



# TEXAS DEPARTMENT OF TRANSPORTATION



## WRONG WAY DRIVER INITIATIVE

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San Antonio District - TransGuide



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May 13, 2014



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# San Antonio Wrong Way Driver Task Force

- March 15, 2011 – SAPD Officer Stephanie Brown (27 yrs old) – killed in the line of duty by a wrong way driver on IH 35 on N side of Downtown San Antonio.
- WWD Task Force was organized in the spring of 2011 to examine factors contributing to wrong way driving in San Antonio, and to identify methods of addressing wrong way drivers.
- Agencies Participating:
  - Texas Department of Transportation
  - The San Antonio Police Department
  - City of San Antonio Department of Public Works
  - The Bexar County Sheriff’s Department
  - The Federal Highway Administration
  - The Texas Transportation Institute



# San Antonio Wrong Way Driver Task Force

- **August 2010** – San Antonio Police Dept.(SAPD) - Implemented E-Tone WWD notification for its radio network
- **January 2011** – SAPD: Implemented code in Computer Aided Dispatch (CAD) system identifying WWD events
- **May 2011** – TxDOT: TransGuide operators authorized to display WWD warning message on DMS when SAPD issued E-Tone for WWD alert. Previously operators verified the WWD, and then placed the messages.
- **January 2012** - TxDOT: Installation of first set of LED Wrong Way signs on US 281 exit ramps.
- **January 2013** – TxDOT: IH 35 project N of San Antonio lets – first construction project to install LED illuminated WWD signs and radar
- **March 2013** –TxDOT: Activation of first WWD radar on US 281 SB exit ramp @ Josephine St

# San Antonio Wrong Way Driver Task Force

- Goals

- Identify high risk locations
- Investigate prior WWD related research
- Investigate WWD Counter Measures implemented elsewhere
- Identify potential WWD Counter Measures
- Identify funding for implementation of WWD Countermeasures



# San Antonio Wrong Way Driver Task Force

## ■ Challenges

- Determining points of entry for WWDs
- Number of ramps:
  - + More than 400 exit ramps in San Antonio metro area
- How to get the attention of drivers that are severely impaired
- Manual of Uniform Traffic Control Devices Compliance
- Spike Strips are not MUTCD compliant



# 2013 WWD Statistics (TransGuide Operator Logs)

**222** Total WWD Events logged by TransGuide Operators

**199** WWD not apprehended, no crash (90%)

**14** Total crashes documented (6%)

**9** Crashes with serious injuries or fatalities

- **8** Crashes with serious injuries or fatalities (10), Driver DWI

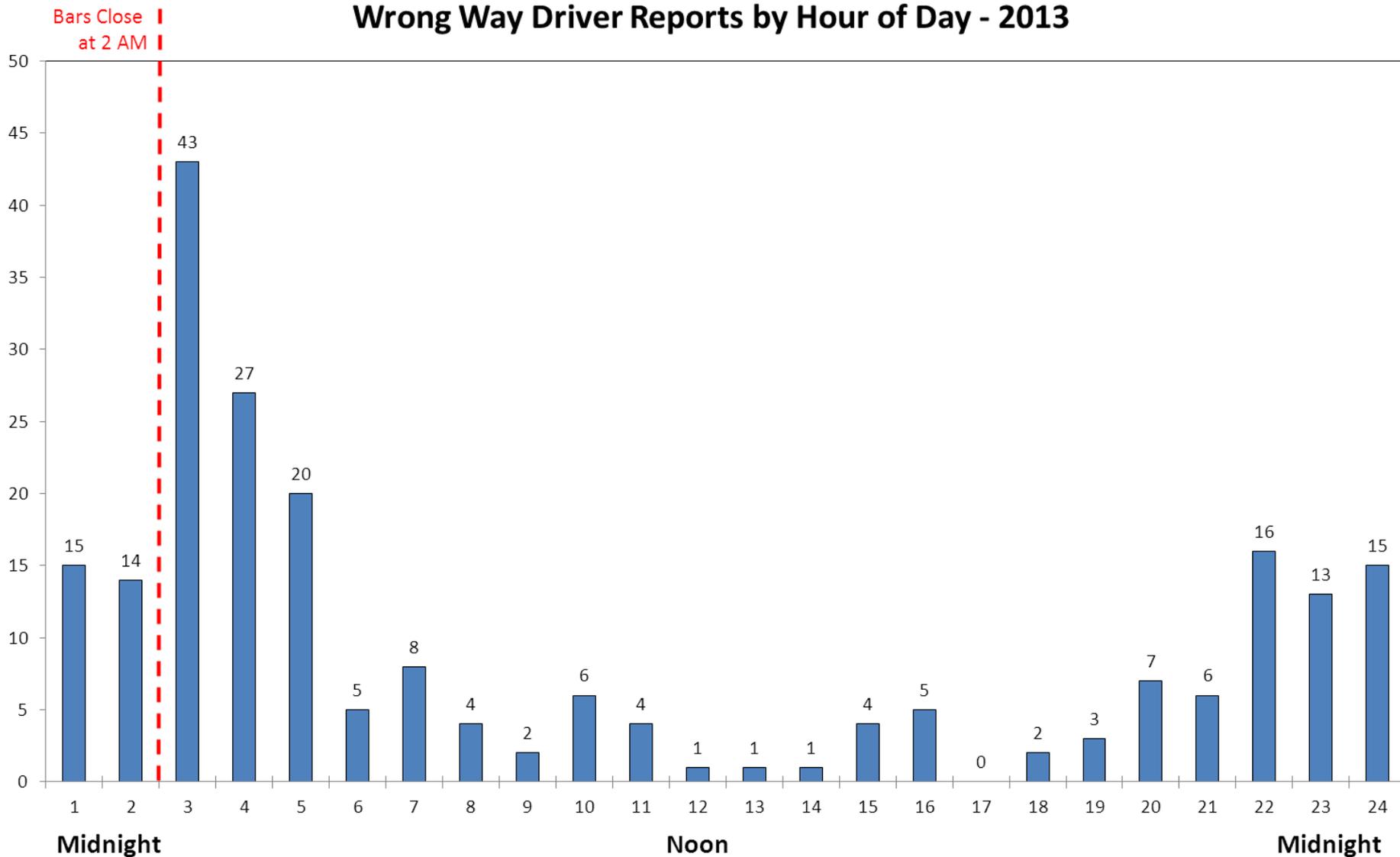
- **1** Crash with serious injuries or fatalities, Driver not DWI

**7** No Crash, WWD apprehended, Driver DWI (3%)

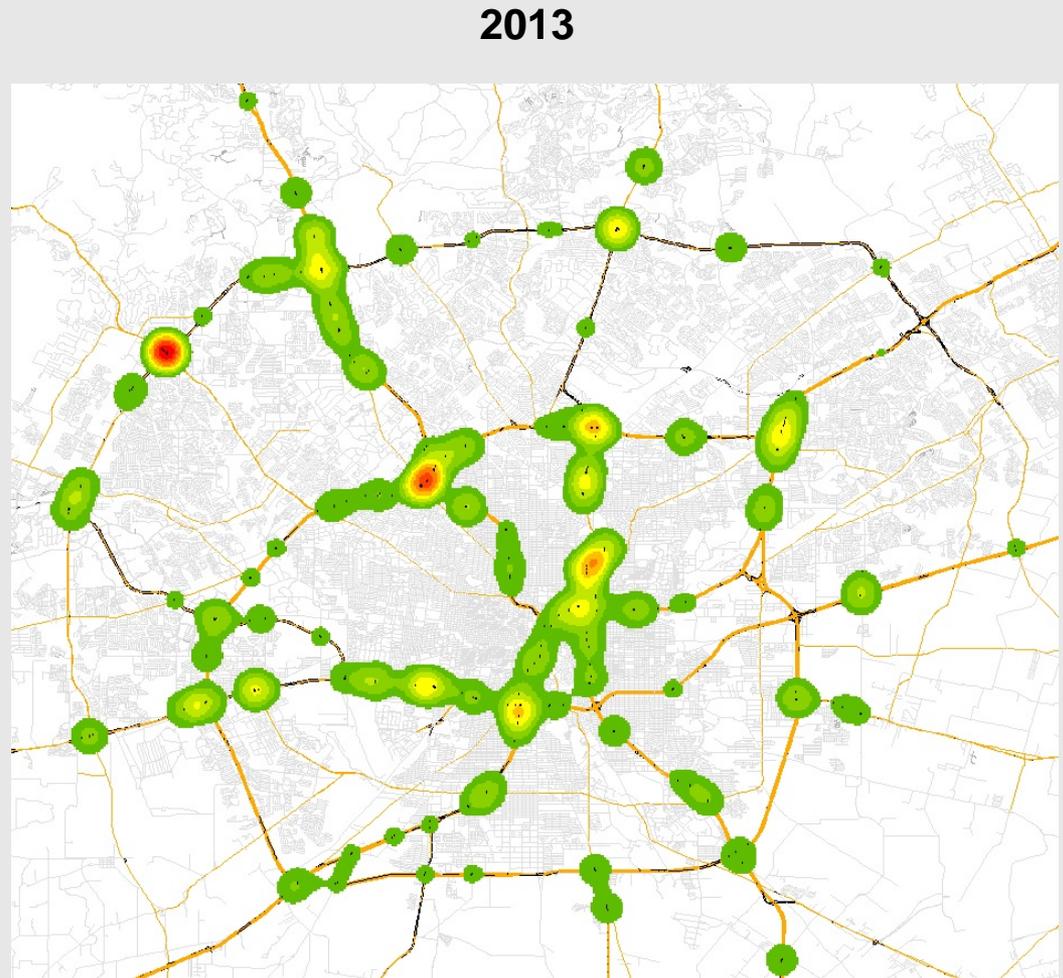
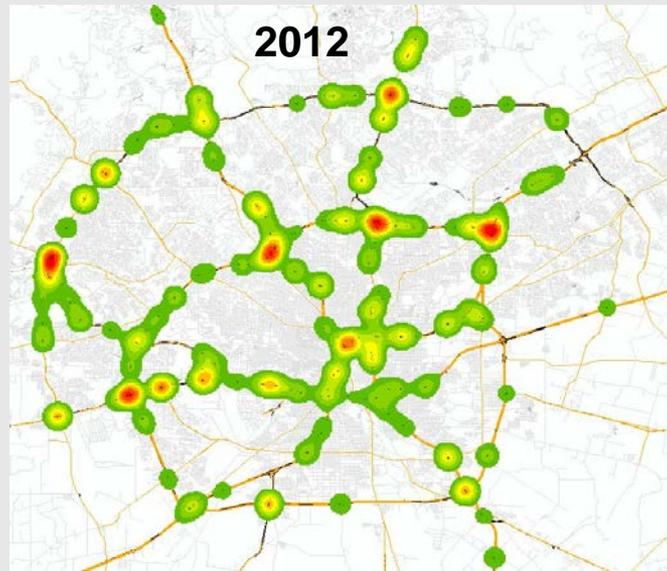
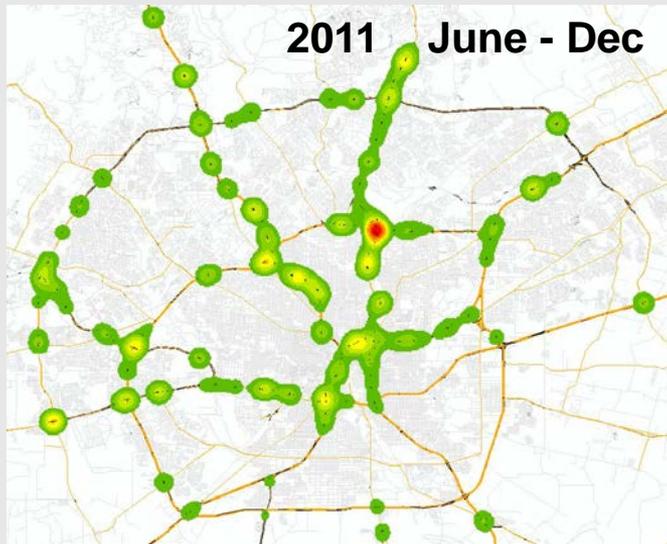
**2** No Crash, WWD Disoriented due to medical condition (1%)

# 2012 WWD Statistics Reports by Hour of Day

## Wrong Way Driver Reports by Hour of Day - 2013



# 2011, 2012 & 2013 GIS Density Maps



# Countermeasures Identified

- Active/Illuminated Signing
- Enhanced Static Signing & Pavement Markings
- Detection Technologies (Radar Sensors)



# DMS Wrong Way Driver Warning Message – May 2011



- No lane instructions given
- Message displayed first, then operator searches for vehicle using cameras
- Displayed Until:
  - 1) WWD stopped,
  - 2) Accident found,
  - or
  - 3) SAPD cancels Alert

# Active/Illuminated Signing : LED & Blank-out Wrong Way Signs



**LED WW Sign**



**Blank-out WW Sign**



- 72% of the wrong way driver events occur at night
- The flashing LED lights will be visible from a greater distance

# Enhanced Static Signing & Pavement Markings

- Increased visibility of “WRONG WAY” and “DO NOT ENTER” signs shown to reduce wrong way driving
- TxDOT implemented measures recommended in a prior study:
  - “Countermeasures for Wrong-Way Movement on Freeways: Overview of Project Activities and Findings”, TTI 2003/2004
  - Field Inspection of all ramps using 2004 TTI Study Checklist
  - Ensure all required signs, pavement markings and RPM’s are in place and visible



- Wrong Way Arrows on TxDOT Standard Sheet FPM (1)-12



# Enhanced Static Signing & Pavement Markings

- Recommend additional (supplemental) measures:
  - Add reflective tape on sign posts
  - Increased size of ONE WAY signs
  - Additional WRONG WAY & DO NOT ENTER signs at critical locations
  - Lowered sign heights\*
- \* Note: TxDOT is not implementing lowered sign heights at this time



# Detection Technologies (Radar Sensors)

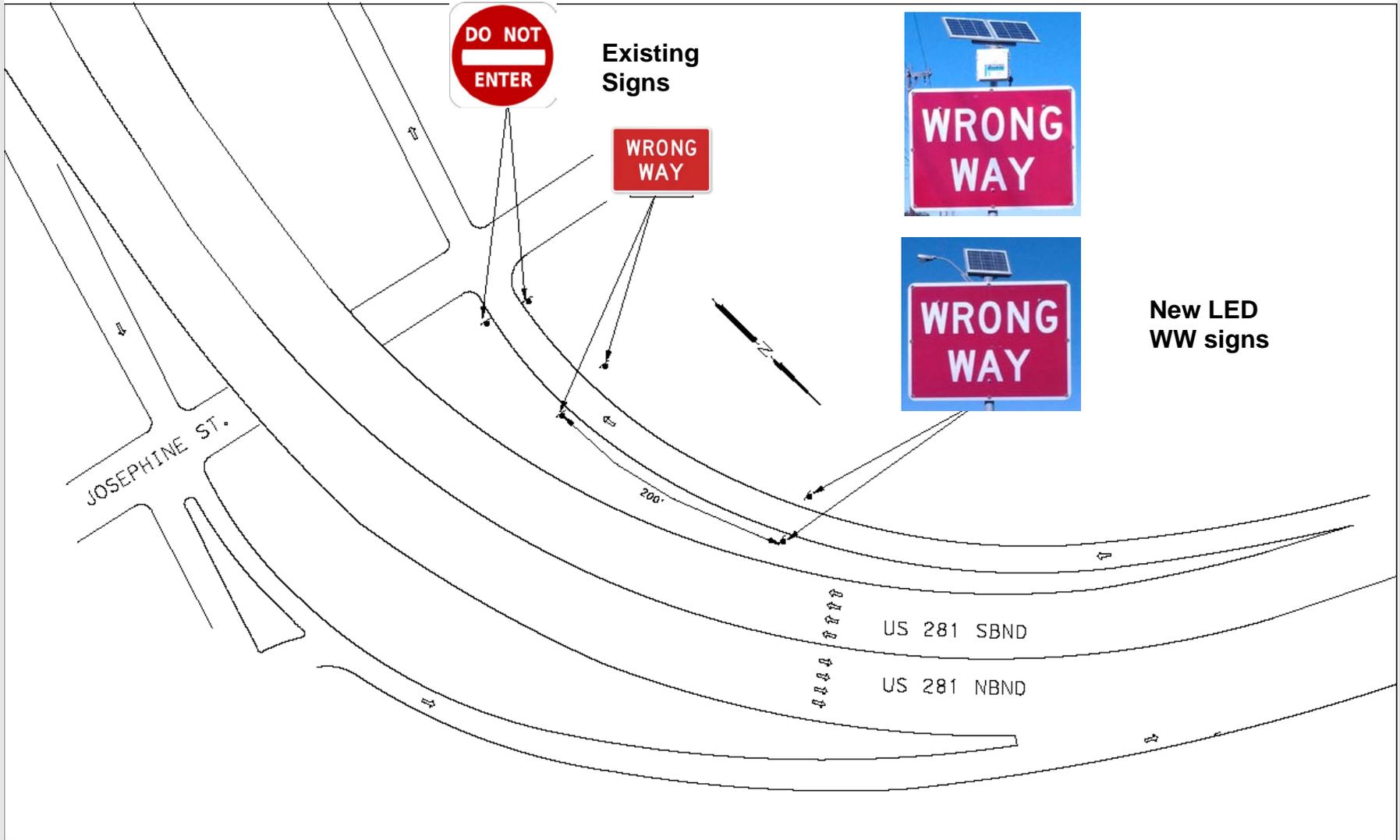
Exit Ramps – TAPCO Radar



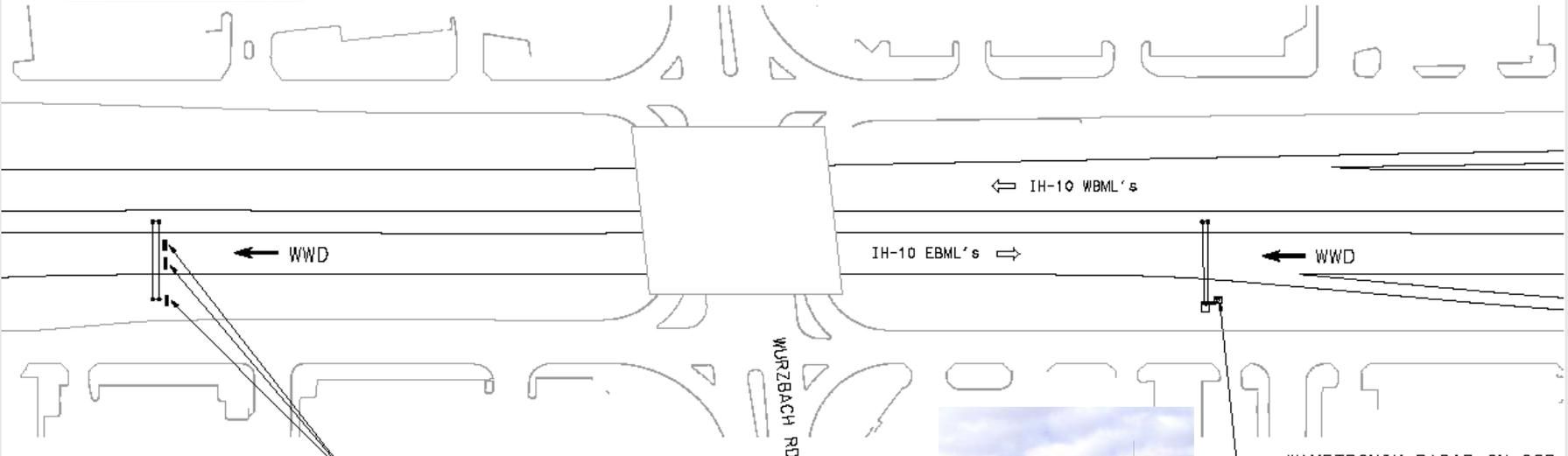
Mainlanes – Wavetronix Radar



# Exit Ramp Countermeasures



# Mainlane Countermeasures



LED & BLANK-OUT WRONG WAY SIGNS  
ACTIVATED BY CONTACT CLOSURE  
RADIO LINK



WAVETRONIX RADAR ON OSB  
USED FOR WWD DETECTION

# Mainlane & Exit Ramp countermeasures

Mainlane



Exit Ramp



# Budget for WWD Active Countermeasures

## ■ Exit Ramps

- TAPCO LED WW sign w/solar panel = \$1,988
- LED WW sign w/Radar & solar panel = \$5,340
- Prices are for existing sign mounts.
- Labor & misc. electronic parts - \$6,500
- **Typical ramp installation = \$14,000**

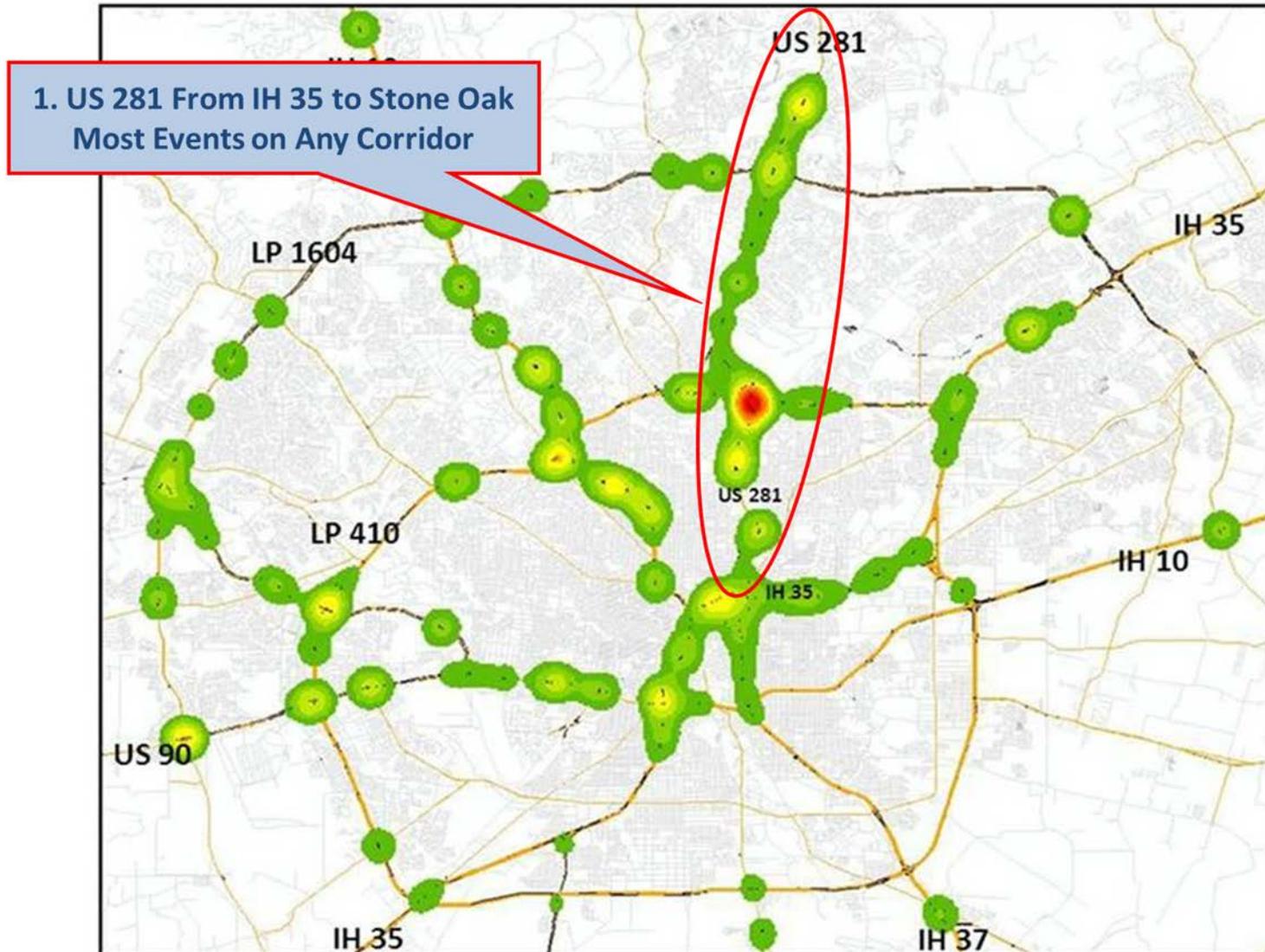


## ■ Mainlane System

- 2 TAPCO LED WW signs Sign = \$3,996
- 2 SES Blank Out Signs = \$16,400
- 1 Wavetronix Radar Detector = \$6,400
- 1 contact closure radio link = \$3,800
- Additional electronic components - \$1,430
- Labor - \$9,600
- **Typical mainlane system = \$42,000**



# US 281 Pilot Project



# US 281 Pilot Project



15 Miles

28 Exit Ramps

- 2 LED Illuminated Wrong Way Signs
- 1 Radar Detection Unit

4 Mainlane Locations (future)

- 2 LED Illuminated Wrong Way & 2 LED Blank Out Signs installed on both shoulders
- 1 Radar Detection Unit

- Installation began Jan 2012
- All LED Illuminated Wrong Way Signs have been installed
- 16 Radar Units Installed
- Mainlane System tested and waiting installation
- Budget \$500,000

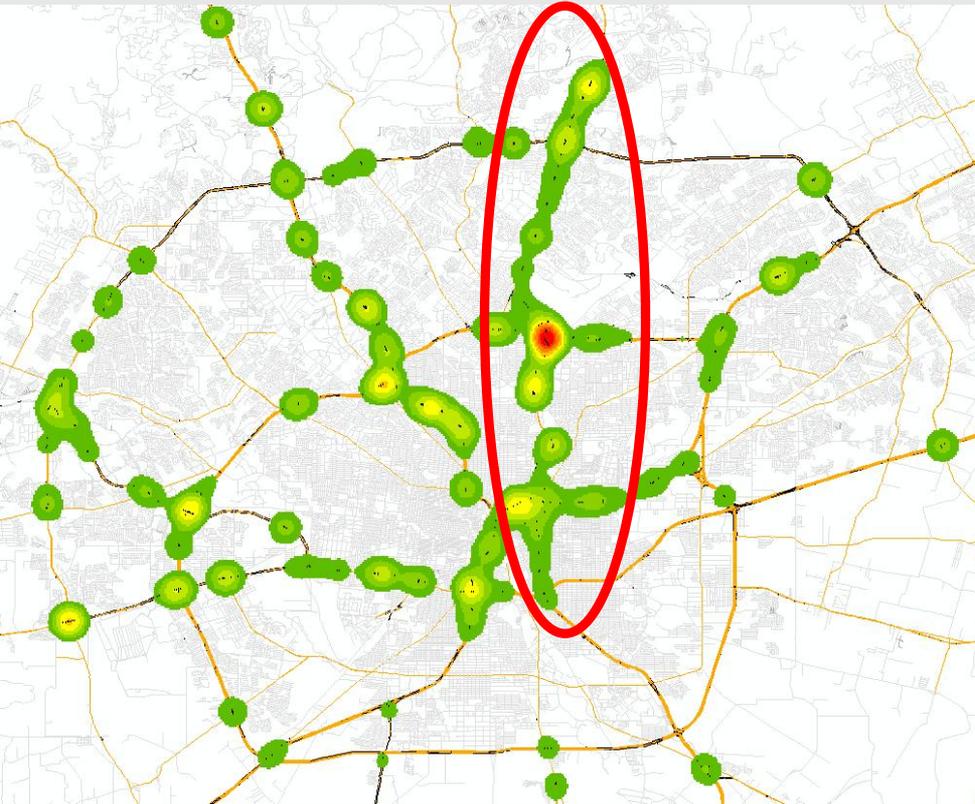


# US 281 Pilot Project - 18 Month Results

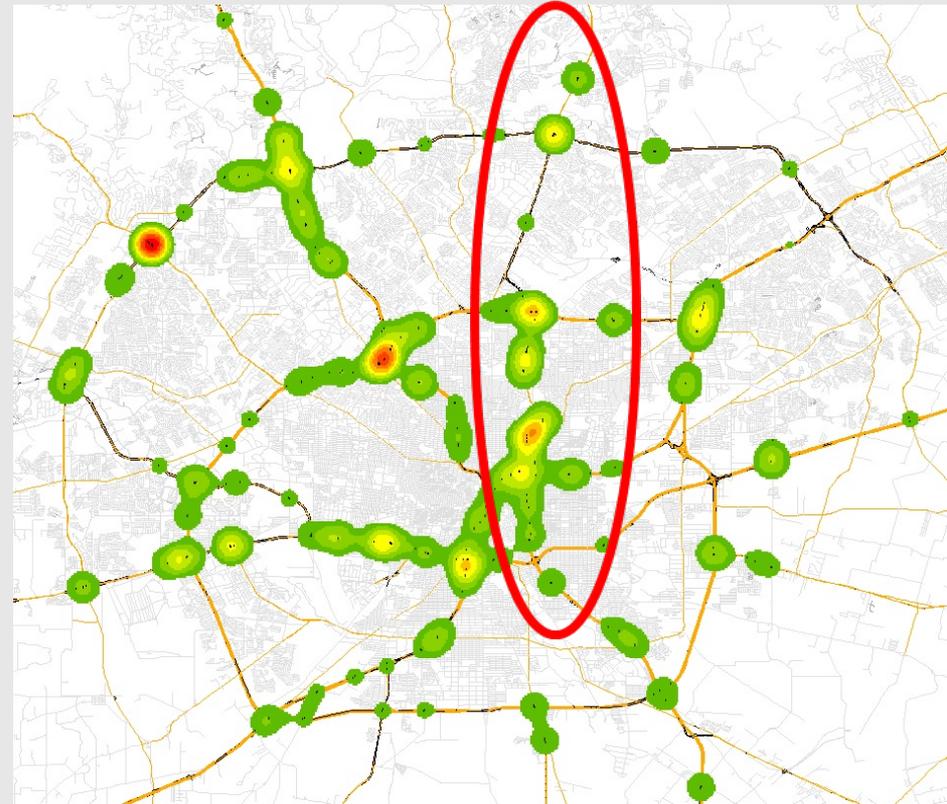
	July 2012 to December 2013
Reduction in Avg. Rate of WWD Events TransGuide Logs	28.11% (thru March 2014)
Reduction in Avg. Rate of WWD Events SAPD 911 Logs	27.29%
Project Cost	\$377,605
Annual Cost Savings Avg. of SAPD & TxDOT data	\$235,946
Benefit - Cost ratio	12.5 : 1
Cost Recovery Time (yrs)	1.6

# 2011 & 2013 GIS Density Maps

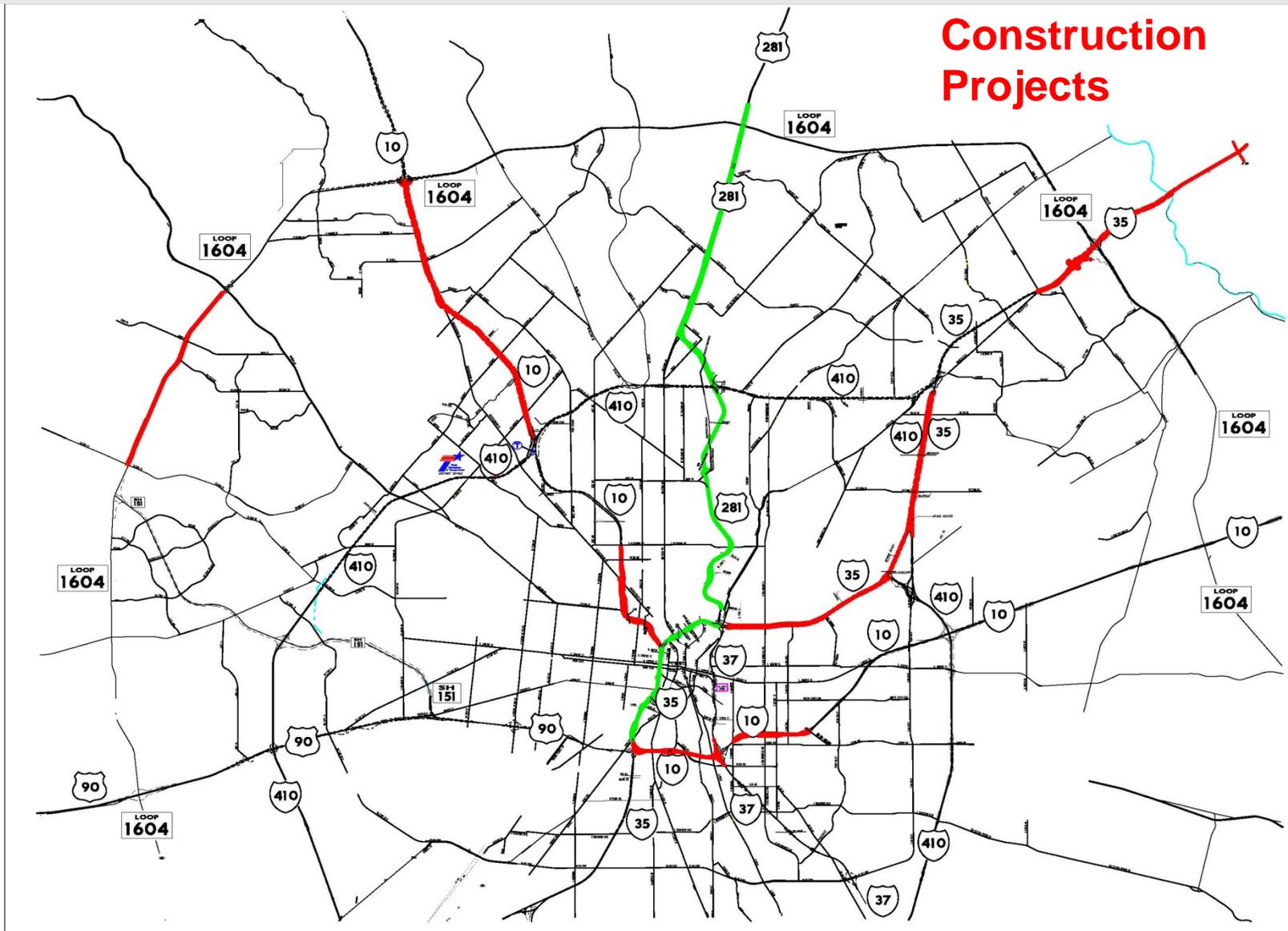
2011: June -December



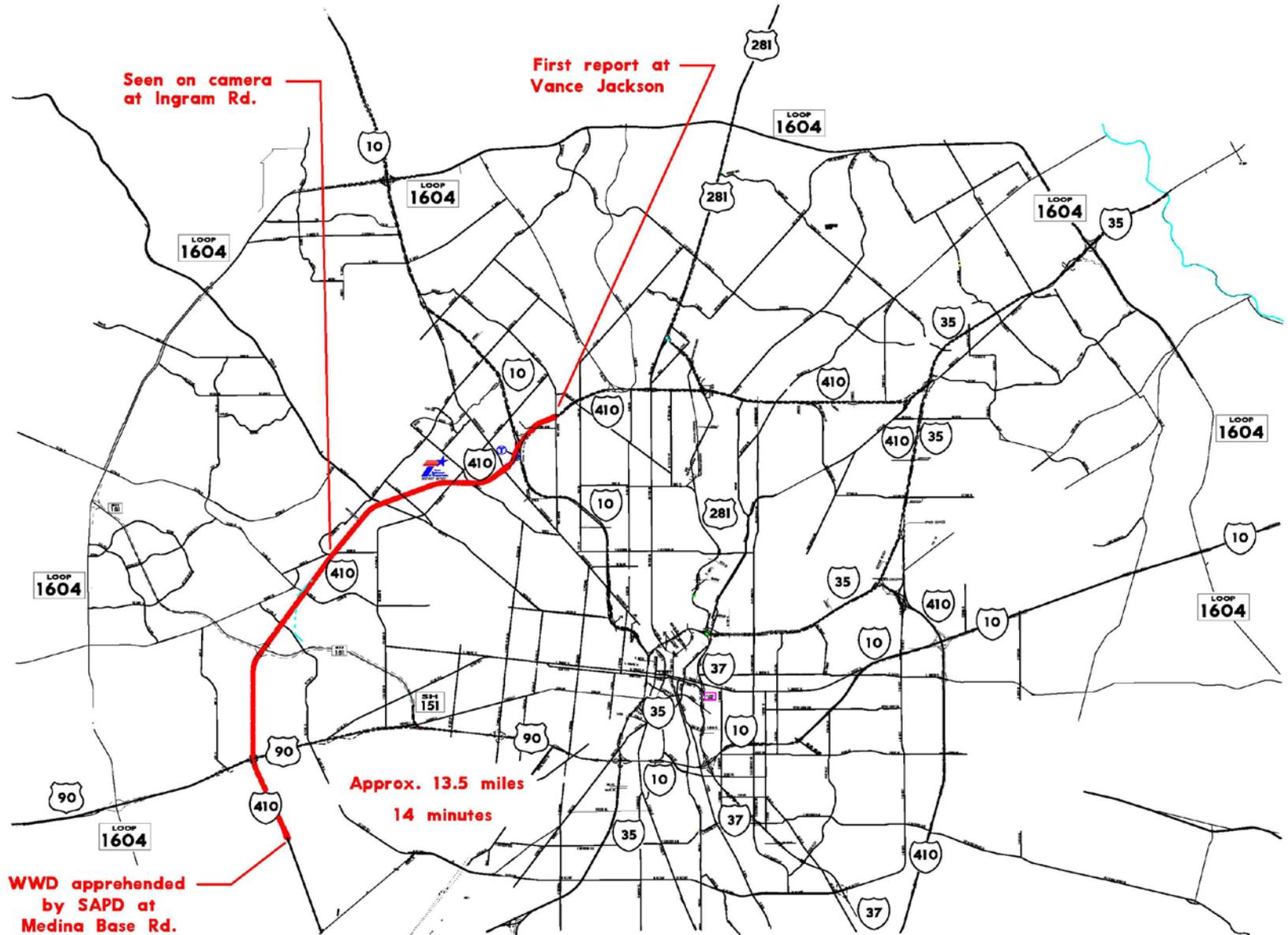
2013: January - December



# How are we doing?



# How are we doing? WWD on IH 410 - 2/12/14





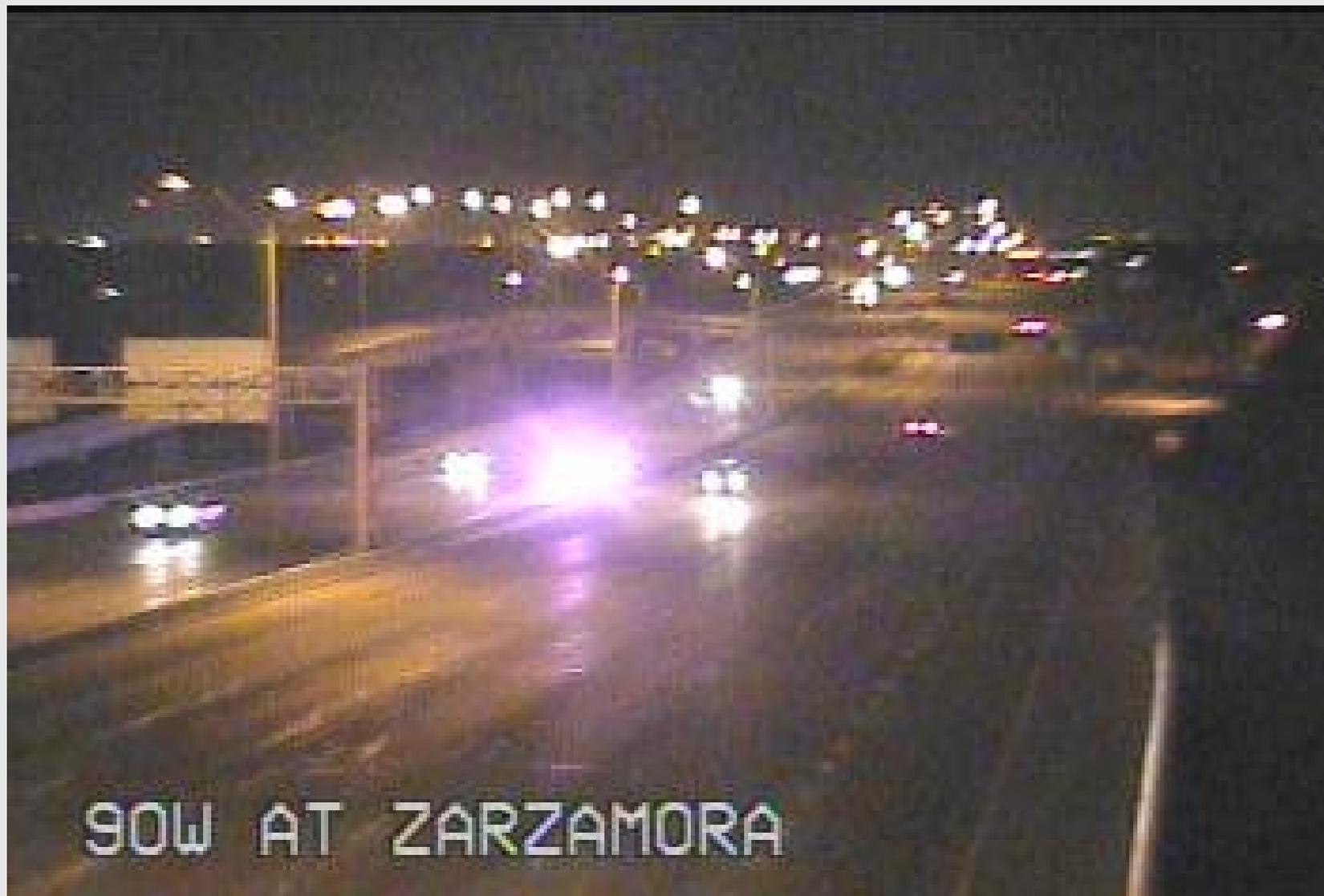
# WWD on IH 35 at 1:30 am – 3/31/14



# WWD on IH 35 at 3 am - 4/1/14



# WWD on US 90 at 3:30 am – 4/19/14



# How are we doing? Nov. 2012 success story





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