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# Secrets Behind the **Weigh Station**

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ORBCOMM® Drivewyze®

## The Purpose of this Guide

If you're a fleet manager, you're probably familiar with how often your trucks are inspected. But you may be surprised at what happens behind the scenes at a weigh station, even if your trucks don't get pulled aside for an inspection.

As a truck pulls in, a number of factors are considered to determine whether it returns to the Interstate or gets sent into a bay for a Level 3 inspection. Thermal cameras scan for bad brakes, automated license plate readers run checks against state and federal databases, and officers in the scale house assess whether the truck needs to be detained.

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## *Exploring Weigh Station Technology and Law Enforcement FAQ*

In this e-book, we showcase some advanced screening technologies that are used by commercial vehicle inspection organizations in weigh stations across North America. Many of these technologies were invented and deployed by Intelligent Imaging Systems, a sister company of Drivewyze, with almost 20 years of experience in commercial vehicle safety solutions.

This e-book also tests a few myths and answers common questions about why some trucks get inspected and others don't. And finally, we arm you with some tips and tricks about what you can do to help your drivers reduce unnecessary delays and inspections.

# Weigh Station Technology *Explored*

At the heart of the modern weigh station are technologies including overhead cameras, license plate and decal readers, and advanced thermal imaging. In some instances, these technologies are located at fixed facilities, but in other cases, where law enforcement tend to do their roadside inspections in temporary or mobile locations, specially equipped vans and trailers are used to screen approaching vehicles.

Regardless of their exact location, these technologies all improve vehicle safety by evaluating whether a truck needs to be pulled aside for a closer look. In this section, we explore some of these advanced roadside screening technologies in more detail.

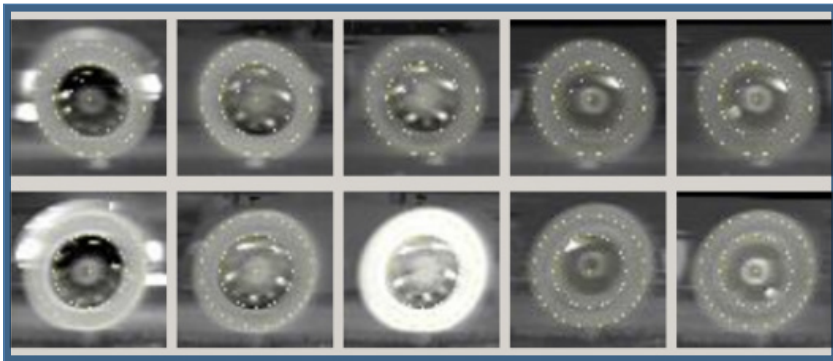


## Weigh Station Technology Explored: Thermal Inspection Technology

One of the most advanced systems used in many weigh station systems is a thermal inspection system which uses thermal signatures to detect unsafe or defective equipment such as:

- Overworked brakes
- Failed axles and bearings
- Under-inflated or damaged tires

Thermal inspection cameras take images of a truck's tires, and these images are then automatically scanned for abnormal hot or cold spots.



*Officers are alerted with hot spots showing light and cold spots showing dark.*



*Thermal inspection can be "manual" requiring the officers to operate on the ramp or can be "automated" with alerts displayed to officers on monitors in the station.*

If the system detects that there may be an issue with bad brakes, sheered bolts, a flat tire or other wheel safety issues, then the station personnel are alerted to pull the truck in for inspection. These systems have accuracy rates above 98%, and are responsible for pulling unsafe vehicles off the road, in most cases identifying problems that a driver would normally be unaware of until an accident happened.

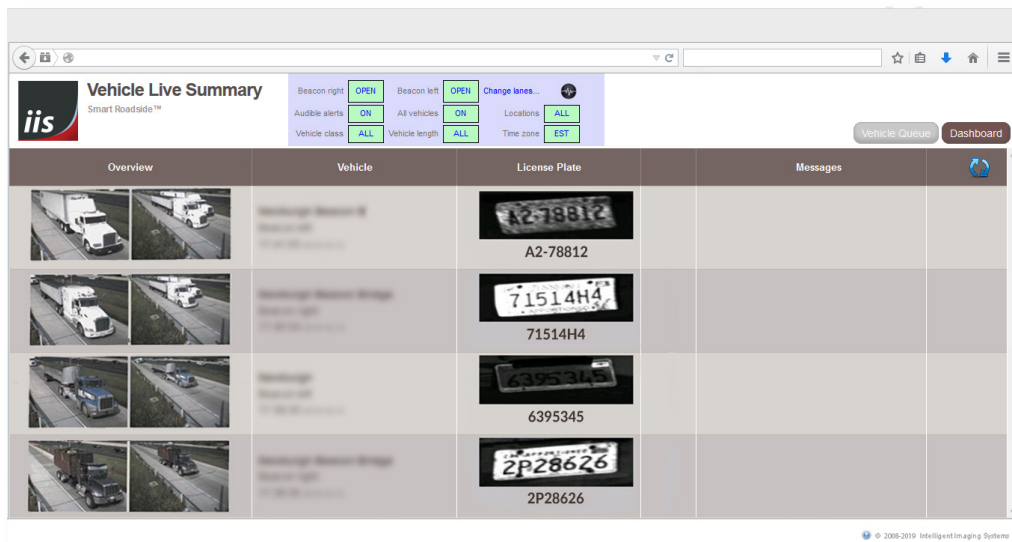
## *Weigh Station Technology Explored:* **Automated Readers**

Automated Readers are another tool used to collect and process information in real time before a vehicle has arrived at the inspection site. Even when a truck is moving at highway speed, high definition cameras are able to capture and scan its DOT and license plate numbers, CVSA sticker and Hazmat Placard, and then access information from other government databases to provide enforcement officers with an instant, detailed description of the vehicle and carrier.







## Weigh Station Technology Explored: Overview Camera

As you approach the scales, overview cameras snap a photo of your vehicle so that officers can match it with the information accessed by the Automated Readers, mainly your license plate and USDOT Number.



The screenshot shows a web application titled "Vehicle Live Summary" with the "iis Smart Roadside™" logo. It features a control panel with buttons for "Beacon right" (OPEN), "Beacon left" (OPEN), "Audible alerts" (ON), "All vehicles" (ON), "Vehicle class" (ALL), "Vehicle length" (ALL), "Change lanes..." (with a plus icon), "Locations" (ALL), and "Time zone" (EST). Below the control panel is a table with columns: Overview, Vehicle, License Plate, and Messages. The table contains four rows of vehicle data, each with a thumbnail image of a vehicle, a description, and a license plate number.

Overview	Vehicle	License Plate	Messages
	Heavyweight Western Truck	A2-78812	
	Heavyweight Western Truck	71514H4	
	Heavyweight Truck	6395345	
	Heavyweight Western Truck	2P28626	

*Law enforcement sees a overview image to help identify the vehicles as they travel through the station.*



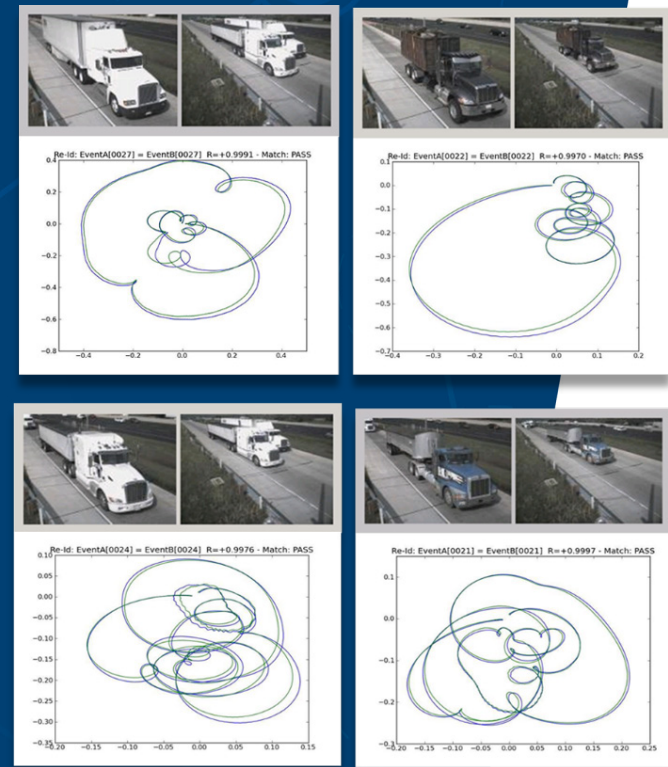
Weigh Station Technology Explored:

## Vehicle Waveform Identification

One of the challenges with tagging and tracking vehicles is that vehicles will often change order as they approach the inspection station. An innovative solution developed and patented by Intelligent Imaging Systems is called Vehicle Waveform Identification (VWI).

VWI uses in-road sensors to electronically identify and match vehicles using unique magnetic signatures based on each vehicle's composition and load — no two signatures are alike, and therefore a specific vehicle can be matched and tracked with almost 100% accuracy, regardless of its speed, acceleration or braking.

VWI is often combined with lane control systems that automatically sort, route and track vehicles through a weigh station. Collected data can be used to efficiently direct vehicles to specific lanes or areas for different levels of inspection.



## *Weigh Station Technology Explored:* **Weigh in Motion Scales**

**Weigh-In Motion (WIM) scales** are typically embedded in the roadway about a half-mile ahead of the inspection station. As a truck drives over the scale at highway speed, its weight is registered and sent to the scale house. If the truck is overweight, it's flagged for scrutiny before it ever enters the scale house. In some cases, if the truck participates in a weigh station bypass program, the WIM scale reading is a key factor in determining whether the driver gets a green light to bypass the station completely.

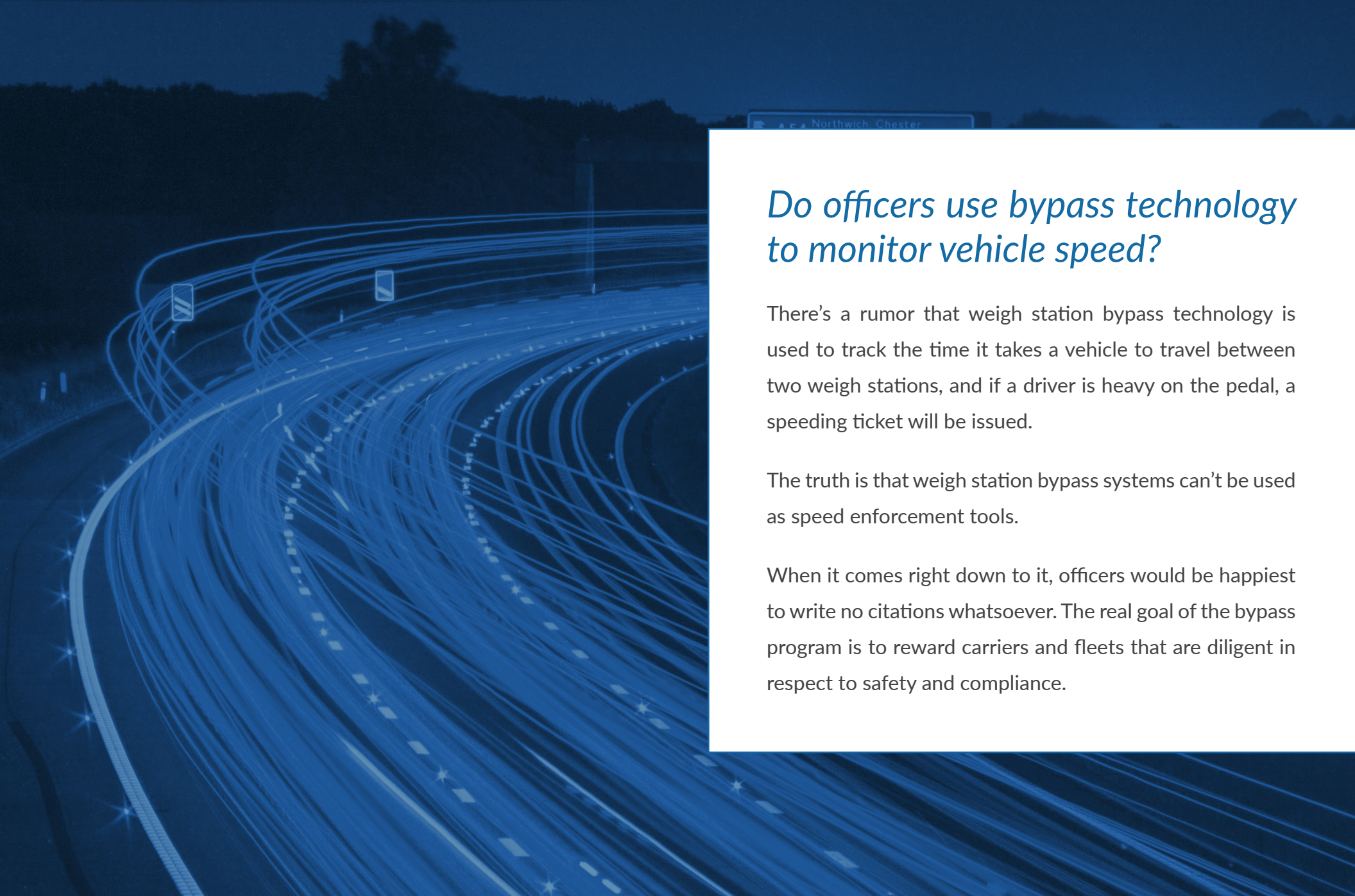
*(We talk more about Weigh Station Bypass programs in the last section.)*



We talked with dozens of roadside enforcement officers and asked them some common questions about weigh station bypass programs, the inspection process, and when warnings and citations are issued. This section addresses some common misconceptions and busts a few myths.

# Myths Busted and *Questions Answered*





## *Do officers use bypass technology to monitor vehicle speed?*

There's a rumor that weigh station bypass technology is used to track the time it takes a vehicle to travel between two weigh stations, and if a driver is heavy on the pedal, a speeding ticket will be issued.

The truth is that weigh station bypass systems can't be used as speed enforcement tools.

When it comes right down to it, officers would be happiest to write no citations whatsoever. The real goal of the bypass program is to reward carriers and fleets that are diligent in respect to safety and compliance.



## *Do officers choose which vehicles are inspected?*

Guidelines are generally set up by individual states and jurisdictions — and they vary widely. Some jurisdictions need probable cause to pull drivers in and some can stop a truck “just because.”

Officers are generally given a lot of discretion, and some have their own system for selecting trucks for inspection — which could be as simple as picking every fifth or tenth truck. Typically, if a truck is not automatically told to pass through, the officers will rely on a number of indicators, such as the general appearance and operation of the vehicle (are lights working, do tires need replacement, is the load secure, is the vehicle being driven erratically, and so on).



## *How does an officer choose if a citation goes to the driver or the carrier?*

This one's pretty straightforward: the officer should be citing the responsible party. If it's a violation that a driver is obviously responsible for (not wearing a seat belt, for example) then the ticket goes to the driver. If it's a maintenance issue for which the carrier is responsible, then the company is cited.

That rolls into the next question -- how do officers decide whether to give a warning or a citation? The more critical the violation, the more likely a citation will be issued. If it's a CVSA out-of-service violation, you're likely going to see a citation. With minor issues, the officer makes the call - so be polite!



## *Do officers have a quota?*

Yes, no, and it depends. In almost every jurisdiction, each inspector is required to perform a specific number of inspections. By regulation, each officer is required to complete a certain number of level I inspections to maintain proficiency. In some states, full-time officers are mandated to conduct as many as 600 inspections a year.

As to whether there are quotas for citations — that's a total myth. In some jurisdictions requiring a citations quota is actually illegal.

# *Tips and Tricks:*

## Help Your Drivers Avoid Unnecessary Detentions and Inspections

## *Establish a Good Relationship with Law Enforcement*

Inviting law enforcement to conduct on-site inspections at your fleet headquarters or maintenance facility and hosting Q&A sessions on CVSA topics are some great ways to build solid working relationships. Offering coffee and donuts doesn't hurt either! Management can also arrange to visit the scale house and observe first-hand what happens behind the scenes.

**If you get the red light, don't get shook up** -- remember that you're dealing not just with an inspector, but also a law enforcement professional, and they're just doing their job to make your roads safer.

**Don't get defensive or act out**, and realize that inspections can still happen to the best of drivers -- you aren't being singled out.

**The best way to establish a good rapport is through cooperation:** promptly provide the information requested, politely follow directions, and ask questions if you don't understand -- in other words, act like the professional truck driver you are.



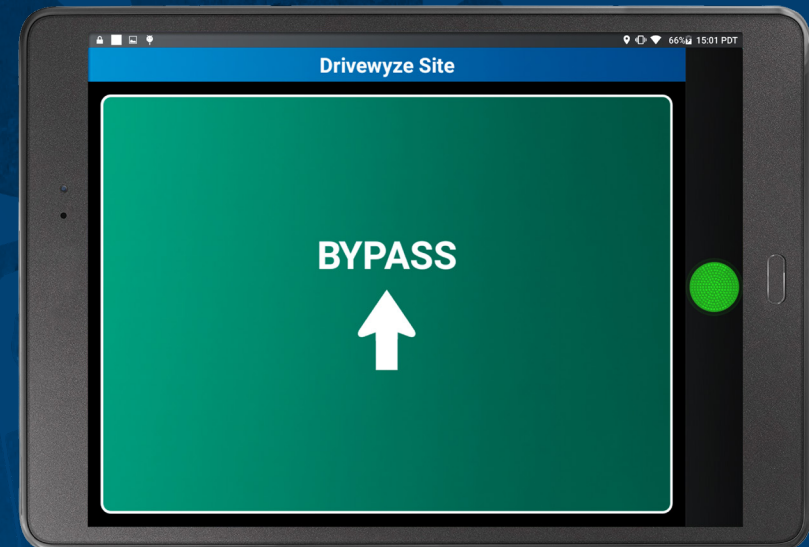
## Enroll in a Weigh Station Bypass Program

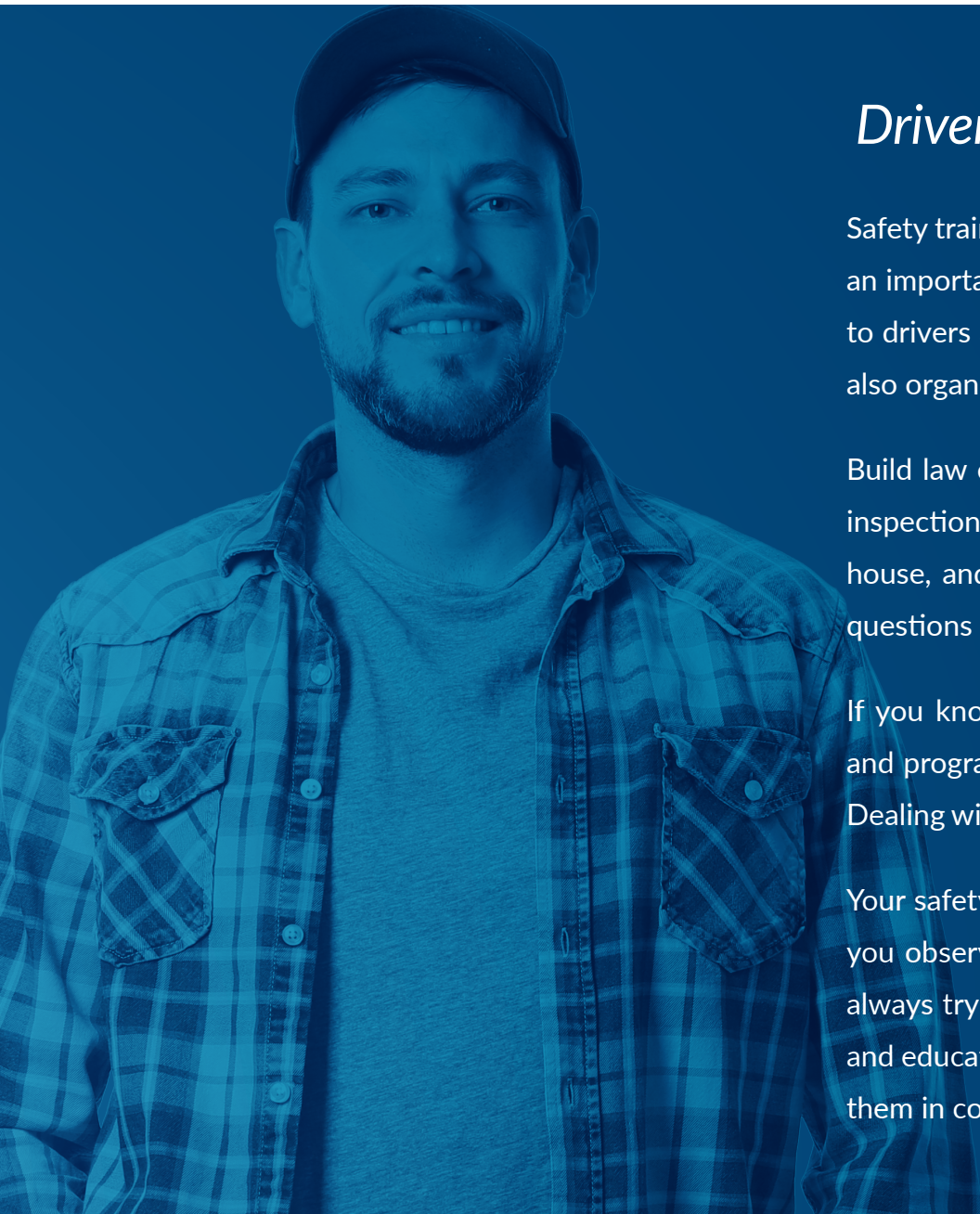
Almost every state in the U.S., and many Canadian provinces, currently participate in weigh station bypass programs.

For safe fleets, using weigh station bypass technology is a win-win. It allows their drivers to bypass weigh stations a lot of the time, which in turn allows inspection officers to concentrate their efforts on more potentially unsafe vehicles.

It's a carrot-based approach that encourages the trucking industry to adopt safer practices, and rewards them for doing so. By enrolling in a weigh station bypass program, such as Drivewyze PreClear, carriers are participating in a voluntary safety program that rewards them based on safety score – the better the safety record, the better the bypass rate.

There are two technologies available: transponder-based and cellular-based bypass. Drivewyze, Intelligent Imaging Systems' sister company, offers a cloud-based software-as-a-service called Drivewyze PreClear, which has the most bypass coverage in North America, leverages cellular networks and the Internet to add transponder-like functionality to ELDs and mobile devices (such as tablets and smart phones) without requiring a physical transponder.





## *Driver Training is Indispensable*

Safety training is a never-ending process – and consistent training should be an important part of your safety program. Many companies provide training to drivers as part of their new driver on boarding process, but fleets should also organize ongoing refresher training on (at least) an annual basis.

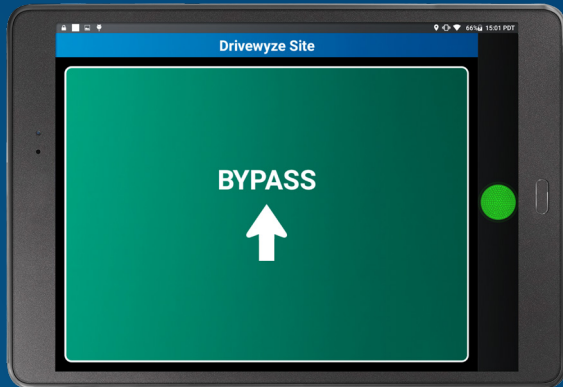
Build law enforcement into your safety program, and ask them to conduct inspections on-site, so drivers can see what officers look for at the scale house, and give time to have drivers ask any compliance or safety centric questions they may have.

If you know what your top violations are, create driver training materials and programs that address these issues first – before moving on to others. Dealing with these violations first will have a big impact on your safety score.

Your safety efforts shouldn't slow down with a good safety score. In fact, if you observe the companies with industry-leading safety cultures, they are always trying to maintain and improve their safety profile. Engaging drivers and educating them on the inspection process is an effective way to support them in consistently practicing safe driving behaviors.



We hope that you found the information in this document useful in gaining knowledge around inspection sites and the reasons law enforcement is pulling your vehicles in for inspection. All carriers can do more to avoid unnecessary inspections, including using a bypass service like Drivewyze PreClear.



# Stop wasting time *pulling into inspection sites.*

Drivewyze PreClear is the innovative new way to bypass weigh stations, saving you time and money by keeping freight on the move. It's integrated into telematics/ELD devices — no transponder required.

- Increase fleet efficiency and driver productivity
- Improve recruitment and retention
- Receive more bypasses at more locations

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