# 2022 Delaware Freight Emphasis Area Summary: Technology & Operations

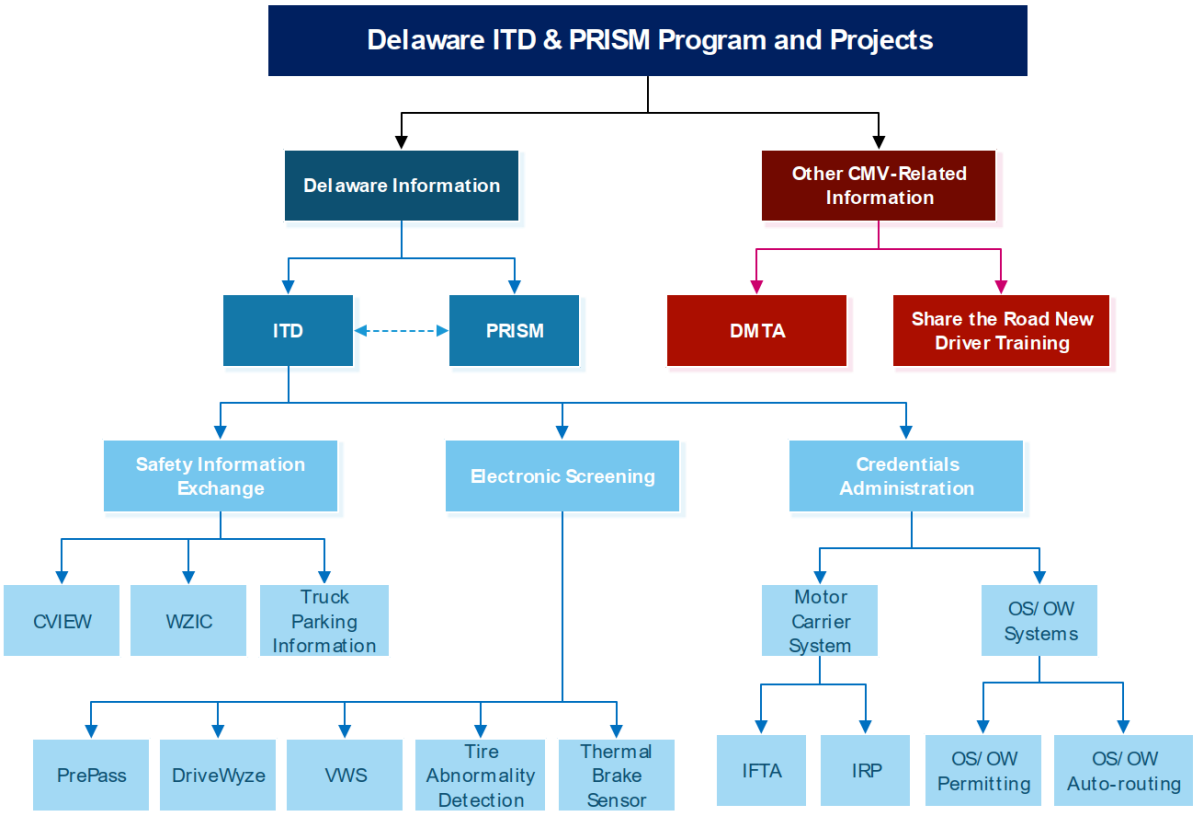
### D.1.1 Delaware ITD-PRISM Program

**Detail Report:** https://deldot.gov/Programs/ITD-PRISM/pdfs/DE-ITD-PRISM.pdf.

**DelDOT Commercial Motor Vehicle Portal:** https://deldot.gov/Programs/ITD-PRISM/index.shtml.

DelDOT operates the Innovative Technology Deployment (ITD) Program[1] and Performance Registration and Information Systems (PRISM) Program as mechanisms through which the Federal Motor Carrier Safety Administration (FMCSA) provides federal funding to deploy a variety of projects that support interstate and intrastate commercial motor vehicle (CMV) operations. ITD provides funding for CMV credentials administration; electronic screening of CMVs for size, weight, safety, and credential information; and the real-time exchange of vehicle and driver safety information to support safety inspections and enforcement of CMV regulations. PRISM provides states with a mechanism to identify and immobilize motor carriers with serious safety deficiencies and hold them accountable through registration and law enforcement sanctions.

*Exhibit D-1: Delaware ITD & PRISM Organization*




**Source:** DelDOT, https://deldot.gov/Programs/ITD-PRISM/pdfs/DE-ITD-PRISM.pdf.

[1] Started in 2006 as the Commercial Vehicle Information Systems and Networks (CVISN) Program, CVISN was renamed to ITD in 2015 with the passage of the FAST Act.

### D.1.2 Electronic Screening Systems

Electronic screening entails deploying technology to identify and electronically screen commercial vehicles at mainline speeds. As part of DelDOT's ITD-PRISM program efforts, Delaware's current and planned electronic screening (E-screening) systems include subscriber-based systems, virtual weigh stations, automatic brake sensor thermal inspection systems, and tire abnormality detection systems.

**Subscriber-Based E-Screening Systems:** The Delaware Electronic Screening Deployment project includes the *PrePass*[2] transponder-based system at one site and the *Drivewyze*[3] geo-fence/mobile device-based system at seven sites (**Exhibit D-2**). These E-screening systems use technology to screen commercial vehicles in motion. Motor carriers can enroll in the program if the carrier and vehicle meet safety and credentialing requirements. Once enrolled, commercial vehicles can use the e-screening sites to bypass fixed weigh stations. The sites pre-screen registered vehicles for compliance with size and weight regulations and tell drivers to bypass or continue to the weigh station. A transponder and dynamic message signs (DMS) or in-cab devices communicate information to the driver. An overheight detector and weigh-in-motion (WIM) system assess if the vehicle meets size and weight requirements.

**Virtual Weigh Station (VWS) Deployment:** Delaware VWS systems include three deployed, one portable, and one planned site (**Exhibit D-2**). VWS technology is typically deployed along diversion routes that trucks might use to avoid tolls or weigh stations. It allows the state to implement cost-effective truck route monitoring with targeted enforcement. The sites typically include WIM technology, overheight detection, cameras to capture images of the vehicle, license plate and USDOT number, and wireless communication devices. The sites send the collected data to officers located in fixed weigh stations or patrol vehicles who can intercept violators based on screening of vehicle size, weight, credentials, and safety information. A VWS site can be developed for a fraction of the cost of a fixed facility, providing greater coverage and flexibility for enforcement officers. The wider enforcement coverage promotes better compliance with size, weight, credential, and safety regulations. Delaware systems

*Exhibit D-2: Delaware Electronic Screening and Virtual Weigh Station Sites*

| Route | Site | System(s) or Status |
|---|---|---|
| **E-Screening Systems** | | |
| **US 301** | Middletown US 301 NB | Drivewyze and PrePass |
| **I-95** | Delaware Toll Plaza I-95 NB | Drivewyze |
| **I-295/I-95** | Delaware Turnpike Inspection Point, I-295/I-95 SB | Drivewyze |
| **SR 7** | Limestone Inspection, SR 7 NB | Drivewyze |
| **SR 7** | Limestone Inspection, SR 7 SB | Drivewyze |
| **US 41** | Newport Gap Pike Inspection, US 41 SB | Drivewyze |
| **Terminal Ave** | Terminal Avenue Inspection Point | Drivewyze |
| **VWS Systems** | | |
| **US 13** | US 13 NB approaching weigh station | Deployed |
| **SR 1** | SR 1 NB approaching Exit 119 | Deployed |
| **Warwick Rd** | Warwick Road EB | Deployed |
| **--** | Portable VWS System | Portable trailer can be deployed statewide |
| **US 301** | US 301 NB at Maryland-Delaware state line | Planned |

[2] PrePass® / PrePass Safety Alliance (formerly HELP, Inc.), https://prepass.com/.
[3] Drivewyze, https://drivewyze.com/.

**Automated Brake Sensor Thermal Inspection System:** Delaware plans to install thermal inspection systems on the approach ramps to weigh stations on US 13 and US 301. These systems automatically screen CMVs for unsafe equipment without human intervention by capturing thermal images of each wheel set for every axle as the vehicle passes through the system. The system scans the images and flags vehicles that have potentially faulty equipment based on the heat signatures of the thermal images. This information is then sent to officials at the scale house who can direct vehicles to an area for further inspection.

**Tire Abnormality Detection System:** A tire abnormality detection systems (TADS) electronically screens tires of CMVs to identify underinflated, missing, mismatched, or flat tires at ramp to highway speeds. Anomalous or flat tires decrease a driver's directional control, increasing the risk of an accident. They also reduce the useful life of the tires and impact fuel economy. In the case of missing or mismatched tires (old and new in dual set), the vehicle loading can become imbalanced, also increasing the risk of an accident. Tire and brake failures are the number one equipment failures involved in CMV crashes nationwide. This innovative system can screen CMVs for anomalous tires to prevent crashes before they occur.

### D.1.3 Truck Parking Information System

An element within DelDOT's ITD-PRISM program that focuses on enhanced safety information sharing includes the testing and implementation of a truck parking information system. This system provides CMV drivers with information on available truck parking along major routes in Delaware and neighboring states. The information is provided in real-time and in-cab to the truck drivers in a safe and non-intrusive manner. The information is collected from DelDOT and parking authorities around the state. With truck parking information, CMV drivers can plan to rest along their routes, in accordance with federal requirements. As of 2022, a pilot system has been developed at Delaware's Smyrna rest area, using cameras and in-pavement "puck" sensors to determine parking space availability. A corresponding webpage is being developed to track available spaces in parking lots, areas, and subareas; and a system demonstration is planned for the end of 2022. These technologies reflect ongoing implementation efforts that mesh with specific recommendations from the 2021 Delaware Statewide Truck Parking Study to explore information and technology projects where there are opportunities to address truck parking issues by providing timely and accurate truck parking information.

### D.1.4 Work Zone Incident Communication System

**DelDOT WZIC System:** https://deldot.gov/Programs/WZIC/index.shtml.

Another element of DelDOT's ITD-PRISM program and a continuation of efforts from a prior (2017) feasibility study, DelDOT continues to explore the conceptual development of a Work Zone Incident Communication (WZIC) system to enhance the state's ability to communicate work zone restrictions to CMV drivers. The communication includes notifications of closures, adverse roadway conditions, safety alerts, and security concerns that will be provided via existing in-cab devices/systems in a safe and non-intrusive manner. The notifications will be sent with sufficient advanced notice to enable rerouting around the incident or slowing down to a safe speed approaching the area of concern. The system will collect information from DelDOT, cooperating agencies and companies in the private sector. As of 2022, ongoing work on the WZIC program includes development of the Trucker Portal and related requirements, as well as coordination of preferred data sets from sources such as Drivewyze, PrePass, and INRIX.

### D.1.5 Share the Road New Driver Training Program

**VTTI Sharing the Road Program:** https://cmvroadsharing.org/.

In support of other technology and operations programs and to help the state's goal of reducing motor vehicle fatalities, DelDOT has also implemented a supplemental driver education program developed by the Virginia Tech Transportation Institute (VTTI) that promotes safe driving practices among teen drivers and the general driving population while interacting with CMVs. This program includes a hands-on truck experience developed by VTTI at Delaware schools, which demonstrates proper procedures for sharing the road with trucks and other heavy vehicles, along with the danger areas around these heavy vehicles. It also provides website resources through VTTI that incorporate video clips of real-world driving events captured during VTTI naturalistic driving studies.

### D.1.6 DelDOT Oversize/Overweight Permit System

**Delaware OS/OW Permit System:** https://deldot.gov/osow/application/.

DelDOT's ITD-PRISM program efforts also include an emphasis on expanded electronic credentialing systems. Current efforts focus on Delaware's Oversize/Overweight (OS/OW) Hauling Permit System Software Upgrade and Common Look and Feel (CLF) Enhancement Project, and the OS/OW Automatic Routing System Project.

**OS/OW Hauling Permit System Software Upgrade and CLF Enhancements:** This project updates the DelDOT's system to be more accessible and secure. The system software is being upgraded to a new version of JAVA and Delaware's Information Technology (IT) CLF standard. The CLF standard improves the user experience and enables access to the system through different platforms such as tablets and smartphones. The upgraded system also provides enhanced security against cyber-threats.

**OS/OW Automatic Routing System:** This system generates routes for commercial vehicles along permitted routes. Motor Carriers can enter start and end locations into the OS/OW Auto Routing System to generate a safe route using the auto-routing system. The system ensures the safety of the traveling public and the integrity of public streets, bridges, and infrastructure statewide. Data input by DelDOT personnel and Commercial Vehicle Operations personnel is used to evaluate the routing options.

### D.1.7 Dilemma Zone (DZ) System

**Dilemma Zone System Details:** https://deldot.gov/Programs/itms/index.shtml?dc=projects.

A dilemma zone (DZ) is the area just before a traffic signal where approaching vehicles may not be able to safely slow down to stop before a red signal, but also may not be able to keep driving to make it through an intersection safely before the signal turns red. Driver-decisions in the DZ during a traffic signal change interval play a significant role in affecting road safety at signalized intersections – more so, potentially, for CMVs with heavy freight loads that require greater time/distance to stop completely. To improve safety at strategic locations, Delaware is deploying a system that uses high-definition radar sensors that can detect if a vehicle may be entering a DZ, and that automatically extend the signal green time while also turning on a flasher sign ahead of the intersection to warn approaching drivers. DelDOT's initial DZ system was installed in February 2019 at the US 113 / SR 16 intersection in Ellendale. Future installations are planned in Smyrna along DelDOT's US 13 emerging technology testbed.

## D.1.8 Connected and Automated Vehicles

**DelDOT CAV website:** https://deldot.gov/Programs/autonomous-vehicles/index.shtml.

Connected and Automated Vehicles (CAV) utilize technology to communicate with other vehicles, connected devices, and the transportation system. DelDOT maintains a CAV Advisory Council tasked with developing recommendations for innovative tools and strategies that can be used to prepare Delaware's transportation network for CAV. Potential CAV subject areas are related to promoting economic development; technology, security, and privacy; transportation network infrastructure; and impact on public and highway safety.

## D.1.9 Transportation Operations Management Plan

**DelDOT TOMP Resources:** https://deldot.gov/Programs/itms/index.shtml?dc=tomp.

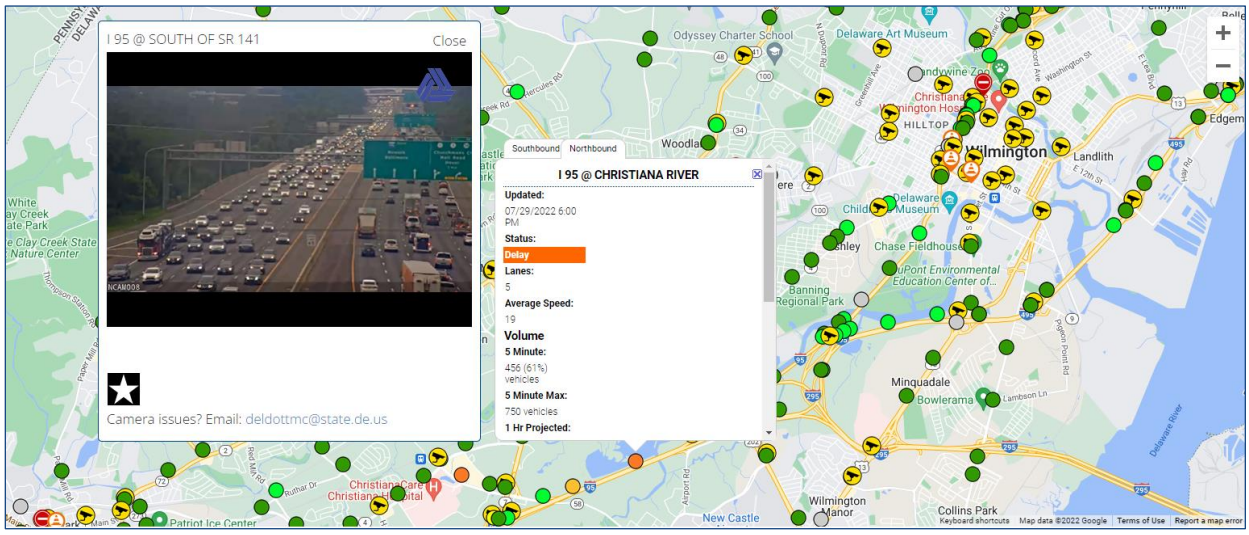
The Transportation Operations Management Plan (TOMP) is Delaware's comprehensive, consistent statewide approach that uses ITMS data to understand traffic mobility across the state. This understanding is essential for DelDOT to ensure the state's transportation system supports safe, reliable, and multimodal travel to make Delaware a better place to live and conduct business.

## D.1.10 Real-Time Traffic Data

**DelDOT Interactive Map:** https://deldot.gov/map/index.shtml.

From a real-time data technology perspective, much of the information that DelDOT gathers for transportation systems management is shared with the public. DelDOT provides incident and travel advisory information throughout the state as part of an interactive travel map (**Exhibit D-3**) with access to data layers such as live traffic cameras, travel times, weather advisories, water-on-road warnings, snow advisories, and more. Maps are available online and via mobile device apps.

*Exhibit D-3: DelDOT Interactive Map Sample*



### D.1.11 Other Technology Systems

Other technology and operations systems that support the applications above and other resources throughout DelDOT with benefits for both CMV traffic and general travel include details related to:

- All electronic tolling (AET) initiatives
- Traffic responsive signalization (TRS) via advanced software control and periodic retiming
- ITMS radar traffic detector systems (Wavetronix) for volume, speed, delay, and classification
- ITMS Bluetooth data collection systems for travel time, speed, and travel pattern data

**DMTA Congestion Newsletters**

In addition to state advisories and data available through DelDOT resources, the **Delaware Motor Transport Association (DMTA)** (https://delawaretrucking.org/) also supports public/private information sharing by providing newsletters and subscriber alerts directly to trucking and logistics professionals to alert them to road closures, congestion conditions, construction advisories, safety issues, and more.

https://www.fhwa.dot.gov/tpm/rule.cfm.