ADOT’s Wrong Way Vehicle Detection Program

FHWA Wrong Way Driving Workshop
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Presented by:
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Background

- Nationwide problem, Arizona not exempt
- Data analysis over 11 years in Arizona
  - 245 wrong-way driver crashes
  - 91 people died in these crashes
  - 25% of wrong way driver crashes are fatal, compared to 1% of all crashes

- Research strategies to combat wrong-way crashes, specifically using technology and other countermeasures
I-17 Wrong Way Vehicle Detection Pilot Project

- Proof of concept
- I-17 between I-10 to L101 (15 miles)
- First in the nation for tracking wrong way vehicles
- Operational since 2018
- $4.2 million funded by MAG
- Coverage of 42 ramps and 34 mainline segments, communication and integration with the decision support software at the traffic operations center
Pilot Program Components

- Time-proven components
- Assembled in a new and innovative configuration
- Coordination between traffic operations center dispatchers and Department of Public Safety troopers based at the traffic operations center
<table>
<thead>
<tr>
<th>Year</th>
<th># of Wrong Way Events Detected</th>
<th>Wrong Way Crashes</th>
<th>Wrong Way Fatal Crashes</th>
<th>Wrong Way Fatalities</th>
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<td>2013</td>
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<td>0</td>
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<tr>
<td>2014</td>
<td>-</td>
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<tr>
<td>2015</td>
<td>-</td>
<td>1</td>
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<td>-</td>
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<td>-</td>
<td>3</td>
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<td>2018</td>
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<tr>
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<td>73</td>
<td>1</td>
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<td>2021*</td>
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</table>

**I-17 Wrong Way Pilot Segment**

Comparison

*I-17 Wrong Way Pilot

*2021 data as of 8/10/2021
Pilot Project Results

• Day of Week:
  Highest number of incursions occurred on Friday, Saturday, and Sunday

• Time of Day:
  Approximately 85% occurred at night and 15% during day

Wrong-Way Events Detected via 911 Calls vs. by the Pilot System in 2018
Pilot Project Results

- Increased Detection - Threefold increase in detection compared to 911 calls.
- Improved Notification to Law Enforcement – Faster, average of 1 minute, 38 seconds before a 911 call was received.
- Driver self-correction – During two-year pilot, of 109 wrong-way vehicle incursions, 88% self-corrected on exit ramp.
Additional WWD Countermeasures

- Lowered and oversized WRONG-WAY and DO NOT ENTER signs
- Enhanced ramp directional arrows
- Added red raised pavement markers to HOV delineation
- Wrong way driver awareness campaign
- ADOT wrong way driver alert app
- Modify traffic school curriculum
- Standardize intersection signing and left turn arrows at single point urban interchanges
Mainline Detection

THERMAL CAMERAS
Detect wrong-way vehicles (♦) and provide limited tracking

Back of DMS

DETECTION ZONE

TRACKING ZONE

NOTE: Utilize available power and communication links to the DMS
Detection Expansion Efforts

- Locations of highest wrong way driver occurrence
- Funding availability
- Current and future ADOT projects
  - Ramp detection
  - Mainline Detection
- Active Locations:
  - I-17: (Original Pilot) 90 Detection Cameras
  - I-10: 23 Detection Cameras
  - I-17: 20 Detection Cameras (outside pilot Corridor)
  - Loop 101: 36 Detection Cameras
  - Loop 202 (South Mountain): 30 Detection Cameras
  - Loop 303: 32 Detection Cameras
  - SR 347, 25 Detection Cameras
  - US 60, 14 Detection Cameras

Total 270 Detection sites
Operations & Maintenance Considerations

• As additional locations are brought onto the network
  • Increased monitoring and maintenance
  • Increased data collection, verification, scrubbing, and reporting
  • Continued development of decision support software to incorporate additional locations, hardware/software limitation

• Operations Plan Developed
  • Standard work for monitoring, verification, reporting process
  • Training program for staff

• Coordinate data with Department of Public Safety and Traffic Operations Center dispatchers
Conclusions

• ADOT will continue to implement countermeasures to mitigate wrong way vehicles
• I-17 pilot project was an effective test of a corridor-level system of wrong way driving countermeasures
• Program additional wrong way detection throughout state per funding availability
• Safety and operational benefits of increased detection and notification
Thank You!

ADOT Website
- www.azdot.gov

I-17 Wrong Way Vehicle Detection Pilot Project Final Report
- https://azdot.gov/content/i-17-wrong-way-vehicle-detection-pilot-program-june-2020

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