Weigh station bypass, including at mobile sites • Data analytics	App only	Integrates with transponder-based services	30-day free trial, then $17.99 per month	ID, MT
Washington screening system	• Weigh station e-screening • E-screening for inspection selection	Transponder and LPR	Compatible with any 915 Mz transponders, including PrePass	One-time $35 fee per transponder, or register existing compatible transponder for no fee	WA
360SmartView	E-screening for streamlined inspection selection	LPRs, USDOT number readers, WIM scales, etc.	Integrates with PrePass	N/A	MT
Level VIII Inspection	Electronic inspection system	LPRs, USDOT number readers, WIM scales, etc.	TBD	N/A	TBD

Source: CPCS analysis of PrePass and Drivewyze websites.

The following section provides more details on e-screening systems used in Washington, Idaho, and Montana.

PrePass

Used by: Idaho, Montana

PrePass, offered by the non-profit corporation PrePass Safety Alliance, allows CMVs to be pre-screened at designated weigh stations, port-of-entry facilities, and agricultural interdiction facilities. PrePass operates at over 450 sites in North America and bills itself as the most widely used weigh station bypass system on the continent.[6]

CMVs must be equipped with a transponder or app, depending on each state's arrangement with PrePass, to make use of this system. Once a vehicle has been pre-screened, it can bypass participating weigh stations and continue traveling at highway speed without the need to stop. As the vehicle approaches a weigh station, the windshield-mounted PrePass transponder will identify the vehicle to the station's AVI reader or the PrePass app will communicate this information via cellular to the PrePass information system, which in turn sends this information to the weigh station. The vehicle is then screened based on its carrier safety status and other credentials, such as registration. The PrePass transponder or app will signal either a green light, indicating that the vehicle has met the

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[6] PrePass, https://prepass.com/

federal and state criteria to bypass the station, or a red light with an audible alert, indicating that the vehicle must pull into the weigh station for normal processing. Compliance is monitored by a roadside bypass compliance reader.[7]

Depending on the PrePass site, a PrePass transponder, the PrePass app, or both may be accommodated.[8]

Washington Screening System

Used by: Washington

The State of Washington operates its own proprietary screening system that uses transponders and license plate readers and which does not charge membership or subscription fees. The system is compatible with other transponders, including those used by PrePass. The system screens vehicle weights and carrier credentials on the mainline to determine if they need further inspection. The system also incorporates a number of e-screening technologies, including WIM scales, roadway and roadside sensors, and cameras. Washington operates an automated push/pull data CVIEW system which maintains the data that contributes to screening decisions. The state completed a proof-of-concept pilot to test compatibility with Drivewyze in early 2022.

> ### *Washington Automated Push/Pull CVIEW System*
>
> Through its proprietary screening system, Washington operates an automated data push/pull CVIEW system which has a live connection to each inspection site. The CVIEW system exchanges data with state and federal databases, including SAFER, multiple times per day. It pushes data out to inspection sites and pulls screening records back which are then accessible for other queries and reports.

Drivewyze Preclear

Used by: Idaho and Montana

Drivewyze is a smart mobility services company that operates Drivewyze Preclear, a system offering truck drivers the ability to bypass over 800 weigh station sites in the US and Canada. Unlike other commonly used e-screening systems, Drivewyze Preclear does not use transponders. All e-screening takes place on a mobile device (e.g., smartphone, tablet).

The Drivewyze Preclear app notifies drivers of an upcoming weigh station two miles and one mile ahead of time. The app then notifies drivers if they have been cleared to bypass the station or if they need to pull into the station for further inspection with a green or red light, respectively. The likelihood of receiving a bypass is largely determined by the carrier's ISS safety score (see ISS inset box in Section 2.5). Bypass rates also vary among weigh station sites and states based on a variety of factors determined by each state. If a driver approaches a weigh station that does not support bypass, the Drivewyze Preclear app still notifies drivers that they are approaching the station and directs them to follow road signs. In addition, Drivewyze Preclear is compatible with other transponder-based bypass services. Drivewyze can also be linked to other roadside sensor data so that all of these factors are considered.

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[7] Western States Trucking Association, PrePass,
https://westrk.org/programs/prepass/#:~:text=PrePass%20is%20an%20automatic%20vehicle%20identification%20%28AVI%29%20system,weigh%20stations%2C%20port-of-entry%20facilities%20and%20agricultural%20interdiction%20facilities.
[8] PrePass, https://prepass.com/

360SmartView

Used by: Montana

360SmartView quickly screens CMVs by integrating information, including license plate numbers, USDOT numbers, and vehicle weight, using sensors, cameras, and other devices (as depicted in Figure 11). 360SmartView then assists officers in assessing the vehicle credentials using a robust set of data, including Commercial Vehicle Information Exchange Window (CVIEW) – state software that collects information to create carrier, vehicle, and driver snapshots and that can interface with federal and other systems; National

Figure 11: 360SmartView Station in Butte, MT

Source: Google Maps Streetview

Law Enforcement Telecommunications System (NLETS) – a private software allowing interstate criminal justice information sharing; and state data. Vehicles that are the least likely to present safety or compliance issues are dismissed from the weigh station. Otherwise, vehicles are directed to the appropriate lane for additional inspection. This sorting reduces congestion-related delays and ensures that station resources are focused where they are needed most. The criteria used by 360SmartView to sort vehicles can be tailored to specific state requirements. 360SmartView can also provide data reports with varying levels of granularity, ranging from site-specific to statewide information.[9]

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9 360SmartView, https://www.360smartview.com/

2.5 E-Screening Determinants and Thresholds

Each state establishes its own screening rules for the types of information and thresholds used to electronically screen CMVs. Figure 11 details the e-screening determinants used in Washington, Idaho, and Montana.

Figure 11: E-Screening Information Determinants

Bypass Determinant	Description	Washington	Idaho	Montana
ISS score	Safety score of vehicle's carrier	Yes	Yes	Yes
International Registration Plan (IRP)	Vehicle registration status	Yes	Yes	Yes
International Fuel Tax Agreement (IFTA)	Fuel tax compliance	Yes	Yes	Yes
Out-of-service	Previously declared out of service	Yes	Yes	Yes (only at 360SmartView sites)
Vehicle weight	Weight of vehicle	Yes	Yes	Yes
Vehicle height	Height of vehicle	Yes	Yes	Yes
Vehicle length	Length of vehicle	No	Yes	Yes
Vehicle width	Width of vehicle	No	Yes (with permit)	Yes (with permit)
Tire or brake condition	Tire pressure, brake quality	Not currently (in process)	No	Yes (only 360SmartView sites)
Permit status	Correct permitting, including for OS/OW	Not used for screening	Yes	Yes (only at 360SmartView sites)
Random compliance	Random inspection checks	Yes	Yes	Yes
Unified Carrier Registration (UCR)	Unified Carrier Registration	No	Not mentioned	Yes
Oversize	Overall vehicle size	No	Not mentioned	Yes (with permit)
Recent bypass status at other sites	Whether a vehicle has recently been bypassed	No	No	No
Recent inspection results at other sites	Whether a vehicle has recently been inspected	No	No, not currently	No

Source: Consultations with WSDOT, ITD, MDT (2022).

ISS Safety Score

A key piece of data used to grant a bypass is the ISS score of the motor carrier. A carrier fleet's ISS score ranges from 1 to 99, with lower scores indicating a better safety rating. The score is calculated by aggregating the fleet's various Compliance, Safety and Accountability (CSA) scores. FMCSA calculates CSA scores monthly, in consideration of certain metrics, including the number of safety violations, the severity of safety violations, the number of vehicles in the fleet, and the number of vehicle miles traveled. The carrier's ISS score can be pulled from federal systems using certain data, such as a vehicle's license plate number or USDOT number.

Because inspection violations affect the ISS score, they also affect bypass rates. Therefore, there is a feedback loop between inspection and bypass that is established using the ISS score, as shown in Figure 13. Note that this figure presents the case of a negative feedback loop (an inspection violation reducing the bypass rate), but a positive feedback loop is also possible (repeated successful inspections can increase the rate of bypass).

Figure 13: Relationship Between Inspection and Bypass (Negative Feedback Loop)

| Violation identified during inspection | → | Carrier ISS score is adjusted up. A higher ISS score indicates a worse rating. | → | Higher carrier ISS score is reflected in a decreased bypass rate for fleet vehicles. |

Source: CPCS

Figure 12 identifies the bypass thresholds for the six determinants used by Washington, Idaho, and Montana: ISS score, IRP, IFTA, vehicle weight, vehicle height, and random compliance.

Figure 12: Bypass Thresholds

Information Determinant	Washington	Idaho	Montana
ISS score	Score greater than 74 must pull in for inspection.	Score of 75 or lower receives a bypass. A score over 75 does not receive bypass.	A score below 90 faces the random compliance bypass rate (5%). A score of 90 or above faces a lower bypass rate: • Score of 90 to 92 – 10% inspection rate • 93 to 94 – 15% • 95 to 96 – 25% • 97 to 98 – 50% • 99 to 100 – 100%
IRP	Either expired or revoked means no bypass	Valid registration required for bypass	Valid registration required for bypass
IFTA	Either expired or revoked means no bypass	Valid license required for bypass	Valid license required for bypass
Vehicle weight	• CMV must be within legal weight to be considered for bypass. • Max legal weight is 105.5k pounds • State does not currently electronically screen for permits. CMVs must pull in for paperwork inspection verify permits.	CMVs exceeding 129K pounds must pull into inspection site	Overweight CMVs are not granted bypass even if permitted. This is only in operation at WIM sites.[10]
Vehicle height	• CMVs over legal height (14'1" or more) may not bypass.	CMV exceeding 14' in height may not bypass and must pull in for inspection, even if permitted.	CMVs exceeding 15'6", even if permitted, may not bypass and must pull in for inspection.
Random compliance	• Random compliance rate depends on whether the CMV is identified by a transponder or license plate or whether it is unidentified. • Also varies based on traffic volume and what the patrol is focusing on at that place and time. These parameters are adjustable by the officers. • Generally, the state tries to avoid slowing down traffic. Thresholds are adjusted throughout the day.	5%	5%

Source: Consultations with WSDOT, ITD, MDT (2022).

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[10] Montana Code Annotated 2021, Maximum Gross Weight, https://leg.mt.gov/bills/mca/title_0610/chapter_0100/part_0010/section_0070/0610-0100-0010-0070.html

2.6   Types of Inspection Conducted

If a CMV is not granted a bypass, then it must pull in for a more detailed inspection. There are eight types of vehicle inspection that states might conduct, which are set by the Commercial Vehicle Safety Alliance (CVSA) Washington, Idaho, and Montana conduct different levels of inspections, as shown in Figure 13.

Washington and Montana conduct all types of inspection except Level VIII. The Idaho Transportation Department only conducts walk-around inspections: Levels II, III, and V.

Figure 13: CVSA Inspection Levels and Use

Inspection Level	Description	Washington	Idaho*	Montana
Level I: North American Standard (NAS)	Examine driver's license, medical certificate and waiver, HOS; inspect seat belt, exhaust system, turn signals, tail lamps, steering wheel	Conducted on multiple vehicles daily by statewide enforcement. Triggered by: • SMS scores • Obvious driver/vehicle violations • Multiple serious violations	Conducted	Conducted randomly or for observed violations
Level II: Walk Around Driver/Vehicle	Everything in Level I, but does not go under the vehicle	Conducted on multiple vehicles daily by statewide enforcement. Triggered by: • SMS scores • Obvious driver/vehicle violations	Conducted	Conducted randomly or for observed violations
Level III: Driver only	Look only at driver documentation (driver's license, medical certification, etc.)	Conducted on multiple vehicles daily by statewide enforcement. Triggered by: • SMS scores • Obvious driver/vehicle violations	Conducted	Conducted randomly or for observed violations
Level IV: Special	One-time inspection that looks at a particular item	Conducted very infrequently by statewide enforcement Triggered by studies or CVSA requests.	Conducted	Conducted for a focused enforcement event

Inspection Level	Description	Washington	Idaho*	Montana
Level V: Vehicle only	Everything under Level I, but driver does not need to be present	Conducted as needed at collisions if the driver is not available or during investigations of a trucking company. Triggered after a collision or for an investigation	Conducted	Conducted on buses, after collisions, as requested by a carrier, or for compliance investigations.
Level VI: Enhanced NAS for Radioactive Shipments	Inspection for radioactive cargo	Conducted as needed for radioactive shipments moved through the state.	Conducted	Not conducted
Level VII: Jurisdictional mandated commercial vehicle	Special inspection programs	Conducted on every school bus at least once a year by state enforcement, usually during the summer	Conducted	Conducted as requested for the state-sponsored Wreckers Inspection Program
Level VIII: NAS Electronic	Everything in Level I, but fully electronic with no direct interaction with officer	TBD	TBD	TBD

Source: CPCS, https://thecdlcenter.com/the-six-levels-of-dot-inspections/ and https://www.cvsa.org/inspections/all-inspection-levels/?msclkid=915bdaedcfb211ec823e3eef8471b9e8; Consultations with WSDOT, ITD, MDT.
*Note: Inspection levels I-VII are all conducted in Idaho, but only levels II, III, and V are conducted by ITD. The remaining inspection levels are carried out by the Idaho State Police.

2.7   State Innovative Technology Deployment Programs: E-Screening

FMCSA manages the Innovative Technology Deployment (ITD) Program to improve CMV safety using technology. States with ITD Program Plans are eligible for reimbursement grant funding on projects included in the plan.[11] These plans must describe and outline a high-level design for potential projects that meet the following ITD Program goals:

- Improve safety and productivity of motor carriers, commercial vehicles, and their drivers.

- Simplify enforcement operations.

- Improve efficiency and effectiveness of commercial vehicle safety programs through targeted enforcement.

- Improve security of data and improve sharing of commercial vehicle data within States and between States and FMCSA.

- Reduce Federal/State and industry regulatory and administrative costs.

- Achieve nationwide deployment of the program, with all jurisdictions participating.

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[11] USDOT, FMCSA, Innovative Technology Deployment (ITD) Program, https://www.fmcsa.dot.gov/itd#:~:text=The%20goals%20of%20the%20ITD%20Program%20are%20to%3A,of%20commercial%20vehicle%20safety%20programs%20through%20targeted%20enforcement.?msclkid=1ecbbec5d06311ec9eac9a1369f562ee

Figure 15: Draft Idaho ITD Program Plan Project Descriptions

Project Name	Description
Electronic Screening Upgrades	Identify and deploy advanced e-screening technologies at existing sites throughout the states. These technologies would include optical character recognition systems, remote bypass technologies, tire anomaly and classification systems, and infrared brake technology.
POE Electronic Screening Build-Out	Expand Idaho's network of e-screening sites. The state would add five more e-screening POE sites.
Roadside Enforcement Upgrades	Deploy technologies for use by Idaho roadside safety enforcement personnel including WIM scales, optical character recognition equipment, barcode readers, etc.
Idaho CVO information Analytics	Provide a set of data analytics tools that integrate POE operations and highway infrastructure data. This integrated data will support transportation planning decisions.
Idaho CVIEW Enhancements	Develop a plan to improve data quality and access, including interfaces to other state agencies and private data suppliers.
Port-of-Entry Communications Upgrade	Assess and communicate deficiencies at POE locations throughout the state. IT would identify and deploy upgrades to POE locations.

Source: ITD, 2022 Draft ITD Program Plan

Montana

Montana's ITD Program Plan, released in early 2020, outlines potential projects that would improve the state of e-screening systems in the state (Figure 16). These proposed projects focus on integrating new e-screening technologies (e.g., LPRs, thermal brake imaging, height detection systems, and WIM scales) into existing e-screening systems. The introduction of these new e-screening systems would reduce the time CMVs are waiting for manual inspections at weigh stations. Montana also proposes a project to share data between e-screening sites to reduce unnecessary, repeated inspections. This project would allow CMVs recently processed at an inspection site to bypass other weigh stations downstream.

Figure 16: Montana ITD Program Plan Project Descriptions

Project Name	Description
Automated Weigh Station Screening System (AWSSS)	MDT currently has five Automated Weigh Station Screening Systems. These systems have license plate and DOT camera readers, thermal brake imaging, and height detection. The camera reader information interfaces with the federal and state databases for safety and credentialing data on the vehicles and carrier. This information, along with thermal brake imaging and height detector alerts, are used at Montana's weigh station through our CVIEW in real time. Montana plans to deploy AWSSS at additional sites and enhance the technology at the five sites where it currently exists.
Maximize Weigh Station Efficiency	Improve the efficiency of Montana weigh stations by adding License Plate and DOT readers at existing WIM sites on the mainline, allowing more CMV bypass. This project will allow CMVs that do not belong to a specific vendor bypass system to bypass the weigh station if they are compliant.
Weigh Station Ramp Monitoring System	Improve weigh station safety and efficiency by installing ramp detection queue systems with signs that read "Weigh Station Open When Lights are Flashing." This will prevent trucks from backing up to the mainline and causing a safety hazard to the traveling public.
Deploy Virtual Weigh Station Vehicle Screening	Deploy cameras and other technology supported by wireless communications at virtual WIM sites to conduct real-time truck and carrier screening. A virtual weigh station is a roadside enforcement facility that does not require continuous staffing and is monitored from another location. An officer located downstream of the WIM site can pull the vehicle

Project Name	Description
	matching the image over for inspection and weighing or direct the vehicle to a nearby fixed weigh station for inspection/weighing.
Data Sharing Between Screening Sites	Improve CMV efficiency and enforcement effectiveness by sharing data between screening sites to only target CMVs that are processed through a weigh station once and if compliant, can bypass other weigh stations downstream.

Source: MDT, 2020 ITD Program Plan

3   Needs, Issues, and Opportunities

Although e-screening systems have been successful in reducing the time CMVs spend at inspection facilities, there remain needs and issues related to the efficiency and coordination of e-screening systems within and between states. The following summarizes e-screening and inspection needs and issues identified by state DOTs and trucking associations representing Washington, Idaho, and Montana. The needs and issues are followed by possible opportunities for improvement of each. Select opportunities address multiple needs and issues.

1. Lack of information sharing between sites and states

States typically do not to share inspection data or results with other inspection sites even when those sites are within the same state or located close by in other states. This is primarily due to technology and reporting limitations. Moreover, bypass decisions are often made in isolation of what actions/decisions have been made upstream from a bypass/inspection site – that is, without considering a CMV's recent bypass/inspection status at other facilities.

Opportunities:

- Encourage broader and timely use of the SAFER system to share recent inspection information (see Item 5).
- Consider developing an automated data push/pull CVIEW system, such as the one developed by Washington
- Install more devices (e.g., WIM scales, LPRs, USDOT number readers, tire anomaly sensors, height detectors) that both provide real-time vehicle data and can pull vehicle information from federal or state systems. For example, Montana plans to install more technology at inspection sites to make better use of its 360SmartView system.
- Share information to make better use of collected data, including for planning purposes. For example, data could be used to inform highway development plans – including facility location, design, and capacity, to identify the most common OS/OW routes, and where to eliminate vertical height or other restrictions.

2. Need for more communications between sites

Communications between inspection sites are, in some case, insufficient. E-screening requires quick exchanges of large amounts of data, which requires robust telecommunications infrastructure.

Opportunity:

- Install broadband to improve connectivity between inspection sites or weigh stations, especially fiber optics.

3. Need for a single authoritative data source

Currently, there are a variety of disparate and sometimes redundant state and federal sources that house CMV and carrier information. These should be consolidated/integrated into a single authoritative source to reduce redundancies and confusion.

Opportunities:

- Consider developing an automated push/pull CVIEW system, such as the one developed by Washington for more real-time access to data.
- Take advantage of the capabilities of existing systems (e.g., SAFER).

- Leverage a consolidated data platform (in development by FMCSA) to make it easier to make better use of inspection data, including for planning purposes.

- This data should be updated on a more regular basis

4. E-screening is expensive

Improvements to e-screening systems require substantial investments by states, including the installation and maintenance of devices, including WIM scales, LPRs, tire pressure sensors, and broadband.

Opportunities:

- Continue to integrate e-screening into ITD plans for federal reimbursement grant funding.
- Develop core compliancy for NWP states that are not yet (North Dakota and Minnesota) to be eligible for federal grant funding.
- Take advantage of Motor Carrier Safety Assistance Program (MCSAP) grants for innovative technology projects
- Identify funds for system installation, maintenance, and operations.
- Investigate the option to pursue multi-state grants.

5. Inconsistent reporting practices

Data entered into the systems that ultimately feed into screening decisions (e.g., SAFER) can sometimes be at the discretion of each officer, and some officers are quicker at doing so than others. Different officers may also make varying decisions on which vehicles to inspect, setting their own screening rules or thresholds.

Opportunities:

- Require officers to promptly input inspection information.
- Train officers on best practices for using state and federal databases
- Inform officers about the importance of efficient truck movement for the economy.
- Be prepared for the eventual implementation of Level VIII inspections which will automate data collection and entry and reduce reporting inconsistencies.

6. Need to make e-screening more accessible

Currently only 13 percent of interstate carriers participate in a screening system, often because there is a cost barrier.[12] The remaining CMVs must stop for inspection at every weigh station, which reduces the efficiency of both inspection processes and trucking.

Opportunities:

- Consider implementing a state-sponsored screening system, such as Washington's proprietary system to reduce costs for carriers.
- Use license-plate or USDOT number readers to identify and screen CMVs that do not participate in transponder or app-based screening services.
- Install variable message signs to communicate bypass status.

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[12] FMCSA Report to Congress, Safety and Efficiency Effects of Replacing Transponders with License Plate Readers to Screen Trucks at Inspection or Weigh Stations, 2020, https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/2020-06/Transponder%20Based%20Weigh%20Station%20Technology%20Report%20Enclosure%20FINAL%20June%202020.pdf

7. Patchwork of e-screening systems

The rapid proliferation of e-screening systems has yielded a patchwork of technologies and services that often lacks harmony and consistency between states and even within states. Many drivers have transponders from multiple providers which can clutter the windshield and be distracting. Inspection officers often must monitor multiple different systems at once.

Opportunities:

- Consider implementing a state-sponsored screening system, such as Washington's proprietary system to consolidate technologies and improve compatibility.
- Install license plate or USDOT number readers to identify and screen CMVs that do not participate in other bypass services.
- Be prepared for the eventual implementation of Level VIII inspections which will simplify the current patchwork of systems.

8. Need for improved outreach with drivers and carriers

Consultations showed that many drivers, especially single-driver carriers, appreciate random compliance checks, as this inspection provides a second set of eyes on their trucks which improves their safety. Carriers and drivers might be interested in inspection events and training or interested in directly receiving vehicle data collected from screenings or inspections, to improve fleet safety and improve awareness of vehicle conditions.

Opportunities:

- Conduct outreach to assess interest in inspection events and training.
- Conduct outreach to assess interest in sharing screening or inspection information directly with carriers.
- Consider the potential risks of increased liability for carriers that are privy to this data.

9. Inspection evasion

Some drivers, notably those moving across the Canadian border in Washington, take alternative routes to avoid inspection sites and associated delays.

Opportunities:

- Improve the efficiency of screening and inspection processes to reduce delays at inspection sites and border crossings.
- Consider introducing additional virtual screening locations to reduce evasion, similar to what Washington has proposed in its ITD Program Plan.

10. Repeated inspections

Drivers sometimes get pulled over repeatedly for inspection in the same state. This is especially true for vehicles that do not participate in screening programs. Stakeholders suggested that a recent inspection or even bypass should carry forward for a period of time or over a certain distance. However, the enforcement community counters that changes in the condition of CMVs between inspection sites may affect screening and sorting decisions. There is a delicate balance to be found between improving the efficiency of CMV movements and ensuring compliance with safety standards.

Opportunities:

- Use license plate or USDOT number readers to identify and screen CMVs that do not participate in transponder or app-based screening services.

- Consider carrying bypass or inspection status forward for a period of time or over a certain distance, especially if the travel time between sites indicates that the CMV has not made any lengthy stops.

- Look into Montana's proposed ITD project to only target CMVs that are processed through a weigh station once and if compliant, allow a bypass at other weigh stations downstream.

- Improve quick e-screening technology to reduce the need for manual inspections.

The following section provides additional state input on reducing repeated inspections.

State Input on Reducing Repeated Inspection

The Washington, Idaho, and Montana DOTs provided input on the possibility of carrying bypass or inspection status forward for a period of time or over a certain distance to reduce unnecessary repeated inspections. This input is presented in Figure 17.

Currently, neither Idaho nor Montana nor Washington use a CMV's recent bypass or inspection status as a determinant in granting a bypass. During consultations, the three state DOTs shared their views on whether incorporating these as bypass factors would be possible.

States communicated that using recent bypass or inspection status is likely possible but would require improved information sharing between inspection sites and states, updates to policy and service agreements, more investments in e-screening technology, and generally more consideration of the appropriate thresholds for these bypass factors. Idaho and Montana both communicated that the state is interested in using recent bypass or inspection status as additional bypass factors. Washington generally expressed caution that granting a bypass based on recent bypass or inspection status may not always be wise, since vehicle conditions may have changed since it was last screened.

Figure 17: Recent Bypass or Inspection as Bypass Factor

Washington	Idaho	Montana
Recent bypass		
Would be possible if: • Recent bypass status data could be accessed easily and quickly • The recent bypass status considered bypass thresholds that are at least as strict as the state's own screening rules However, state prefers to verify for itself that the CMV is compliant itself at the current place and time.	The state is interested in using this as a bypass factor. There would need to be some type of threshold for time and/or distance since last bypass.	The state has had internal discussions about using previous bypass status to make bypass decisions, but this is not currently in place. There would need to be some threshold, such as distanced traveled since the last bypass. This would require querying a location and then examining whether a CMV received a bypass at that location. This would have to be mandated by a policy put out to field officers. It would also require an agreement with Drivewyze and PrePass to change bypass requirements. Montana's ITD (Innovative Technology Deployment) plan currently has a project related to information sharing within and between states.
Recent inspection		
Inspection information would come from SAFER system. Currently, inspection only affects bypass when a CMV receives an out of service order. Recent inspection probably won't be used as a bypass consideration until Level VIII inspections (electronic inspections) are viable.	The state is interested in using this as a bypass factor. There would need to be some type of threshold for time and/or distance since last bypass. Idaho might be able to accept a successful inspection from another state if that state has a more stringent inspection protocol than Idaho's.	Montana is considering this. There would need to be some threshold, such as distanced traveled since the last inspection. This would have to be mandated by a policy put out to field officers. It would also require an agreement with Drivewyze and PrePass to change bypass requirements. Montana's ITD (Innovative Technology Deployment) plan currently has a project related to information sharing within and between states.

Source: CPCS

4 The Future of E-Screening

This assessment hints at a future defined by the following developments in e-screening practices:

- **Improvements in optical character recognition technology** (license plate and USDOT number readers) increase the accuracy and reliability of these devices such that they are on par with transponders and apps. Without this competitive edge, transponder- and app-based e-screening systems may begin to become obsolete. These systems make inspection bypass more accessible to smaller carriers.

- **The consolidation of information systems** at the federal and state levels increases the ease of collecting and analyzing data related to inspection screening factors. This simplification also facilitates more information sharing between inspection sites and jurisdictions.

- **Level VIII electronic inspections** become ubiquitous, improving the efficiency of inspection, reducing the labor requirements of enforcement, and generally bringing the practice into the digital era. Electronic inspection may also become an important means to check that autonomous CMVs are in good working order when there is no driver to monitor the vehicle's performance, pull the vehicle into an inspection site, or interact with enforcement officers.[13]

The North/West Passage states should each consider this expected e-screening future and prepare for new technology and improved coordination opportunities among the states in the corridor.

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[13] Truckinginfo, CVSA Ponders Driverless Truck Enforcement, 2021, https://www.truckinginfo.com/10148005/cvsa-ponders-driverless-truck-enforcement

Appendix A. Key FMCSA and Related Information Systems

Figure 18 provides a listing, with descriptions, of key FMCSA information systems.

Figure 18: Key FMCSA and Related Information Systems

FMCSA Information System	Description
Aspen	An application that allows inspection officers in the field to collect all roadside inspection details relating to CMVs. The software is also able to pull data from other remote FMCSA data sources, including ISS. The service allows inspection officers to maintain a comprehensive database of vehicle inspection details. Moreover, Aspen can communicate inspection information to SAFER, a public website, and SAFETYNET, a database management software.[14]
Commercial Vehicle Information Exchange Window (CVIEW)	State-developed software that collects information to create carrier, vehicle, and driver snapshots.
Inspection Selection System (ISS)	The main tool used by inspection officers to screen vehicles and decide whether to perform an inspection. The system provides a "carrier snapshot" with details including safety performance. This functionality provides inspection officers with a wider breadth of data at their fingertips, allowing them to make informed decisions more quickly. ISS is connected to Aspen, creating a data field when a vehicle is directed to an inspection.
National Law Enforcement Telecommunications System (NLETS)	Privately developed software allowing interstate criminal justice information sharing.
SafeSpect (in development)	Anticipated as the next major step in FMCSA's software, SafeSpect will collect data related to CMV inspection, and it will ultimately replace all existing legacy field systems by combining their functionality into one system, including Aspen and ISS.
Safety and Fitness Electronic Records (SAFER)	A public website that provides carrier snapshot information and displays communication links that are critical for FMCSA data transfers. The system allows inspection information to be shared between weigh stations within and between states.

Source: CPCS, FMCSA: https://www.fmcsa.dot.gov/mission/information-systems/information-systems, https://www.transportation.gov/sites/dot.gov/files/2022-03/Privacy%20-%20FMCSA%20-%20SafeSpect%20-%20PIA%20-%2003%2018%202022.pdf

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[14] USDOT, FMCSA, Information Systems, https://www.fmcsa.dot.gov/mission/information-systems/information-systems