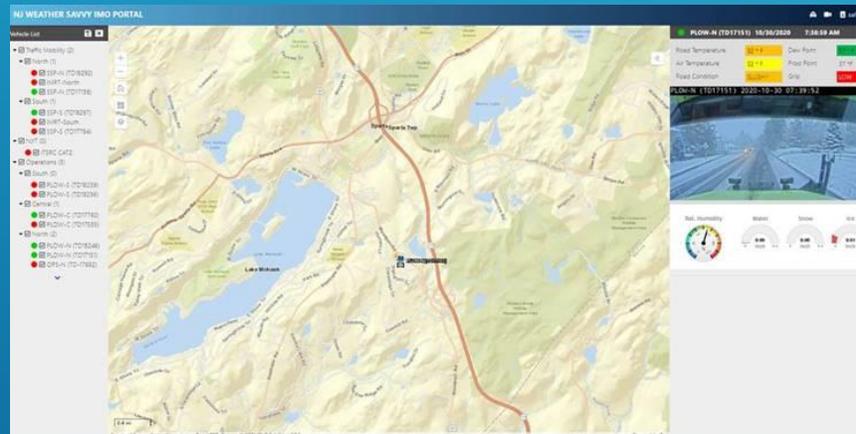
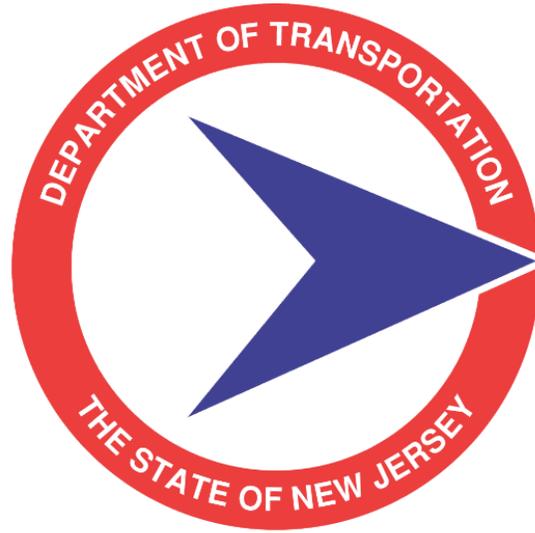




# FEATURE PRESENTATION: WEATHER SAVVY ROADS INSTRUMENTATION ACCELERATED IMPLEMENTATION DEMONSTRATION (AID) GRANT



Sal Cowan, Senior Director,  
Transportation Mobility, NJDOT



# **Weather Savvy Roads Pilot Project**

October 2020



# Weather Savvy Roads - Pilot Project

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1. What is the pilot?
2. Why is NJDOT doing this?
3. Are any other DOTs doing this?
4. What equipment will be installed?
5. What will the equipment do?
6. What won't the equipment do?



# Weather Savvy Roads - Pilot Project

## What is the pilot?

An FHWA pilot program, valued at \$322,462, under the “Weather Savvy Roads Integrating Mobile Observations (IMO)” innovation.



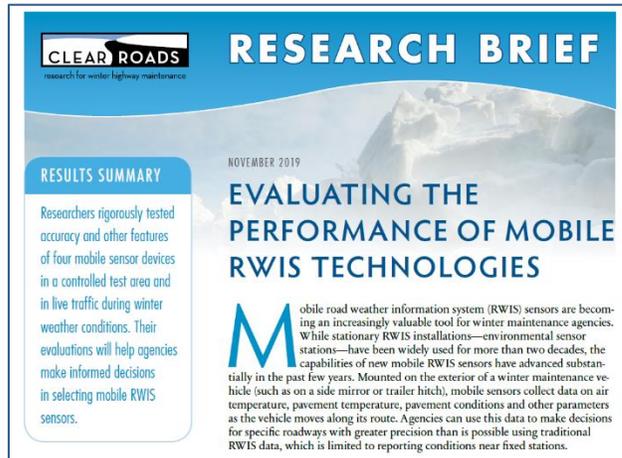


# Weather Savvy Roads - Pilot Project

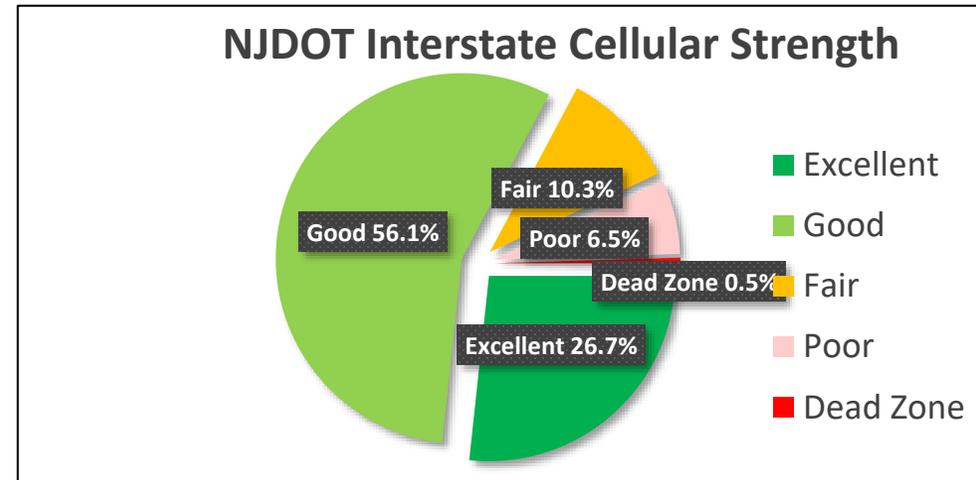
## Why is NJDOT Doing This?

To do our own research ...

...to compare the value of mobile RWIS vs fixed RWIS



...to test FirstNet signal strength vs commercial cellular strength on NJDOT's road network





# Weather Savvy Roads - Pilot Project



## Locations

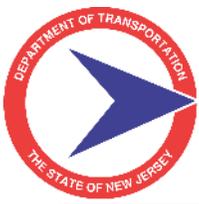
### Maintenance Operations

- Sussex – 1 Plow Truck
- Rockaway – 1 Plow Truck
- Flemington – 1 Plow Truck
- West Amwell – 1 Plow Truck
- Cherry Hill – 1 Plow Truck
- Mays Landing – 1 Plow Truck

### Mobility

- Harding – 2 x SSP trucks and 1 IMRT truck
- Cherry Hill – 2 SSP trucks
- Deptford – 1 IMRT truck

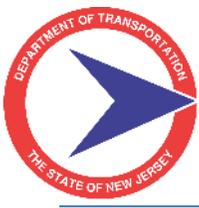
Expanding with additional 8 vehicles\*



# Weather Savvy Roads - Pilot Project

Cab Setup – IMRT Truck





# Weather Savvy Roads - Pilot Project

## Cab Setup – SSP / IMRT Trucks

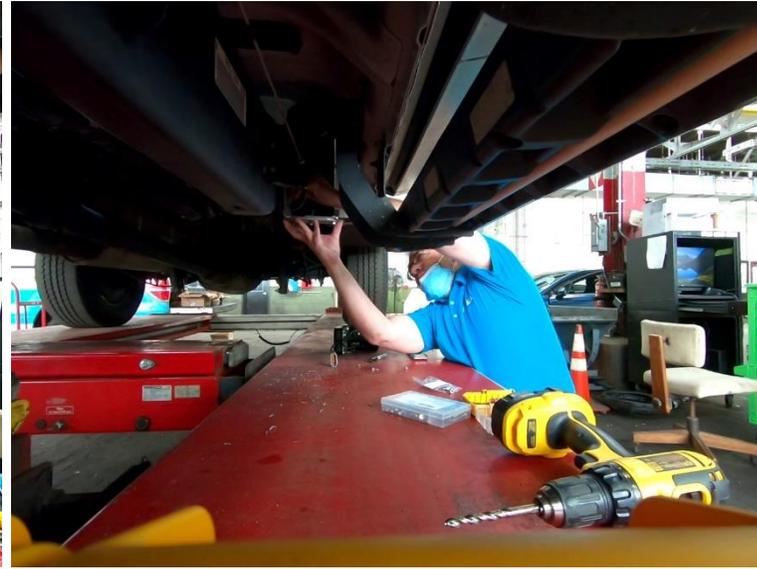


- Cellular Router (with GPS) -- FirstNet
- Video Camera Transcoder and Power Unit
- Power distribution unit



# Weather Savvy Roads - Pilot Project

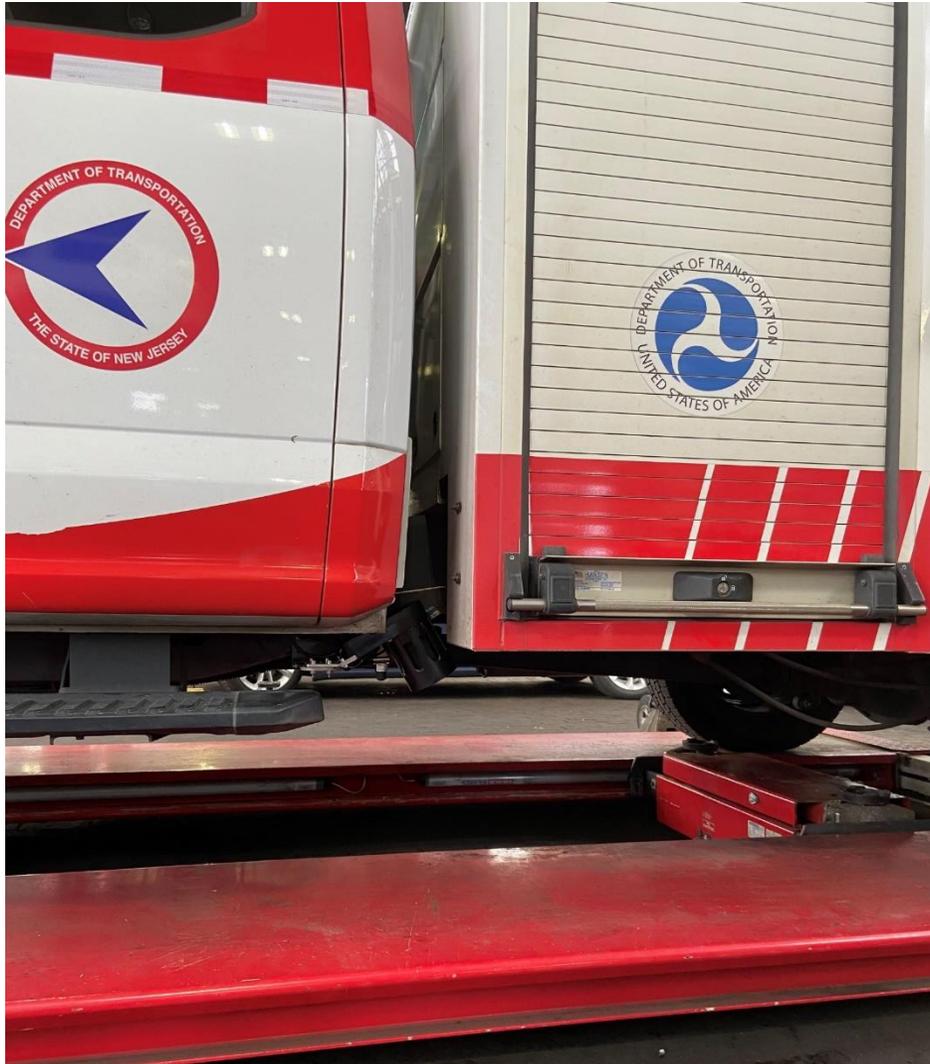
## Road Weather Sensor Installation – SSP / IMRT Trucks





# Weather Savvy Roads - Pilot Project

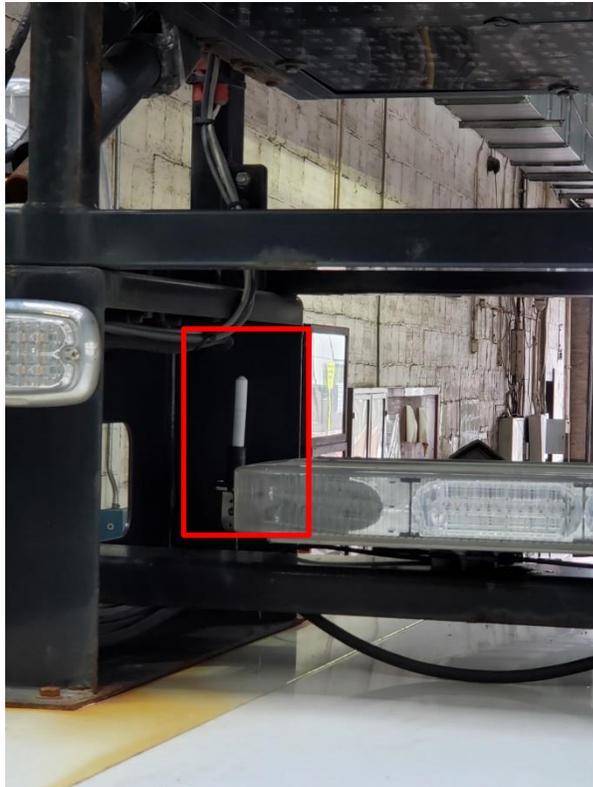
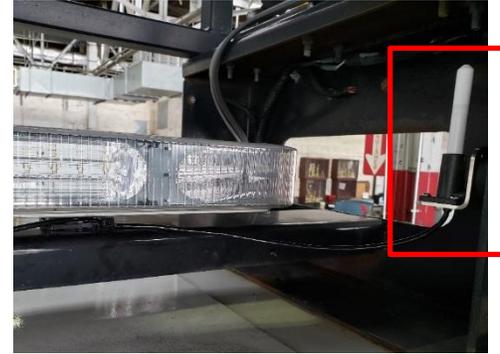
Road Weather Sensor Installed – SSP /IMRT Trucks

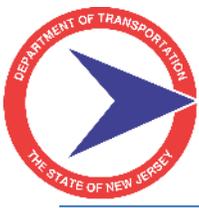




# Weather Savvy Roads - Pilot Project

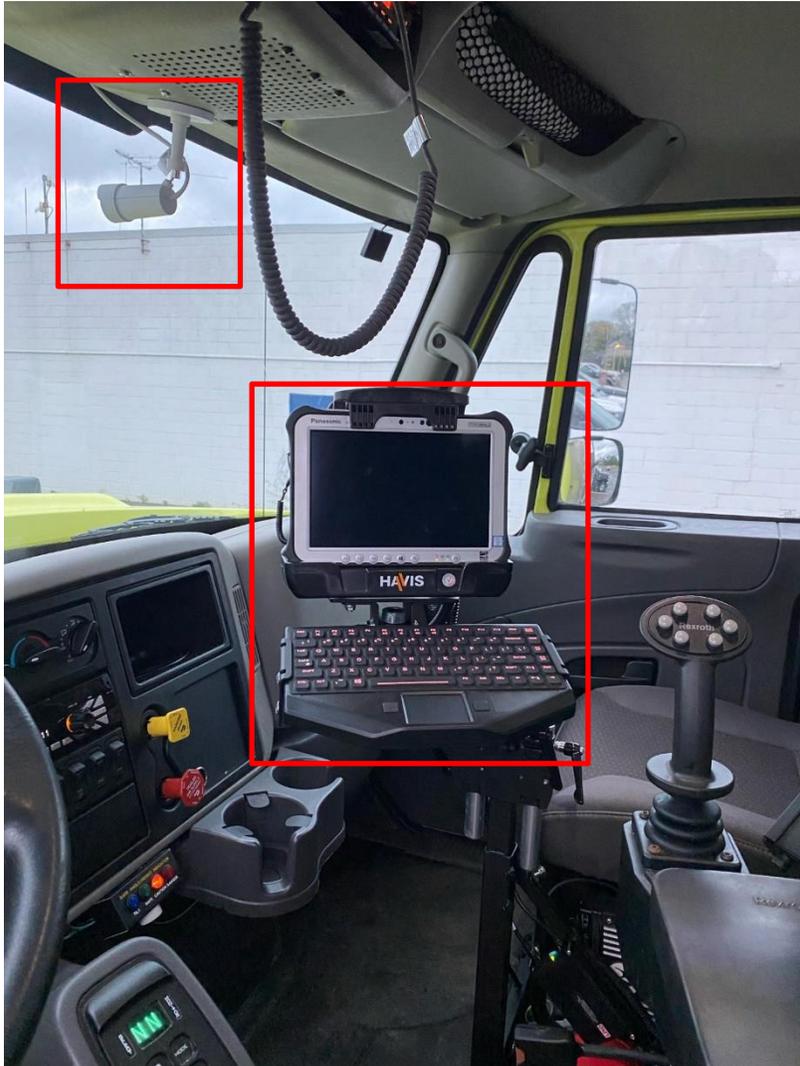
## Ambient Weather Sensor Installation – SSP /IMRT Trucks





# Weather Savvy Roads - Pilot Project

## Cab Setup - Dump/Plow Trucks



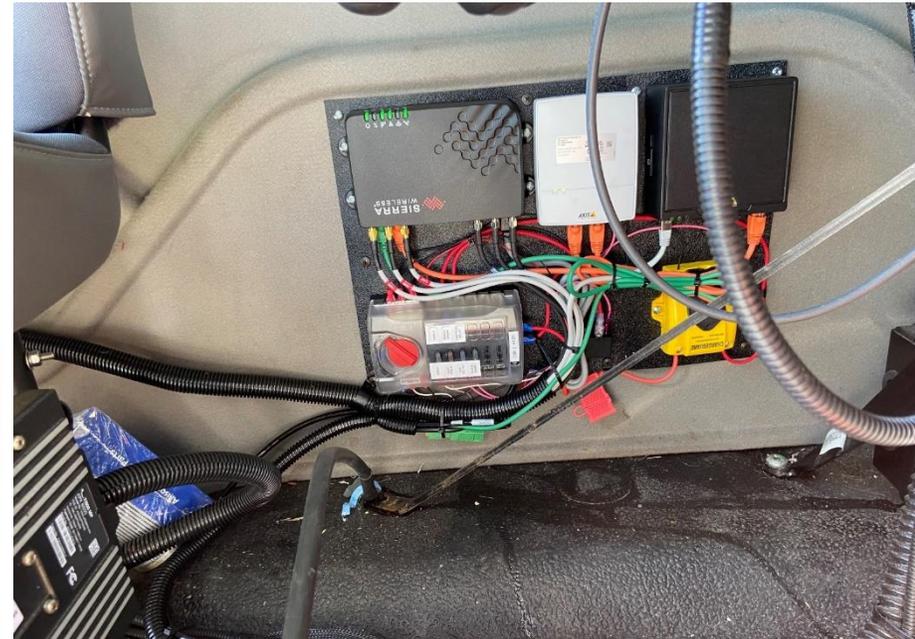


# Weather Savvy Roads - Pilot Project

Cab Setup - Dump/Plow Trucks



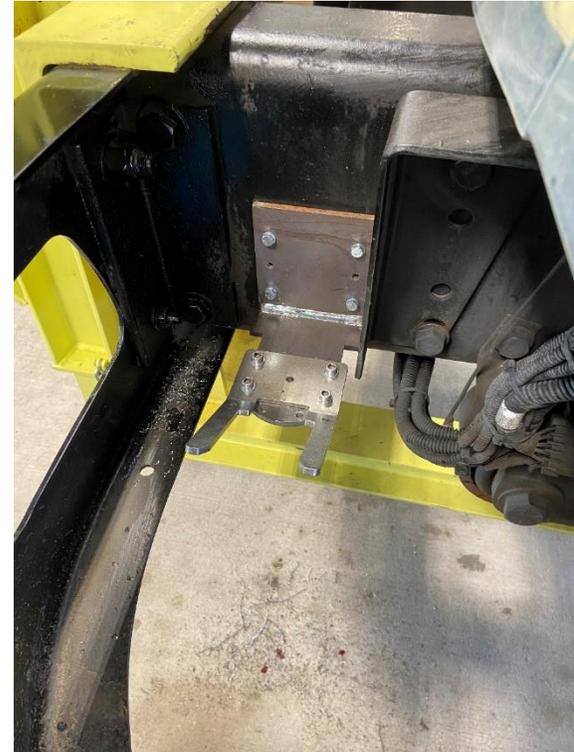
- Cellular Router (with GPS) -- FirstNet
- Video Camera Transcoder and Power Unit
- Power distribution unit





# Weather Savvy Roads - Pilot Project

RWIS Installation - Dump/Plow Trucks

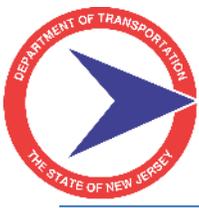




# Weather Savvy Roads - Pilot Project

## RWIS Installed – Dump/Plow Trucks





# Weather Savvy Roads - Pilot Project

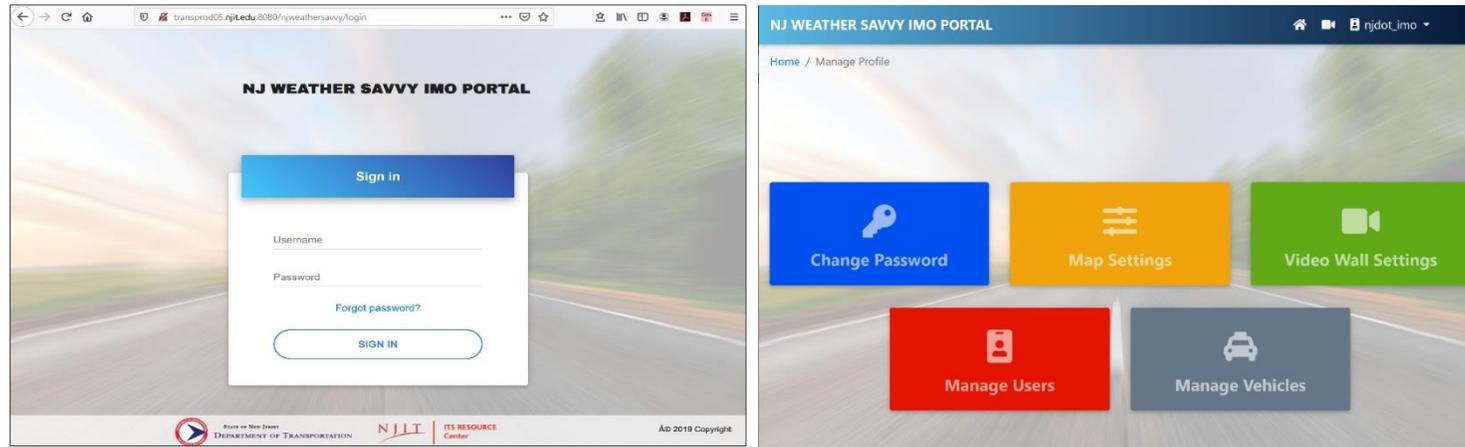
## Ambient Weather Sensor Installation - Dump/Plow Trucks





# Weather Savvy Roads - Pilot Project

## Weather Savvy Pilot Web Interface (GUI)



The main dashboard of the NJ Weather Savvy IMO Portal. It features a 'Vehicle List' on the left, a map in the center, and a detailed weather panel on the right for a selected vehicle.

### Vehicle List

- Traffic Operations (2)
  - North (2)
    - SSP-N (TD18292)
    - IMRT-North
    - SSP-N (TD17138)
  - South (0)
    - SSP-S (TD18297)
    - IMRT-South
    - SSP-S (TD17784)
  - NJIT (1)
    - ITSRC CAT2
    - NJIT LAB
    - TRUCK 08
    - TRUCK 05

### Map

Map showing the location of SSP-N (TD18292) on a road network. The vehicle is marked with a blue icon and labeled 'SSP-N (TD18292)'.

### Weather Data for SSP-N (TD18292) 8/4/2020 6:14:21 AM

Road Temperature	73 ° F	Dew Point	71 ° F
Air Temperature	71 ° F	Freeze Point	N/A
Road Condition	WET	Grip	MEDIUM

### Video Wall

SSP-N (TD18292) 2020-08-04 06:14:40

### Weather Indicators

Rel. Humidity	Water	Snow	Ice



# Weather Savvy Roads - Pilot Project

## Weather Savvy Pilot Web Interface (GUI)

**NJ WEATHER SAVVY IMO PORTAL**

Vehicle List

- Traffic Operations (2)
- North (1)
  - SSP-N (TD18292)
  - IMRT-North
  - SSP-N (TD17138)
- South (1)
  - SSP-S (TD18297)
  - IMRT-South
  - SSP-S (TD17784)
- NJIT (1)
  - ITSCR CAT2
  - NJIT LAB

**System Map**

North of Exit 21 - CR 649/Delaware St - Crash

Location: North of Exit 21 - CR 649/Delaware St  
Type: Crash

NJ DOT - TCC South Crash on I-95 northbound North of Exit 21 - CR 649/Delaware St (West Deptford Twp) left and center lanes closed 10-15 minute delay until 4:00pm tomorrow

1-295 at County Route 644

**SSP-S (TD18297) 9/1/2020 4:30:27 PM**

Road Temperature	93 ° F	Dew Point	62 ° F
Air Temperature	84 ° F	Freeze Point	N/A
Road Condition	Good	Grip	Good

SSP-S (TD18297) 2020-09-01 16:32:05

Rel. Humidity: 60%  
Water: 0.00 inch  
Snow: 0.00 inch  
Ice: 0.00 inch

Weather Savvy Vehicle Dashboard

Virtual Video Wall

**SSP-N (TD18292) 8/14/2020 8:54:03 AM**

Road Temperature	83 ° F	Dew Point	67 ° F
Air Temperature	79 ° F	Freeze Point	N/A
Road Condition	Good	Grip	Good

SSP-N (TD18292) 2020-08-14 08:54:21

Rel. Humidity: 60%  
Water: 0.00 inch  
Snow: 0.00 inch  
Ice: 0.00 inch

**NJ WEATHER SAVVY IMO PORTAL**

Home / Video Wall

Camera Group: South Region (All) Show sensor data

**IMRT-SOUTH 10/8/2020 9:53:42 PM**

VEHICLE OFFLINE

**SSP-S (TD17784) 10/9/2020 9:27:41 AM**

Road Temperature	55 ° F	Dew Point	27 ° F
Air Temperature	52 ° F	Freeze Point	N/A
Road Condition	Good	Grip	Good

SSP-S (TD17784) 2020-10-09 09:29:08

**SSP-S (TD18297) 10/9/2020 9:27:41 AM**

Road Temperature	56 ° F	Dew Point	46 ° F
Air Temperature	61 ° F	Freeze Point	N/A
Road Condition	Good	Grip	Good

SSP-S (TD18297) 2020-10-09 09:30:11

**PLOW-S (TD18236) 10/9/2020 9:27:42 AM**

Road Temperature	67 ° F	Dew Point	54 ° F
Air Temperature	64 ° F	Freeze Point	N/A
Road Condition	Good	Grip	Good

PLOW-S (TD18236) 2020-10-09 09:28:21

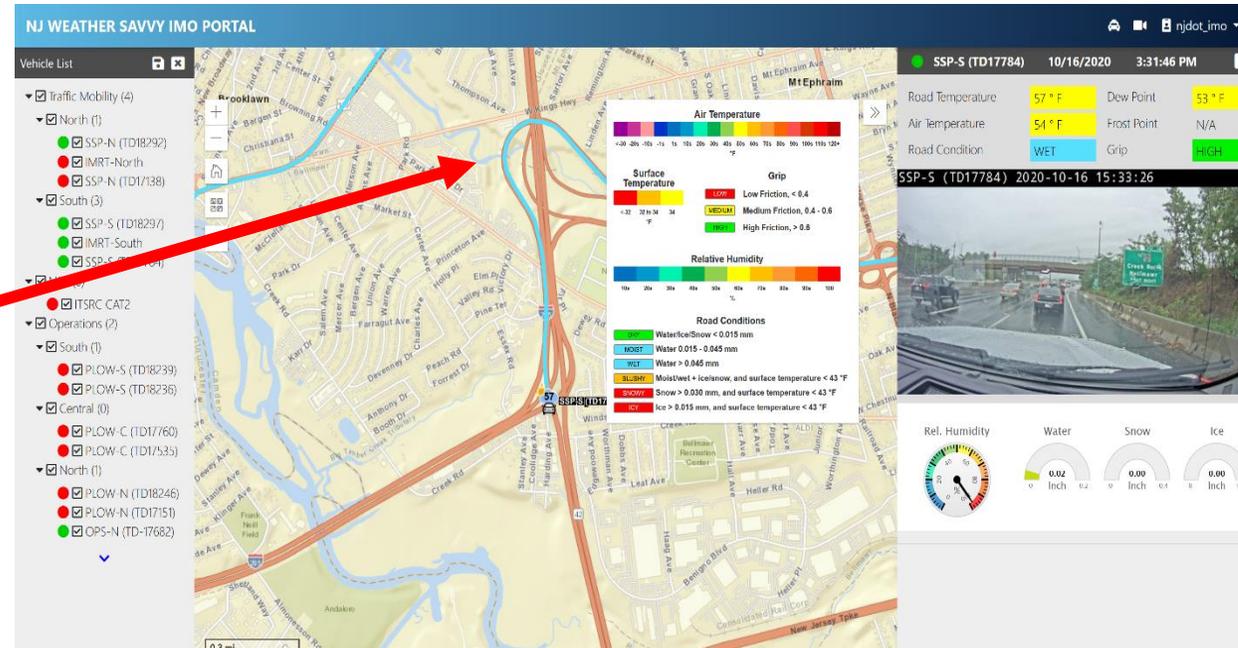


# Weather Savvy Roads - Pilot Project

## Weather Savvy Pilot Web Interface (GUI)

### Vehicle Tracking:

- Shows the trace of vehicles in the past 15 minutes.
- Trace color represents the Road Condition (e.g., BLUE = WET/MOIST)



**Note:** we renamed “Freeze Point” to “Frost Point” in the dashboard to be more consistent with the clarification we received from Vaisala. Explanation in the last slide.



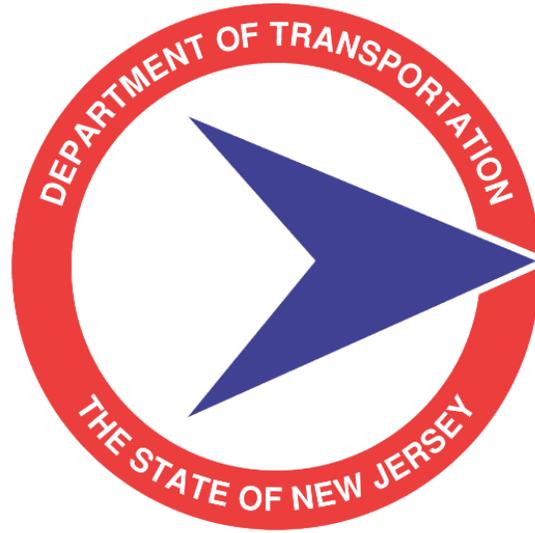
# Weather Savvy Roads - Pilot Project

## Weather Savvy Pilot Web Interface (GUI)

Friday October 30<sup>th</sup> – 7:38 am

The screenshot displays the NJ Weather Savvy IMO Portal. On the left is a 'Vehicle List' sidebar with categories: Traffic Mobility (2), North (1), South (7), NJIT (0), ITSRC CAT2 (1), Operations (3), Central (1), and North (2). The main area features a topographic map of the Sparta, NJ region with a vehicle icon at the location of PLOW-N (TD17151). On the right, a weather panel for PLOW-N (TD17151) on 10/30/2020 at 7:38:59 AM shows: Road Temperature 32 °F, Air Temperature 52 °F, Road Condition SLUSHY, Dew Point 37 °F, Frost Point 37 °F, and Grip LOW. Below this is a live camera feed of the road. At the bottom right, there are gauges for Relative Humidity, Water (0.00 Inch), Snow (0.00 Inch), and Ice (0.01 Inch).

During the first storm of the 2020-21 Winter Season



# **Weather Savvy Roads Pilot Project**

October 2020