TAPCO
Safe travels.

HOW TO REDUCE OVERHEIGHT COLLISIONS AND MAXIMIZE ROI

Overheight vehicles collide with low-clearance structures every day, damaging infrastructure, interrupting commerce, causing major injuries and costing communities millions of taxpayer dollars.

Reduce these dangerous collisions by investing in overheight warning systems with the most effective configuration for each location.

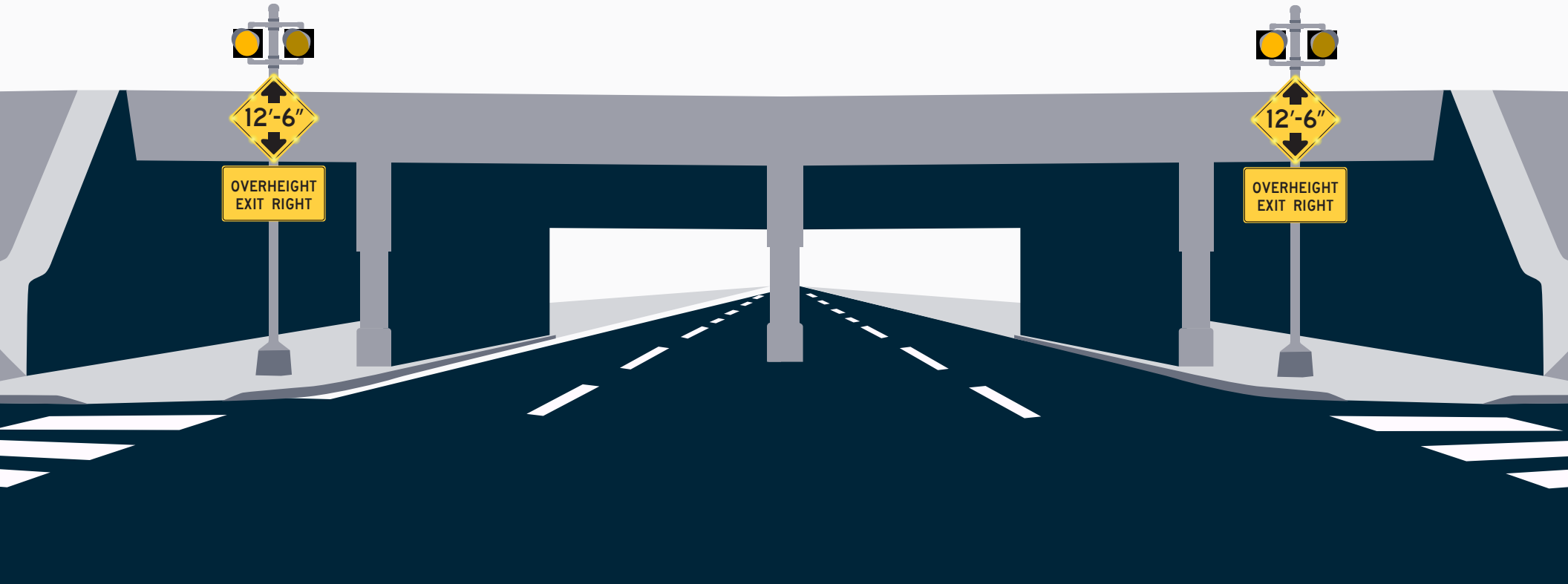


TABLE OF CONTENTS

THE TRUE COST OF OVERHEIGHT COLLISIONS

Every day, overheight vehicles collide with low-clearance structures, such as bridges and highway underpasses.

In an Alaska Department of Transportation (DOT) survey of 29 U.S. states, 18 indicated that they consider overheight collisions a significant problem.[1] In fact, Maryland identified 1,496 bridges susceptible to overheight impacts across the state, with 309 (20 percent) having been struck at least once.[2] Some low-clearance structures, like a rail bridge in Durham, North Carolina, even average over one strike per month.[3]

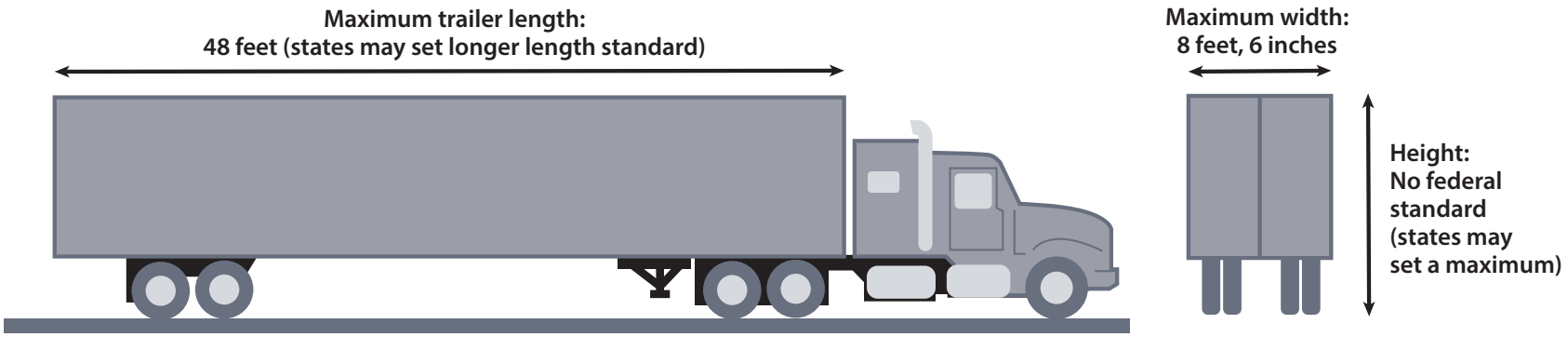
Unfortunately, these collisions can result in serious injuries and fatalities, though no nationwide database exists to track how many.[4]

Overheight collisions also cost governments millions of dollars each year. One damage-causing strike can decimate the budget of a city or roadway authority.

According to a Texas DOT study, **the average cost of an overheight collision can range from $200,000 to $300,000.**[5] That doesn't even include the associated costs of local traffic congestion, new route planning and insurance premium hikes.

In addition, because many overheight collisions are hit and runs, identifying the culprit and holding them accountable is a tall order.

Federal Vehicle Size Standards



Source: United States Government Accountability Office

The Federal Highway Administration (FHWA) does not set a federal standard for vehicle heights like it does for vehicle lengths and widths on certain federal-aid highways. Learn more click here.

WHERE OVERHEIGHT COLLISIONS OCCUR

There are many locations where overheight collisions commonly occur.

LOW BRIDGES

WEIGH STATIONS

PARKING STRUCTURES

TUNNELS

UNDERPASSES

AIRPORTS

MANUFACTURING FACILITIES

WHY OVERHEIGHT COLLISIONS OCCUR

There are five factors that commonly cause overheight collisions.

1. Drivers unaccustomed to driving tall vehicles, such as a couple renting a box truck to move into a new home, may fail to account for a low-clearance structure in time.

2. Professional drivers in unfamiliar territory may accidentally deviate from the path laid out by their GPS, causing them to encounter unexpected low-clearance structures.

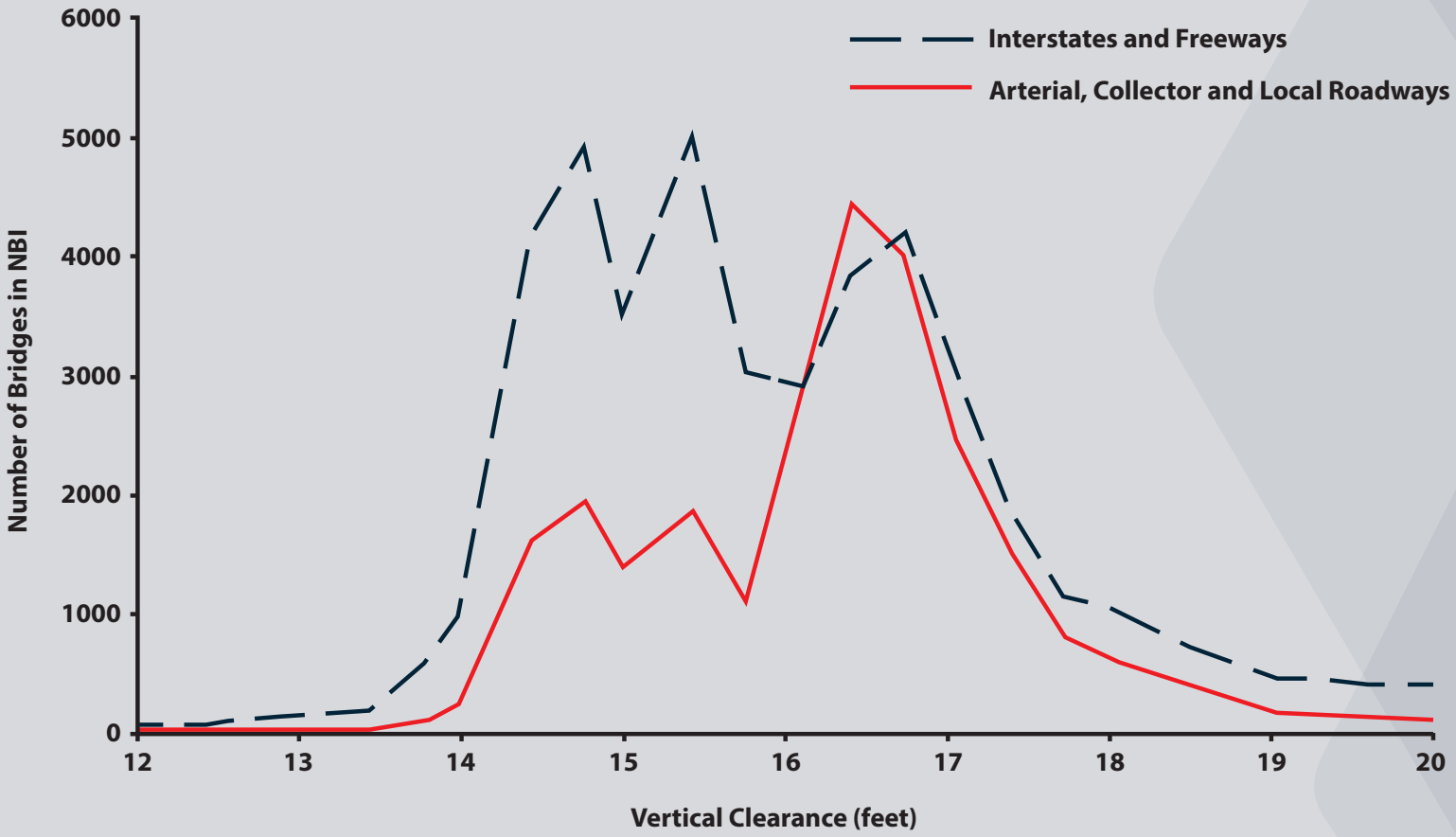
3. Because truck heights vary based on load weight, inexperienced truck drivers may forget about their varying vehicle height.

4. Distracted and/or tired drivers are less likely to notice static overheight warning and clearance height signs, especially at night. By the time they become aware of an impending collision, it may already be too late.

5

Railroad bridges built before motorized vehicles were not designed with trucks in mind, especially on arterial and local roadways. Therefore, they tend to be lower, catching some drivers off guard.

Vertical Clearance of Bridges in National Bridge Inventory (NBI)



According to a study by the University of Maryland[6]

IDENTIFYING STRUCTURES IN NEED OF AN OVERHEIGHT SOLUTION

Certain attributes of a low-clearance structure put it at higher risk of an overheight collision.

LOW CLEARANCE HEIGHT

The risk of a collision goes up as structures' clearance heights go down.

HIGH TRUCK TRAFFIC

If an area has high average daily truck traffic (ADTT), it is more vulnerable to overheight collisions.

HISTORY OF COLLISIONS

The more overheight collisions an area has experienced, the likelier it is that future collisions are imminent.

TYPE OF STRUCTURE

Truss bridges are more susceptible to catastrophic failure when struck compared to girder bridges.

AGE OF STRUCTURE

After a collision, older structures are more likely to fail. At the same time, newer structures are investment worthy.

LACK OF ALTERNATIVE ROUTE

Structures with long or zero alternative routes nearby for overheight vehicles to take are at greater risk of collisions.

A PROVEN OVERHEIGHT VEHICLE SOLUTION

Proactively alert overheight vehicle drivers of an impending collision using an overheight warning system.

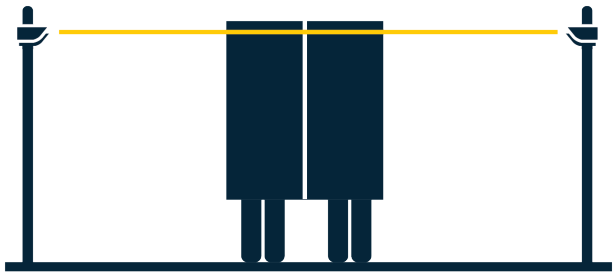
HOW OVERHEIGHT WARNING SYSTEMS WORK

Systems like the TAPCO Overheight Warning System feature infrared sensors mounted on both sides of a roadway in advance of a low-clearance structure that detect overheight vehicles.

When detection occurs, the system uses wireless radio communication to activate flashing LED-enhanced warning alerts – typically signs or beacons – to warn the driver they are about to collide with a low-clearance structure. Crucially, the alerts only flash when an overheight vehicle is approaching, commanding drivers' attention far more than traditional static signs.

Systems are recommended to be placed in advance of an alternative route to provide safe passage for overheight drivers.

In a survey by the Alaska DOT, every state using overheight warning systems reported fewer overheight incidents.[7]

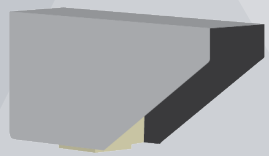


RIGHTSIZING THE CONFIGURATION

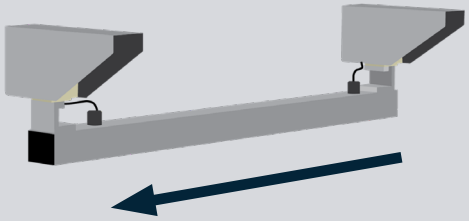
Learn how to identify the best configuration to fit your specific needs.

Activation Options

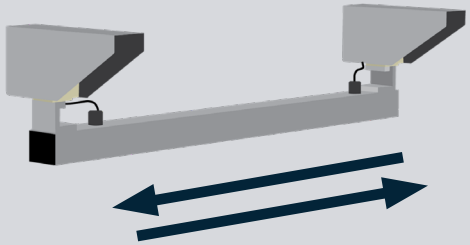
The infrared sensors that activate overheight warning systems can be activated in a few different ways, depending on the application.



Single-beam sensors
are used in parking garages and certain off-road, closed applications.



Dual-beam sensors
are used on roadways with one-way traffic where directionality is not needed.



Dual-directional sensors
are used on roadways with two-way traffic to activate systems only when offenders approach from a specific direction.

Sensors account for the height of low-clearance structures and the posted speed limit. The TAPCO system is capable of covering up to 150 feet between sensors and detecting vehicles traveling up to 75 miles per hour.

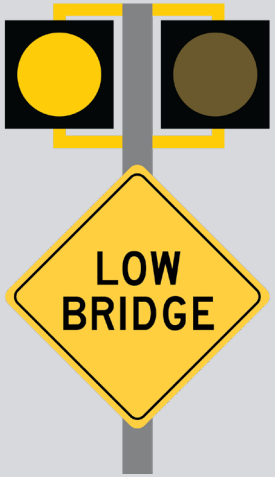
MINIMIZING FALSE DETECTIONS
For maximum detection accuracy, select a system from a vendor like TAPCO that has dual-directional sensors – also ideal for gathering system data – and requires an object be at least two inches wide to activate the system. This prevents snow, hail, birds and more from causing false positive detections.

Warning Alert Options

BlinkerSign® LED-Enhanced Signs

Signs featuring amber LEDs in the sign face that flash upon activation, such as BlinkerSigns from TAPCO, are a popular alert option. The LEDs dim based on ambient light and are MUTCD compliant.

BlinkerSigns can be ruggedized to withstand extreme weather conditions, falling rocks, debris and more.



BlinkerBeacon™ LED-Enhanced Beacons

Overheight warning systems can also leverage round amber LED beacons that flash upon activation. At TAPCO, these are eight-inch or 12-inch beacons called BlinkerBeacons. They can be dual horizontal or dual vertical, depending on the needs of the location.

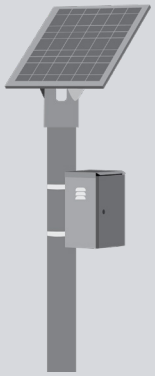
The LED beacons also dim based on ambient light and are MUTCD compliant.

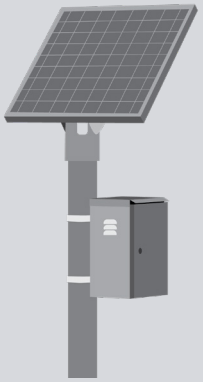
Audible alerts

Some overheight warning systems can activate audible alerts upon detection, providing a second way to notify overheight drivers of an impending collision.

Power Options

Most overheight warning systems can use solar or AC power.





Solar Power

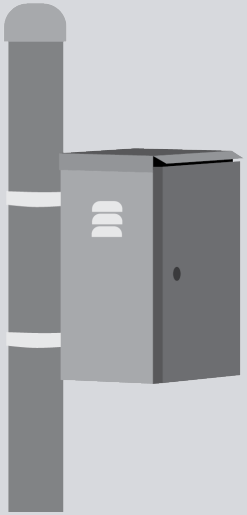
Solar-powered systems are ideal if:

1. The installation location is too far from an AC power grid
2. The costs of connecting to an AC power grid – trenching and metering, for example – are prohibitive
3. Long-term power usage is a concern due to cost or the environment

TAPCO can design overheight warning systems to fit any location's power needs, offering solar panels with varying degrees of wattage and battery capacities, as well as self-contained top-of-pole solar cabinet options.

GET A SOLAR CALCULATION

Critical solar factors, such as direct normal irradiance and global horizontal irradiance, vary depending on the system's location. To ensure the right power configuration, get a solar calculation. For a free consultation from TAPCO, call (800) 236-0112.

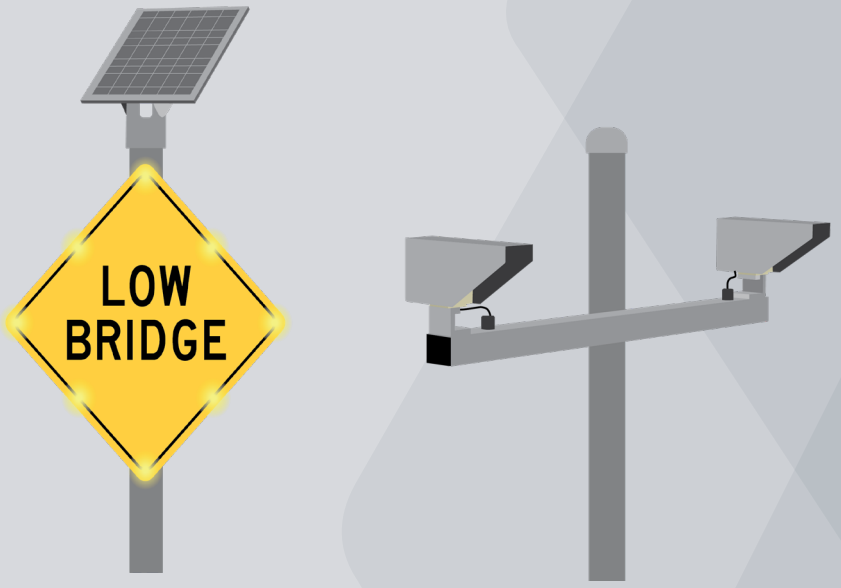


AC Power

AC-powered systems are ideal if:

1. The locations have lower light levels due to tree shading, heavy cloud coverage and/or the geographic region
2. An AC power grid is readily available

The TAPCO Overheight Warning System can use 120VAC or streetlight power, enabling agencies to tap into existing infrastructure for power.



Solar and AC Power Combination

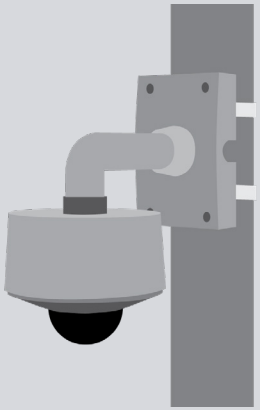
A combination of both solar and AC power is available from TAPCO and some other vendors.

For example, Athens-Clarke County, Georgia placed AC-powered TAPCO Overheight Warning System alerts near large oak trees that cast significant shadows and solar-powered alerts in sunny spots.

System Enhancement Options

Cameras

Some systems can include high-definition cameras that capture images and/or video of overheight system activations, enabling authorities to monitor activity and see the vehicle that triggered the activation. Another option is license plate recognition (LPR) cameras, which provide documentation to road operators for overheight violation enforcement.



BlinkLink® Event Management Software

The TAPCO Overheight Warning System can be enhanced with BlinkLink®, an easy-to-use, cloud-based software application for agencies to remotely manage and monitor overheight warning systems and other Intelligent Warning Systems. BlinkLink® can be integrated with third-party software systems via an application programming interface (API).

Connected Vehicle Interface

Forward-looking government agencies can add another layer of safety with a Connected Vehicle Interface, which communicates information about upcoming low-clearance structures and other hazards via connected vehicle roadside units, delivering in-vehicle alerts to drivers of connected vehicles.

MAXIMIZING RETURN ON INVESTMENT

Overheight warning systems can be incredibly cost effective and cheaper than the alternatives.

Overheight vehicle collisions cost an average of $200,000 to $300,000,[8] and total costs often climb even higher. Thus, if an overheight warning system prevents even one collision, it can easily pay for itself.

In addition, operation and maintenance (O&M) costs for these systems are low. An Alaska DOT survey found that most states with overheight warning systems experienced negligible O&M costs and few maintenance concerns, with 45 percent reporting none at all.[9]

The TAPCO Overheight Warning System was even found by the Georgia DOT to be "very durable" and free of any installation limitations or sensitivity problems,[10] which ensures ownership doesn't come with hassle and extra expenses.

Most importantly, overheight warning systems have the power to save lives, providing a value that simply cannot be measured.

THE POWER OF PREVENTATIVE MAINTENANCE

Preventative maintenance is important for maintaining peak performance and maximizing system lifespans. If finding the technical resources to routinely conduct full system testing and inspections is difficult, a TAPCO service agreement can help.

Reducing overheight collisions and maximizing return on investment is possible with the right overheight warning system and configuration.

Get started by learning more about the TAPCO Overheight Warning System today >

1: http://www.dot.state.ak.us/stwddes/research/assets/pdf/fhwa_ak_rd_03_02.pdf

2: https://cpb-us-e1.wpmucdn.com/blog.umd.edu/dist/f/392/files/2016/08/2003-TRB-overheight-study-rfyszv.pdf

3: https://ops.fhwa.dot.gov/publications/fhwahop18020/overheight_detection.htm

4: https://cpb-us-e1.wpmucdn.com/blog.umd.edu/dist/f/392/files/2016/08/2003-TRB-overheight-study-rfyszv.pdf

5: https://static.tti.tamu.edu/conferences/tsc15/presentations/traffic-ops-2/kozman-stevens.pdf

6: https://cpb-us-e1.wpmucdn.com/blog.umd.edu/dist/f/392/files/2016/08/2003-TRB-overheight-study-rfyszv.pdf

7: http://www.dot.state.ak.us/stwddes/research/assets/pdf/fhwa_ak_rd_03_02.pdf

8: https://static.tti.tamu.edu/conferences/tsc15/presentations/traffic-ops-2/kozman-stevens.pdf

9: http://www.dot.state.ak.us/stwddes/research/assets/pdf/fhwa_ak_rd_03_02.pdf

10: http://g92018.eos-intl.net/eLibSQL14_G92018_Documents/15-21.pdf