Florida Department of

FDOT

FDOT Roadway Wind-Speed Monitoring

- In 2012 FDOT began monitoring wind speed conditions in real-time on approximately 20 critical roadways in the Jacksonville, Florida area
- The information is available in the FDOT traffic management centers around the state and shared with local public safety agencies
- During the 2012 Hurricane Season two tropical storms hit Jacksonville and the wind speed monitoring system supported the FDOT and public safety response
- The FHWA has named the project a "Best Practices" transportation tool for state DOTs

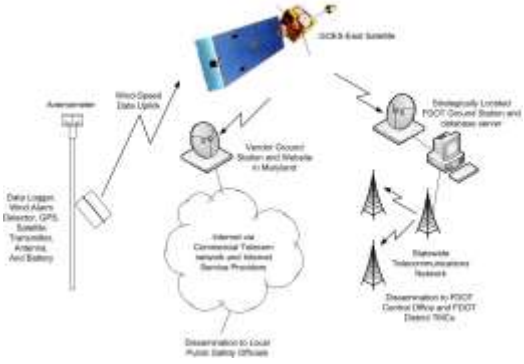
How it works

- FDOT has worked with the National Oceanic and Atmospheric Administration (NOAA) to win approval to use their satellite-based "Data Collection Service" (DCS) to deliver wind speed sensor data

DCS

NOAA

How it Works



Significant Cost Savings

- Equipment/Installation Cost ~ $10,000 per site
- No operational costs for receiving sensor data via NOAA satellite service
  - Using cellular modems at 100 sites would cost:
    - $5,000 a month / $300,000 over 5 years
- No distribution costs for delivering data via the FDOT microwave network
  - Installing dedicated data communication circuits from the satellite ground station database to 8 locations such as TMCs would cost:
    - $8,000 a month / $480,000 over 5 years

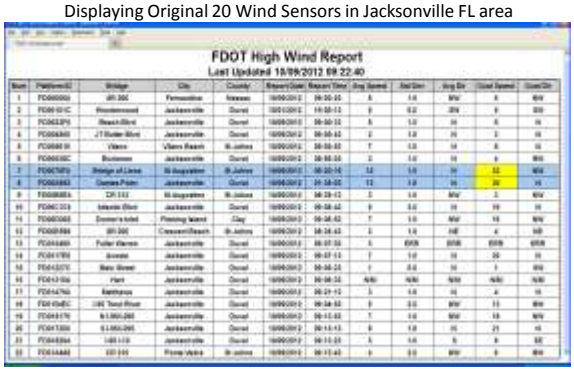
Data Integrity

- The FDOT ground stations at Lake City and Tallahassee receive the wind speed data directly from the GOES satellite.
- Dissemination to FDOT TMCs is via FDOT's redundant and resilient enterprise microwave and fiber network
- The internet has proven unreliable during severe weather events but this system does not rely on it to deliver wind speed data to the TMCs.
- Many TMCs have public safety representatives present during emergencies, reducing further the reliance on the internet for even partner agencies to receive wind speed information.

The Data

- Each site sends in wind speed data as often as once an hour or when a preset threshold is crossed.
- Data that will be transmitted will include specific wind statistics: Mean, Std. Dev., etc.
- Data transmissions for wind speed threshold alarms will be sent multiple times to ensure successful communications.
- Transmissions are limited in size.

Wind Speed Data Website:
Displaying Original 20 Wind Sensors in Jacksonville FL area



Project Status

- The first ~20 sites were installed in 2011-2012
- Two ground stations installed 2012-2013.
- Ground Stations updated 2016.
- 25 additional sites installed in the Florida Keys in 2016

First Installation: Atlantic Blvd, Jacksonville, Florida 8/16/2011

FDOT Wind Speed Sensor Sites

- Using lessons learned from the initial Jacksonville deployments and to save costs the FDOT selected existing concrete pole locations close to strategic Keys bridge sites
- The following table lists the deployment sites in the Keys

Florida Keys:
Wind Sensor
Location List

Site Number	Location Description	Mile Marker	Pole Shape	Approximate Pole Height Above Ground Level (Feet)
1	CCTV Pole	US1 – 4.3	Round	70
2	CCTV Pole	US1 – 7.4	Square	70
3	CCTV Pole	US1 – 14	Round	75
4	CCTV Pole	US1 – 16	Round	50
5	CCTV Pole	US1 – 19.8	Round	60
6	CCTV Pole	US1 – 25.2	Round	95
7	CCTV Pole	US1 – 27	Round	55
8	CCTV Pole	US1 – 31.5	Round	80
9	CCTV Pole	US1 – 34	Round	55
10	CCTV Pole	US1 – 39.8	Round	65
11	CCTV Pole	US1 – 48	Round	100
12	CCTV Pole	US1 – 53	Round	55
13	CCTV Pole	US1 – 59	Round	54
14	CCTV Pole	US1 – 62.8	Round	100
15	CCTV Pole	US1 – 66	Round	60
16	CCTV Pole	US1 – 71.8	Round	100
17	CCTV Pole	US1 – 77	Round	54
18	CCTV Pole	US1 – 80	Round	70
19	CCTV Pole	US1 – 86.2	Round	85
20	CCTV Pole	US1 – 91	Square	68
21	CCTV Pole	US1 – 103.8	Round	80
22	CCTV Pole	US1 – 107.8	Round	75
23	CCTV Pole	US1 – 112	Round	75
24	CCTV Pole	US1 – 121.1	Round	75
25	CCTV Pole	CR905 – 4.7	Round	69

Florida Keys:
Typical CCTV pole
Wind sensor installation