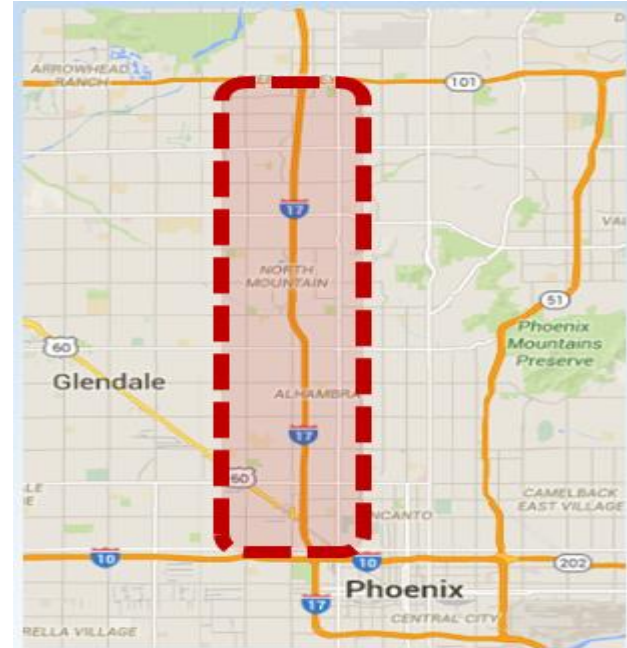# Arizona DOT
Wrong-Way Driving (WWD) Detection and Warning System Pilot Deployment

Presentation by Jim Windsor, P.E.

November 21, 2016

WWD Pilot Deployment
Project Area

- ▸ **I-17 between I-10 and SR-101**

- ▸ **Includes all exit ramps and freeway-to-freeway ramps**

- ▸ **Highest rate of wrong-way crashes and fatalities**

WWD Pilot Deployment

Project Area (completed mitigation)

► Lowered and installed oversized signs

WWD Pilot Deployment
Project Area (completed mitigation)

Ramp Arrows with RPMs

HOV Raised Pavement Markers (RPMs)

WWD Pilot Deployment
Previously Tested Systems

WWD Pilot Deployment

Scope

▸ **Accurately detect and validate all WWD incidents on freeway exit ramps and the mainline**

▸ **Provide an immediate automatic notification to the ADOT TOC and Department of Public Safety OPCOM**

▸ **Automatically position and activate CCTV cameras to validate and track the WWD**

▸ **Automatically activate pre-defined countermeasures**

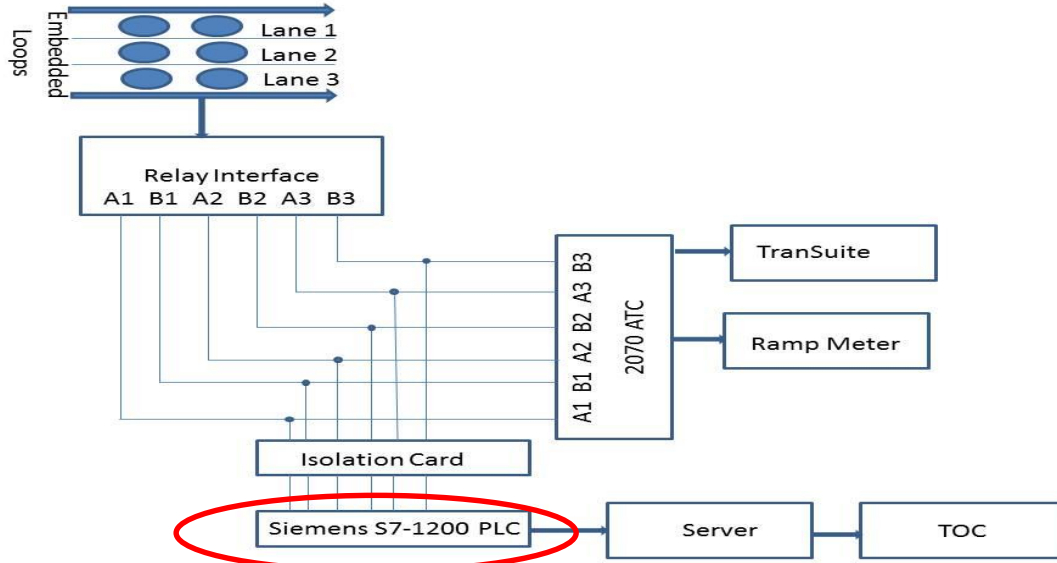▸ **Automatically log all WWD incidents and subsequent responses**

WWD Pilot Deployment

Detection Element

▸ **Exit ramp initial and verification (redundant) detection**

> ➢ **Radar Detection at the top of the ramp**
>
> ➢ **Loop Detection at the bottom of the ramp**
>
> ➢ **Visual verification (e.g., "confidence" or capture camera)**

▸ **Existing mainline loop detection and redundant radar detection**

▸ **Freeway-to-Freeway loop detection and radar detection**

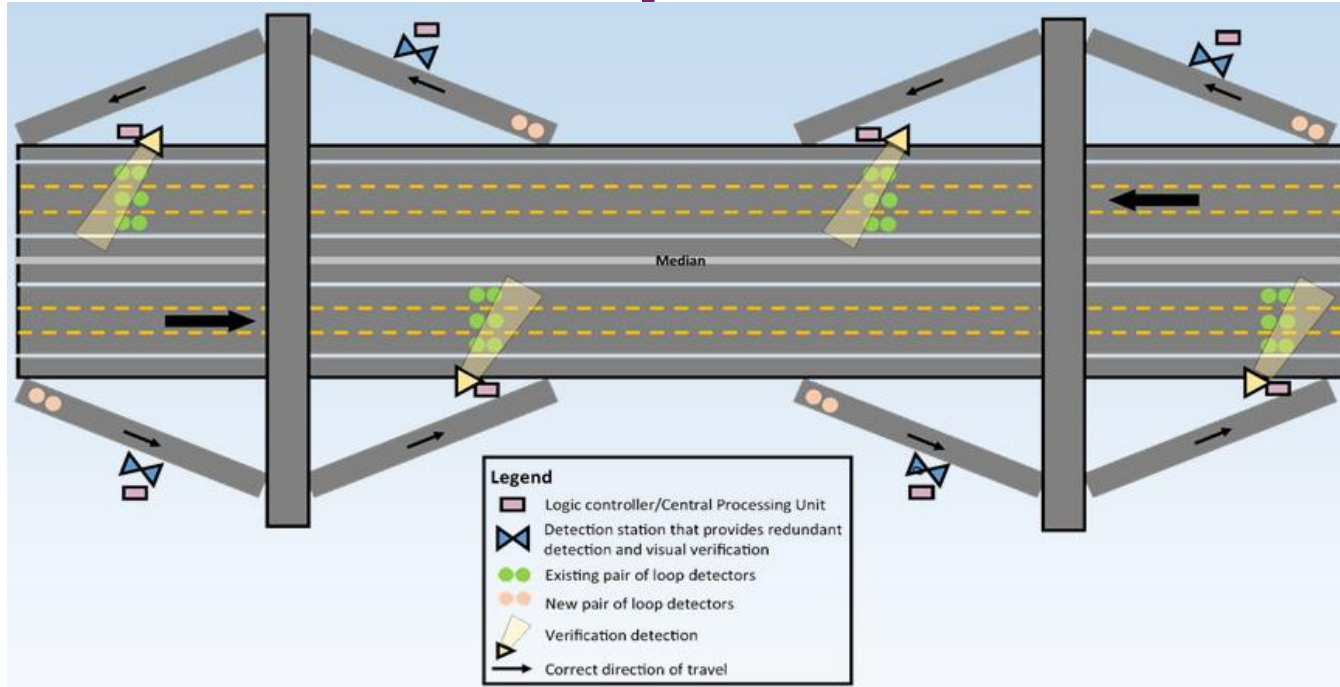▸ **Existing mainline CCTV cameras**

Detection Element

➤ Wrong-Way Detection Utilizing Existing Mainline Loop Detectors

➤ Proto-type was built by DOT staff

WWD Pilot Deployment

Detection Components

Legend
- ▭ Logic controller/Central Processing Unit
- ⋈ Detection station that provides redundant detection and visual verification
- ●● Existing pair of loop detectors
- ●● New pair of loop detectors
- ▷ Verification detection
- → Correct direction of travel

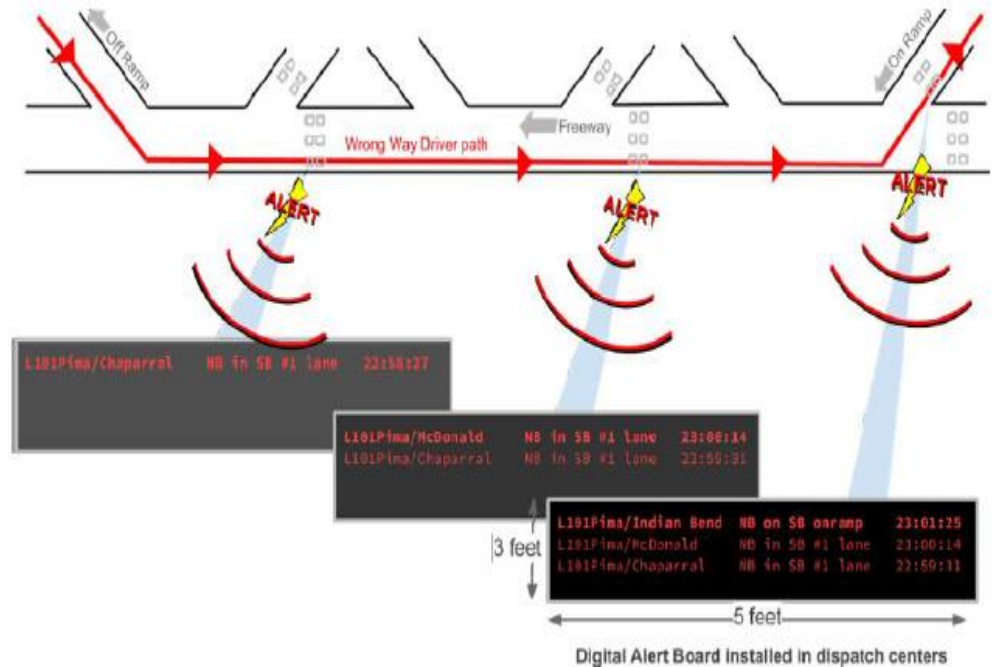# WWD Pilot Deployment
Warning Element

▸ **Dynamic warning signs on exit ramps**

▸ **Posting of DMS messages**

▸ **Activation of upstream ramp meters**

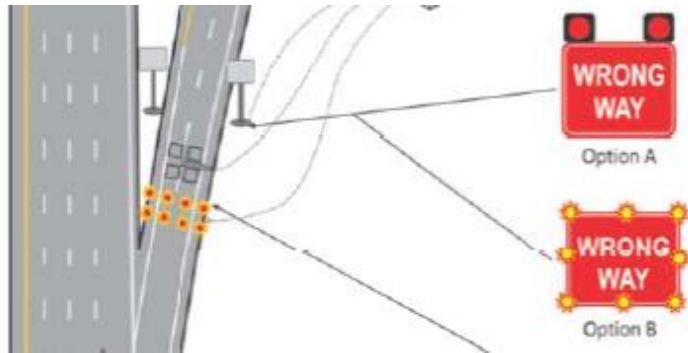▸ **Activation of TI traffic signal timing**

WWD Pilot Deployment

Notification Element

‣ **Digital alert board**

‣ **Desktop alert notification**

‣ **Email notification**

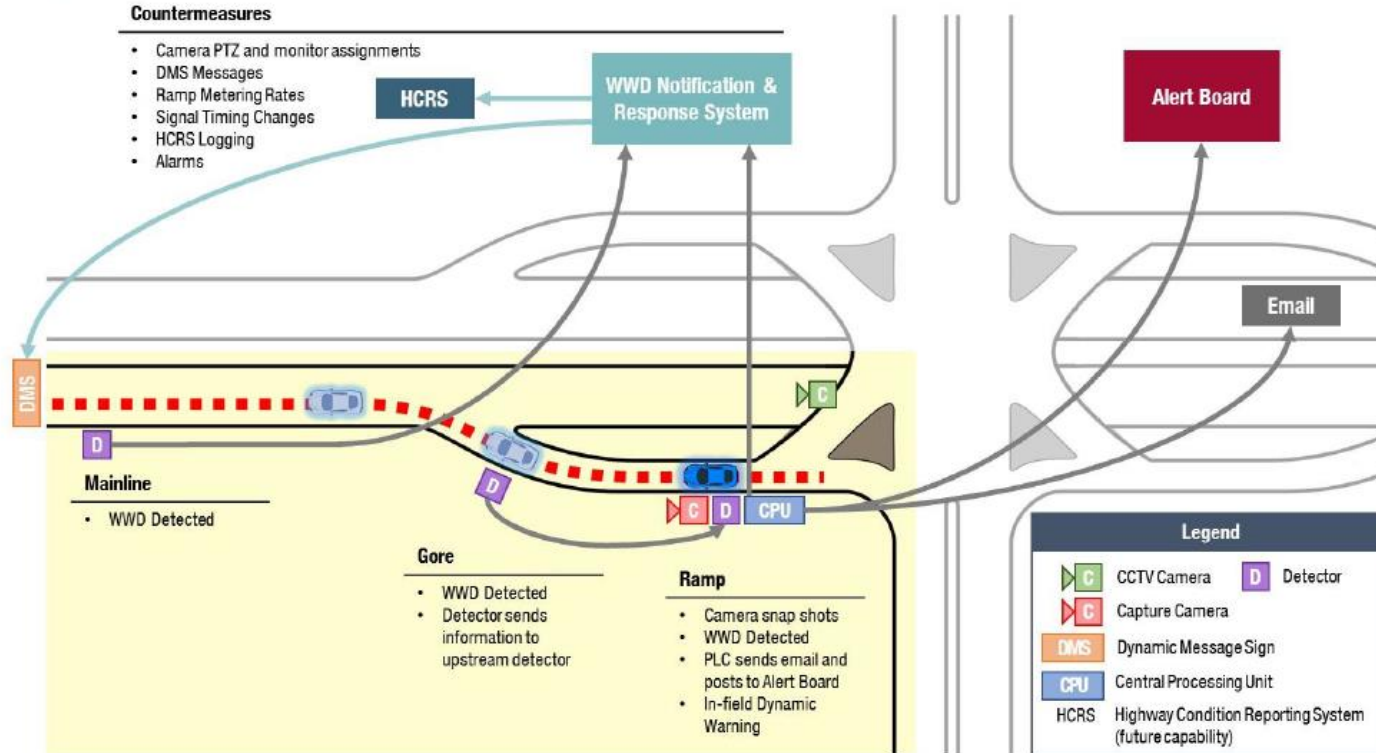Digital Alert Board installed in dispatch centers

Notification Elements

➢ Warning to the errant driver

➢ Digital Alert Board in Traffic Operations center and DPS

➢ CCTV cameras preprogrammed

➢ Dynamic Message signs automatically activated

WWD Detection and Warning System

WWD Detection and Warning System
Pilot Deployment Next Steps

▸ **Finalize PA**

▸ **Present Options to Executive Leadership**

▸ **Secure Funding**

Thank You!

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