

WRONG-WAY DRIVER SOLUTIONS

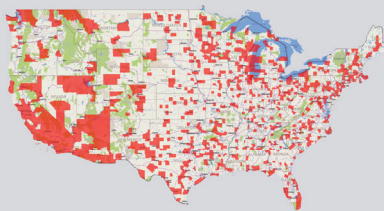




As an industry-leading innovator, TAPCO manufactures, services and distributes a wide portfolio of traffic and parking safety solutions designed to increase safe travels for all. Since 1956, we have set the standard for delivering reliable, cutting-edge traffic safety enhancements. From our world-renowned line of LED-enhanced BlinkerSign® solutions to our pedestrian crossing products and early detection warning systems, safety is at the heart of all TAPCO innovations.

Generations of Expertise

Working alongside traffic professionals for more than 60 years-gives our team an exclusive perspective on the past, present and future needs of the traffic and parking safety industry.



A Nationwide Reach

With successful solution installations throughout all 50 states, we understand the safety concerns communities face across the nation.

Innovative, Smart City Technology

Our mission is to continue to lead the industry with an innovative, customer-focused approach that evolves with the technological demands of our customers.



Award-Winning Mindset

As a family-owned company, we take pride in establishing and maintaining our innovative culture.



Wrong-Way Driving: A Nationwide Problem

Considered among the most lethal types of traffic incident because of their head-on characteristics, wrong-way driving collisions on U.S. roads claim an average of 360 lives each year. As troublesome interchanges are identified and public awareness of wrong-way incidents grows, traffic professionals are increasingly challenged to mitigate these horrific and often-fatal collisions.

Factors Contributing To Wrong-Way Driving



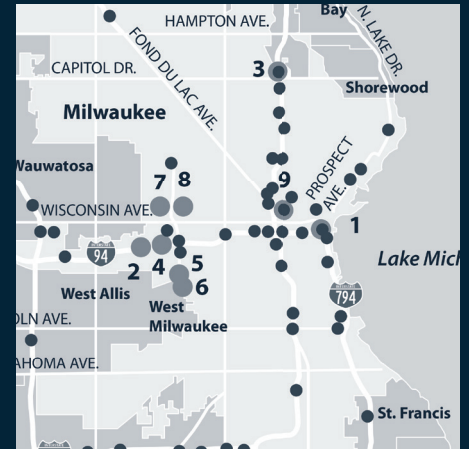
Impaired Drivers

Seventy-one percent of wrong-way drivers have alcohol in their system at the time of collision. Regardless of impairment, problematic highway ramps can lead to driver confusion and increased wrong-way incidents.



Slow Response Time

Every second counts when a wrong-way incident occurs. Unfortunately, law enforcement agencies often learn of wrong-way drivers via civilian 911 calls, slowing their ability to respond.



Lack of Insight

A lack of consistent, reliable data, including where and when incidents occur, leaves sites vulnerable to future incidents and local officials in the dark on how to prioritize and remedy problem ramps.

SYSTEM OVERVIEW

WRONG-WAY DRIVER SOLUTION

Uniquely engineered to fit any ramp configuration, TAPCO Wrong-Way Alert Systems detect wrong-way drivers, immediately activate LED-enhanced warning alerts and send real-time wrong-way event notifications through BlinkLink®.

Add another layer of safety with the Connected Vehicle Interface - an Ethernet interface to connect with, and communicate information to, connected vehicle infrastructure

From simple deterrents to complex Intelligent Warning Systems, TAPCO Wrong-Way Driver Solutions are proven to reduce wrong-way events by 38% at notorious wrong-way driver entry points including:

- Side-by-side highway entrance and exit ramps
- Exit ramps near side streets
- Poorly lit entrance and exit ramps
- Tollways and reversible HOV lanes
- Mainlines

PROVEN RESULTS

- Reduces risk to right-way drivers by reducing wrong-way incidents.
- Improves response time of law enforcement by providing confirmation notifications.

SYSTEM FLEXIBILITY

- Solar power capability allows for installation in any environment.
- Modem or fiber communication.
- Vehicle-activated, Dusk 'Til Dawn or 24/7 alert options available.



SYSTEM OVERVIEW

WRONG-WAY DRIVER SOLUTION

1 ACTIVATION SENSORS

Detect vehicles traveling the wrong way with thermal sensors, radar sensors or inductive loops.

2 WARNING ALERTS

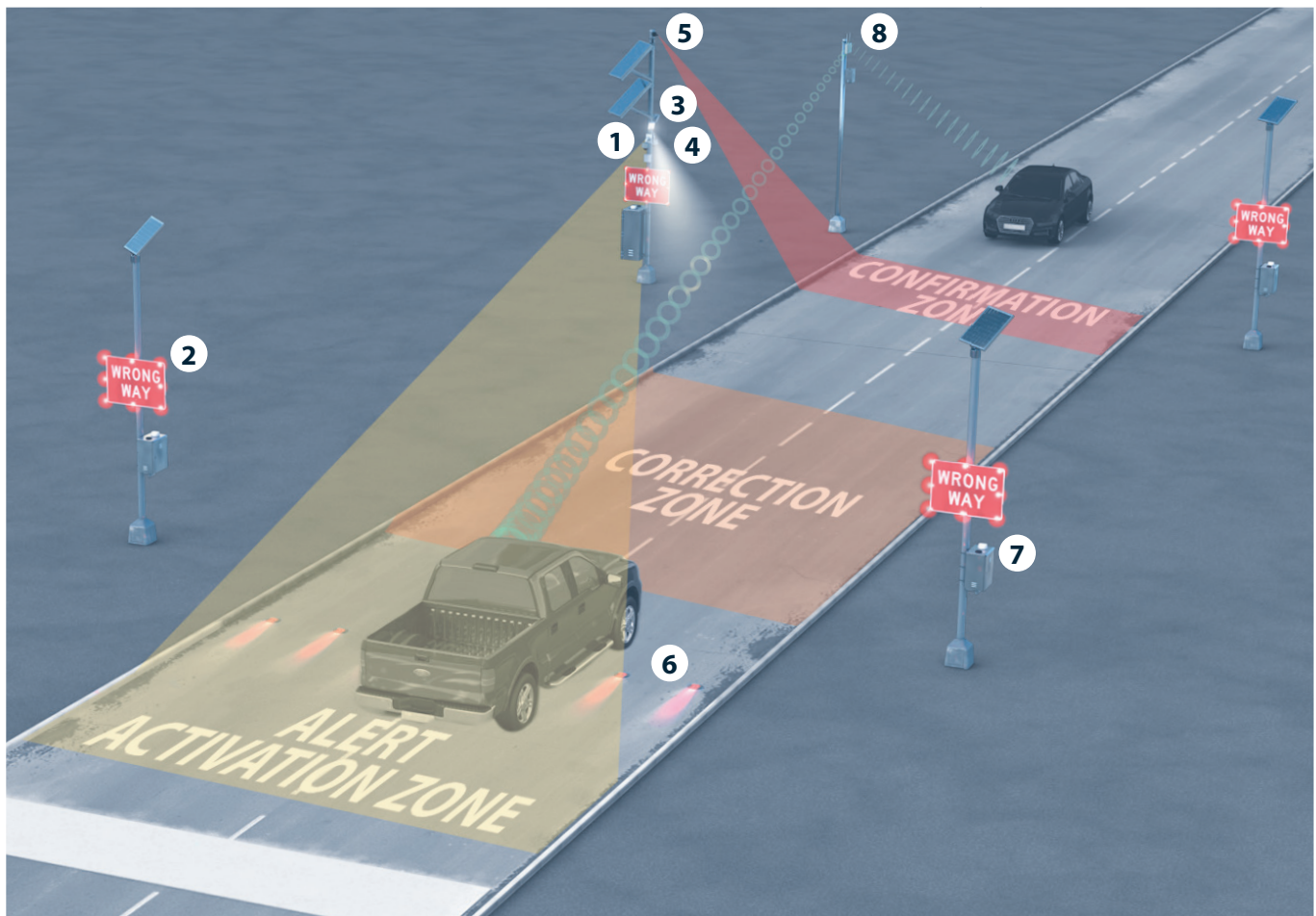
BlinkerSign®, RFB, and BlinkerBeacon™ warning alerts catch the driver's attention to help communicate that they are traveling in the wrong direction.

3 LED ILLUMINATORS

Activate with the system at night to increase wrong-way vehicle visibility for image capture.

4 HIGH-DEFINITION CAMERAS

Capture images of wrong-way vehicles after detection.



5 CONFIRMATION SENSORS

Confirm vehicle has continued to proceed in the wrong direction.

6 IN-ROAD WARNING LIGHTS

Span the width of the road, illuminating to act as an additional warning to the driver that they are traveling in the wrong direction.

7 BLINKLINK®

Sends real-time verification of system activation, remotely monitor system status and collect data including activation trends.

8 CONNECTED VEHICLE INTERFACE

TAPCO's CVI integrates with connected vehicle infrastructure to send in-vehicle alerts to CAVs. Contextual messages are sent to both right-way and wrong-way drivers.

SYSTEM CONFIGURATION

WRONG-WAY DRIVER SOLUTION

Wrong-Way Alert Systems deploy a three-zone configuration to optimize system accuracy and effectiveness.

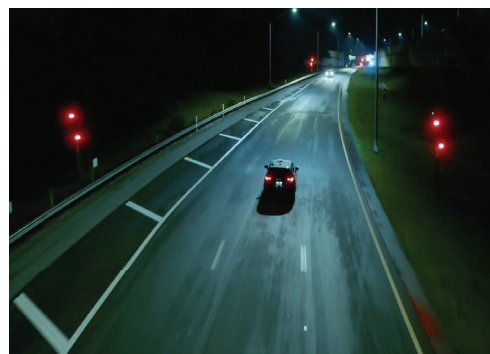
ALERT ACTIVATION ZONE

DETECT

Instantly detects any wrong-way vehicle

ALERT

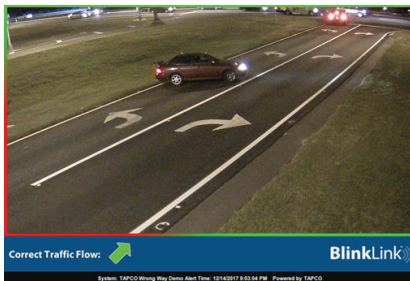
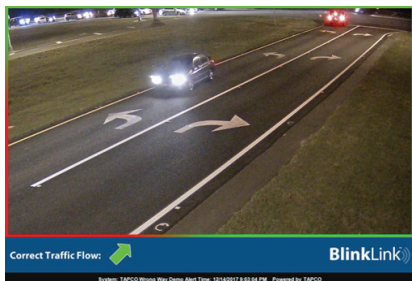
Immediately flashes LED-enhanced warning alert to capture driver's attention



CORRECTION ZONE

CORRECT

Allows for vehicle self-correction and captures vehicle information



CONFIRMATION ZONE

CONFIRM

Verifies that the vehicle has proceeded in the wrong direction

NOTIFY

Sends notification alerts through BlinkLink® to local authorities

WARN

Integrates with Traffic Management Center software to enable activation of dynamic overhead message boards for communication to right-way drivers



SYSTEM ACTIVATIONS

THERMAL DETECTION

The Wrong-Way Vehicle Thermal Sensor uses infrared heat profiles to detect vehicles traveling the wrong direction, activating TAPCO Wrong-Way Alert Systems.

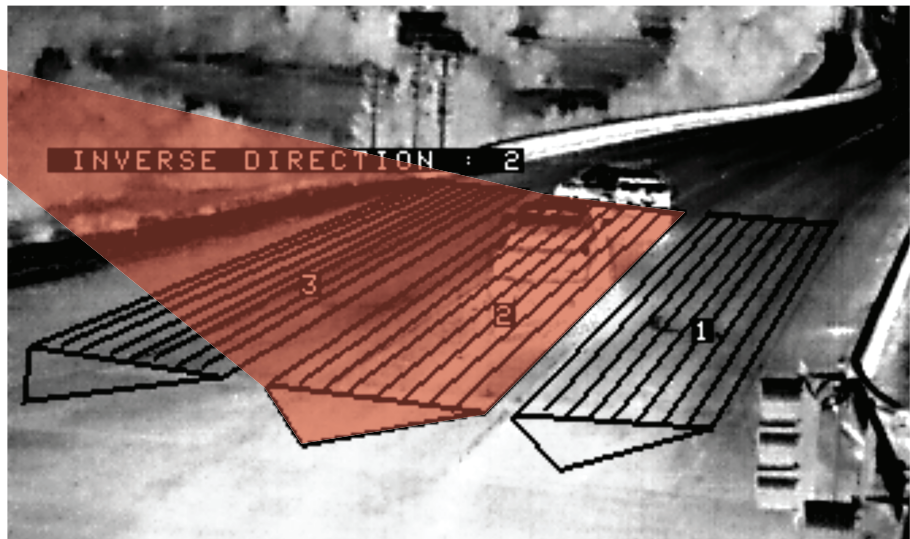
WHY THERMAL?

This sensor's accuracy and directional precision vitally reduce false detections in all roadway configurations and environments. It has been specifically developed to reliably detect in all weather conditions including fog, rain and snow.

- Thermal imaging sensors work in total darkness, through shadows and sun glare, providing reliable detection 24/7
- Versatile functionality accommodates up to six lanes of traffic over several hundred feet
- Easily integrates with existing TMC platforms including BlinkLink®



WRONG-WAY
THERMAL SENSOR



EXAMPLE OF WRONG-WAY THERMAL DETECTION

SYSTEM ACTIVATIONS

PASSIVE AND SCHEDULED

PASSIVE ACTIVATION



RADAR

Radar sensors trigger activation when vehicles are detected traveling the wrong way.



INDUCTIVE LOOP

Installed beneath the surface of the road, inductive loops detect wrong-way vehicles.

SCHEDULED ACTIVATION



24/7 OPERATION

A cost-effective first step to mitigate wrong-way drivers, 24/7 TAPCO flashing wrong-way alerts are always operating.



SCHEDULED/DUSK 'TIL DAWN OPERATION

Scheduled flashing wrong-way alerts are standalone solutions that only activate during specified times via TAPCO's Time Clock functionality.

WIRELESS COMMUNICATION

BLINKERBEAM®

BlinkerBeam® wireless radios communicate system activation to all TAPCO warning alerts.

Placed at the detection location, a transmitter radio sends wireless signals upon system activation to receiver radios located inside the control cabinet of each warning alert, triggering the alert to flash.



**BLINKERBEAM®
WIRELESS RADIO**

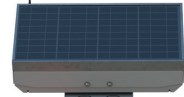
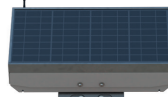
- Easy-to-read, backlit LCD display
- Intuitive joystick for in-field control
- Menu-driven diagnostics for quick set-up and configuration
- Three selectable power levels, up to one-watt, to increase signal distance
- Range of up to 900 feet; works with multiple antenna options to extend distance
- Utilizes 900 MHz frequency-hopping spread spectrum for reliable operation



1 SYSTEM DETECTION



**2 Activated
BLINKERBEAM®
TRANSMITTER RADIO**
sends wireless
signal to receiver(s)



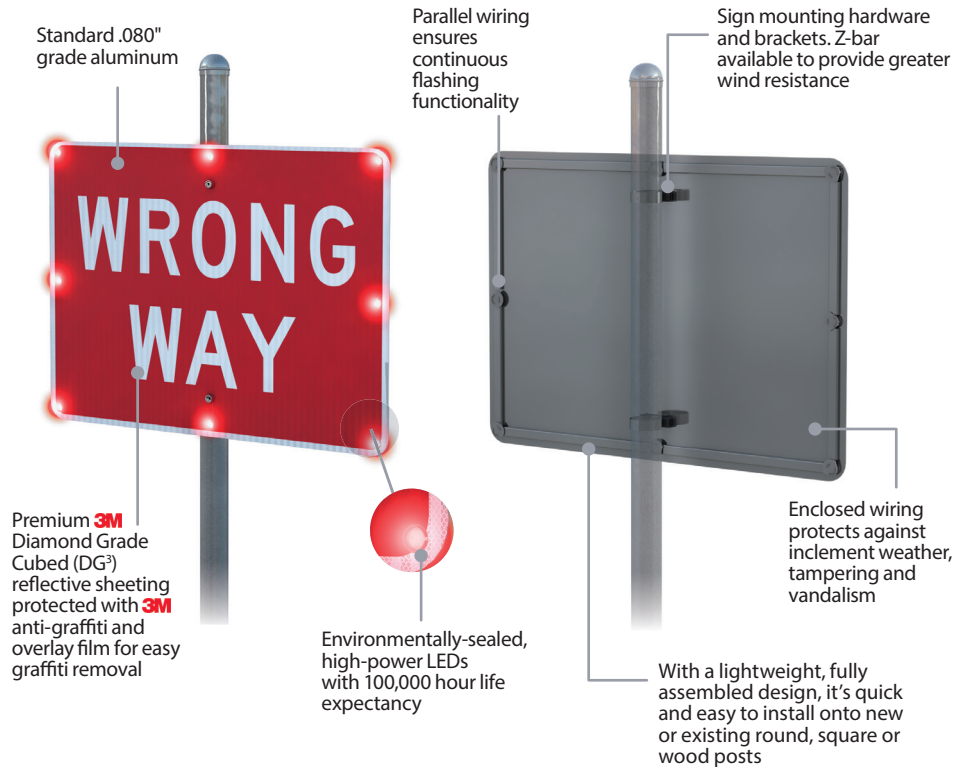
**3 BLINKERBEAM®
RECEIVER RADIO(S)**
activate LED-enhanced
warning alerts



LED-ENHANCED WARNING ALERTS

BLINKERSIGN® FLASHING LED SIGNS

BlinkerSign® Flashing LED signs are edge-lit signs engineered to command drivers' attention day and night, increasing self-correction rates in wrong-way incidents.



MUTCD-COMPLIANT

- Each BlinkerSign® is MUTCD-compliant and flashes in accordance with MUTCD section 2A.07.

HIGH QUALITY, MADE IN THE USA

- Manufactured in Brown Deer, Wisconsin, each BlinkerSign® is engineered to withstand the harshest environmental conditions.

VARIABLE DIMMING

- LEDs automatically dim based upon ambient light – maintaining optimal LED output and extending system autonomy.



LED-ENHANCED WARNING ALERTS

RFB: RECTANGULAR FLASHING BEACONS

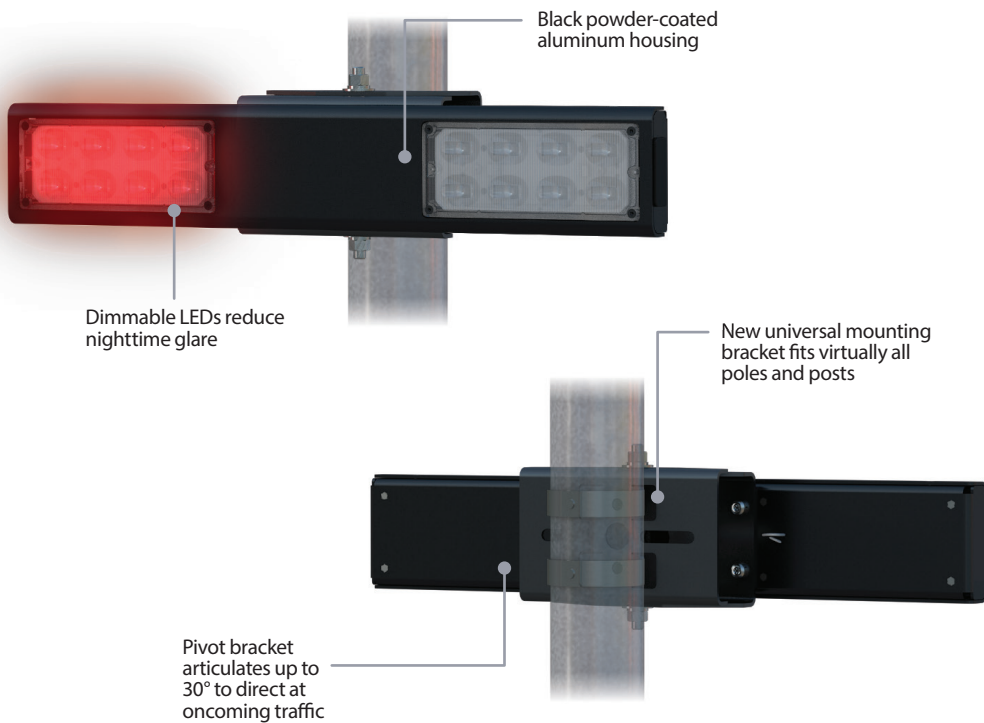
A step above the industry standard, TAPCO RFB light bars are extra-large rectangular flashing beacons, making them highly visible to wrong-way drivers.

ARRANGEMENT

- Always paired top and bottom of sign while flashing in a wig-wag pattern.

VARIABLE DIMMING

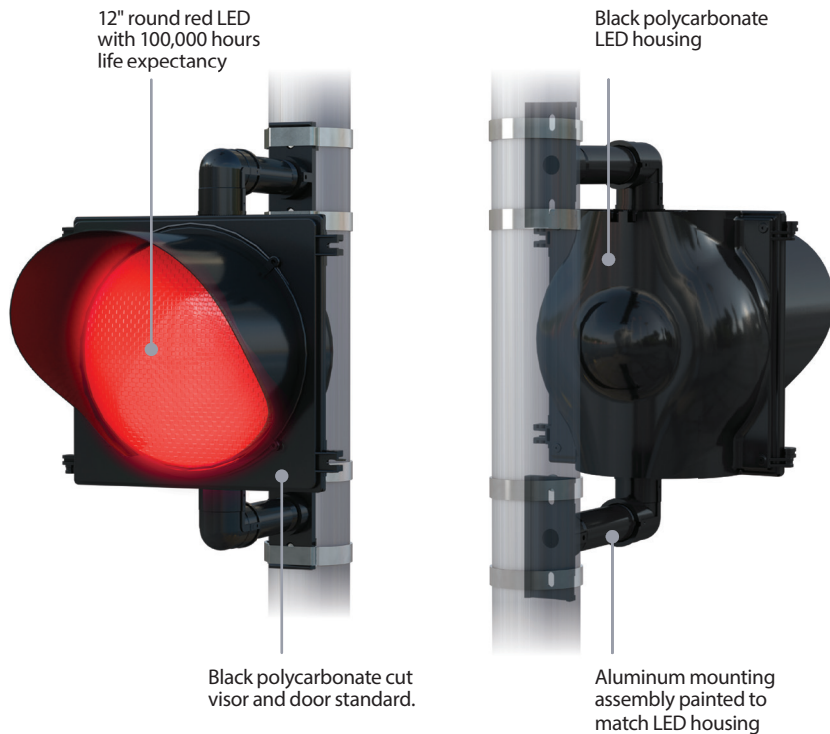
- LEDs automatically dim based upon ambient light – maintaining optimal LED output and extending system autonomy.



LED-ENHANCED WARNING ALERTS

BLINKERBEACON™ FLASHING LED BEACONS

BlinkerBeacon™ Flashing LED Beacons provide drivers real-time warning when traveling the wrong direction.



MUTCD-COMPLIANT

- Each BlinkerBeacon™ can flash in accordance with MUTCD section 4L.03.

VARIABLE DIMMING

- LEDs automatically dim based upon ambient light – maintaining optimal LED output and extending system autonomy.

AVAILABLE OPTIONS

- 8" or 12" LED modules.
- ITE-compliant 12V power options.
- Cut visor standard, tunnel visor available.



CRITICAL COMPONENTS

ILLUMINATOR AND CAMERA

Upon wrong-way vehicle detection, both the illuminator and camera activate to ensure the highest quality visual verification of the wrong-way event.



HIGH-EFFICIENCY LED ILLUMINATORS

High-performance, white visible light illuminates to improve nighttime camera performance and enhances vehicle visibility for critical feature identification.



HIGH-DEFINITION CAMERAS

High-speed, multi-featured camera captures high resolution, full-color images confirming wrong-way event details.

SMART CITY SOFTWARE

BLINKLINK® POWERED BY TAPCO

INTELLIGENT WARNING SYSTEM MONITORING FOR SMART CITY INFRASTRUCTURE

BlinkLink® powered by TAPCO is an easy-to-use, cloud-based software application for agencies to remotely manage and monitor their Wrong-Way Alert Systems.

With secure Application Programming Interface (API) integration through reliable cellular or fiber networks, BlinkLink® collects real-time data and sends voice, email and SMS notifications to predetermined recipients.

- Ability to integrate with local Traffic Management Center's Advanced Traffic Management System software for additional upstream routing and logical commands
- TMC operators can focus on high priority events by analyzing up to 15 high-resolution, color images that include directional overlay for situational clarity
- Remotely review system health and diagnostics for optimal and reliable operation
- Scalable system architecture provides a budget friendly adoption and minimizes arterial system overhauls



Analyze system activation trends and gain insight to problem areas



Warns right-way drivers on system-integrated overhead dynamic message boards



Converts alert image and data to display in standard API

SMART CITY SOFTWARE

BLINKLINK® POWERED BY TAPCO

BlinkLink® provides data to fine-tune ramp configurations, allocate resources, and implement best practices/lessons learned.

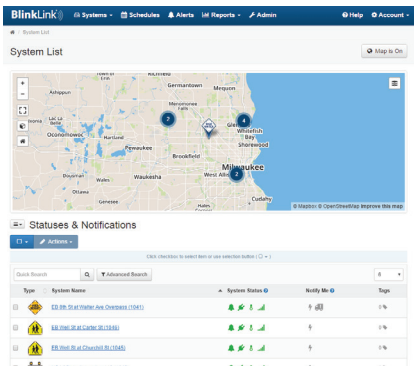


Notify

Keep your whole team informed when a wrong-way driver is detected by receiving alert notifications.

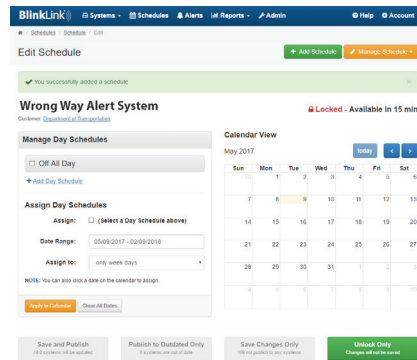
Location and time of incident

Directional overlay for situational clarity



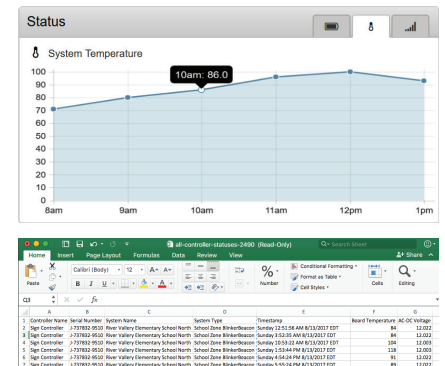
Monitor

Easily program and view the status of every TAPCO Wrong-Way Alert System from the interactive map view and gather historical data.



Manage

Eliminate time-consuming site visits by remotely managing each system anywhere, on any web-enabled device.



Report

Receive reports every wrong-way detection, including self-corrections, providing officials the insight to correct notorious trouble spots.

POWER AND CONTROL OPTIONS

FLEX POWER

Flex Power options provide flexible system configuration for multiple applications and power requirements while allowing easy access to control cabinets. Any TAPCO system can be designed to fit your power or environmental need.

AC POWER OPTIONS



120VAC



STREETLIGHT POWER

Tap into existing infrastructure to power TAPCO systems.

POPULAR SOLAR PACKAGES

TAPCO offers many solar packages to choose from, some of the most popular are shown below with other options available upon request.



13-watt solar panel
14Ah battery capacity

* Compatible with warning alerts only. Sensors require additional power for continuous operation.



26-watt solar panel
27Ah battery capacity

* Compatible with warning alerts only. Sensors require additional power for continuous operation.



30-watt solar panel
35Ah battery capacity

* Compatible with warning alerts only. Sensors require additional power for continuous operation.

POWER AND CONTROL OPTIONS

FLEX POWER



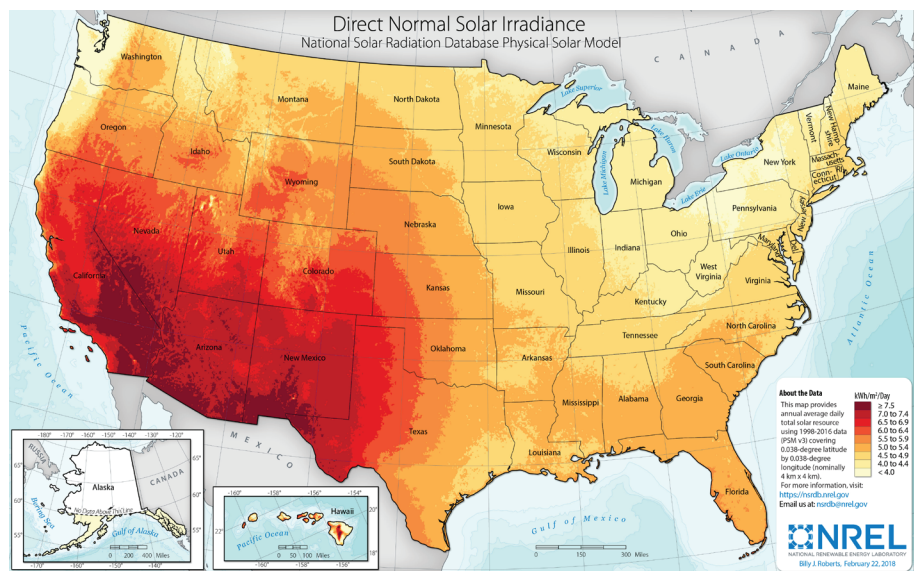
85-watt solar panel
105Ah battery capacity



130-watt solar panel
105Ah battery capacity

SOLAR REQUIREMENTS

Critical solar factors such as direct normal irradiance and global horizontal irradiance vary depending on system location. To ensure the right power configuration, we conduct solar calculations to optimize system power.



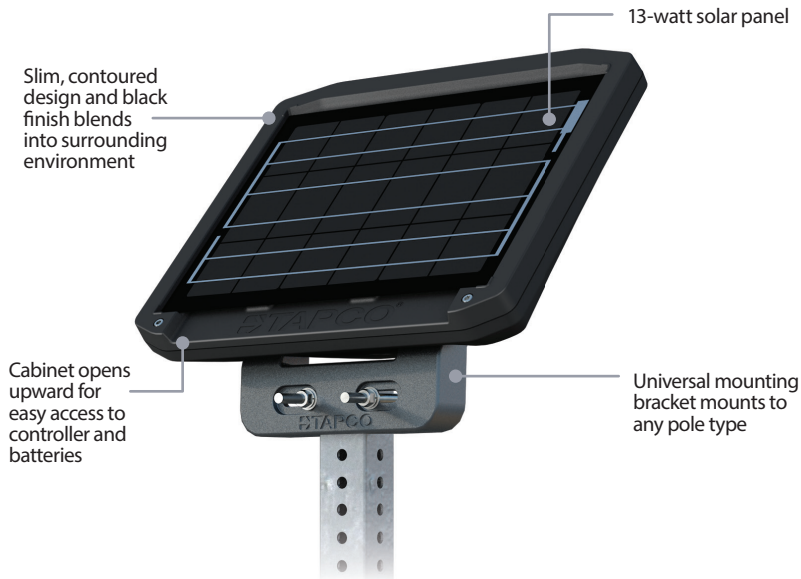
Call us today for a free solar consultation! **(800) 236-0112**

POWER AND CONTROL OPTIONS

SELF-CONTAINED SOLAR CABINETS

Uniquely designed using durable polycarbonate, TAPCO's new 13-Watt Self-Contained Solar Cabinet is a lightweight option that can power warning alerts.

COMING SOON



INCREASED AUTONOMY

- Up to 28Ah of battery power delivers autonomy up to 30 days.

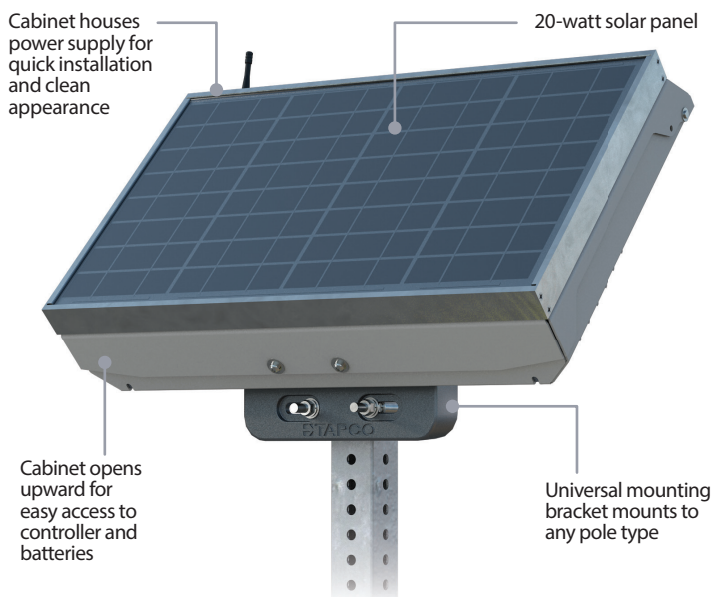
COMPATIBLE

- Supports BlinkerSign®, RFB and BlinkerBeacon™ warning alerts without reducing LED and system performance.

EASY TO INSTALL

- Weighs one-third as much as traditional cabinets for one-person installation.

TAPCO's 20-Watt Self-Contained Solar Cabinet provides 44Ah of battery power for warning alerts in a discreet, powder-coated aluminum housing.



INCREASED VOLTAGE

- The 12-volt system is engineered to power a larger assortment of warning alert options.

EASE OF ACCESS

- Cabinet door opens up for easy access and serviceability.

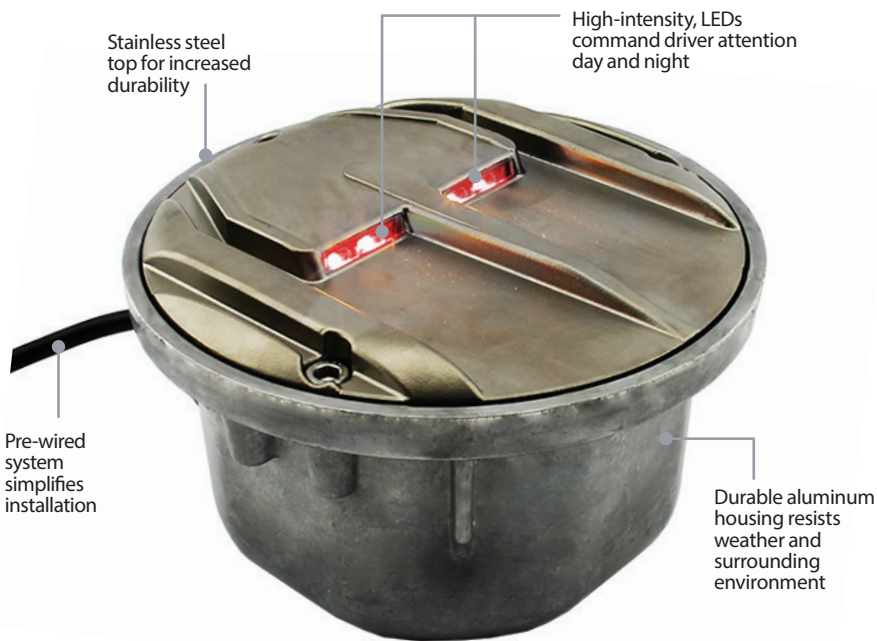
COMPACT DESIGN

- Easily attaches onto new or existing posts and poles.

ENHANCEMENTS

IN-ROAD WARNING LIGHTS

Embedded in the pavement, spanning the width of the road and oriented to face wrong-way traffic, In-Road Warning Lights (IRWL) flash in unison to alert drivers of their wrong-way movement.



MUTCD-COMPLIANT

- Each IRWL is MUTCD-compliant.

LOW PROFILE

- Allows for snowplows and vehicles to safely pass over.

VARIABLE DIMMING

- LEDs automatically dim based upon ambient light – maintaining optimal LED output night and day.

AVAILABLE OPTIONS

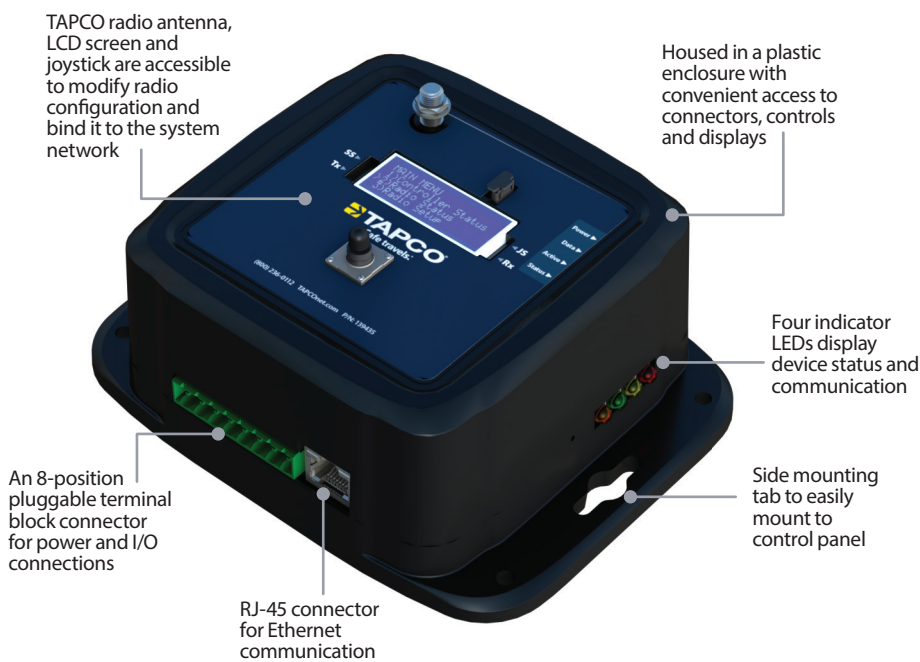
- Can flash independently or sync with other LED-enhanced warning alerts.



ENHANCEMENTS

CONNECTED VEHICLE INTERFACE

Add another layer of safety to your wrong-way solution with the Connected Vehicle Interface (CVI) - an Ethernet interface for TAPCO Wrong-Way Alert Systems to connect with and communicate information to connected vehicle infrastructure, such as typical Road Side Units (RSU).



IN-VEHICLE ALERTS

- Upon system activation, connected vehicles receive notifications through dashboard displays and other onboard devices.

NETWORK AGNOSTIC

- Transmits data via Dedicated Short-Range Communication (DSRC), or cellular RSUs.

ATMS INTEGRATION

- Connects with Advanced Traffic Management Systems to provide traffic managers with actionable system data.

MODULAR

- Can be added to existing or new TAPCO Wrong-Way Alert Systems.



PREVENTATIVE MAINTENANCE

SERVICE CONTRACTS

Preventative Maintenance Service Contracts provide customers nationwide the peace-of-mind that their Wrong-Way Solutions will perform optimally with the highest system uptime. From routine maintenance to complex diagnostic support, every contract is customized based on your labor and budgetary needs.

POPULAR SERVICE CONTRACTS INCLUDE:

- Onsite or virtual training of equipment and software
- Scheduled system maintenance
- System surveillance and monitoring
- Extended warranty coverage
- Emergency services – knockdown repairs and replacement parts
- Dedicated diagnostic support

Want to learn more? Call us today to customize your contract! **(800) 236-0112**

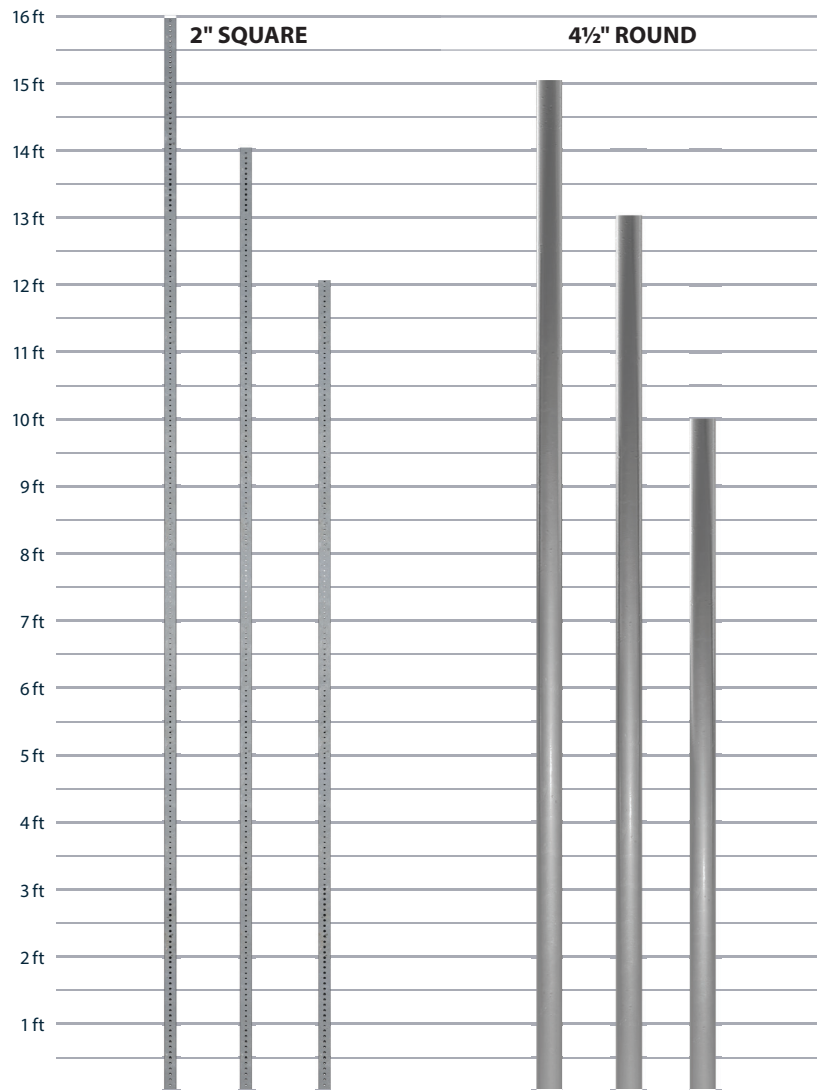


COMMON POLE KITS

POLES & BREAKAWAY ANCHORS

COMMON POLE KITS

Pole configuration plays a crucial role in the design of your Wrong-Way Alert System. Below are some of our most popular options.



2" x 2" Square Post Kits

- Accommodates warning alerts only
- Include:** post height of choice, sleeve and assembly hardware
- Sign brackets and anchor sold separately

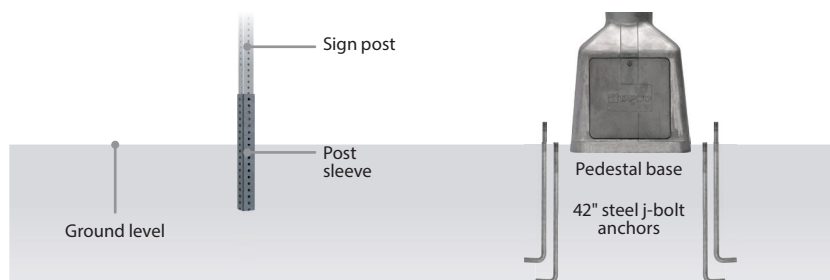
HEIGHT	PART NUMBER
12 ft	114401K
14 ft	138313
16 ft	138314



4 1/2" OD Round Pole Kits

- Accommodates warning alerts and sensors
- Include:** pole height of choice, pedestal base, 42" steel j-bolt anchors and assembly hardware
- 18" steel j-bolt anchors available
- Sign brackets sold separately


HEIGHT	PART NUMBER
10 ft	107889
13 ft	101919
15 ft	101920



Additional poles, anchors and mounting options are available dependent upon weight loads, including 2 3/8", 2 7/8" and wood posts.



 **TAPCO**[®]
Safe travels.

 (800) 236-0112

 TAPCOnet.com