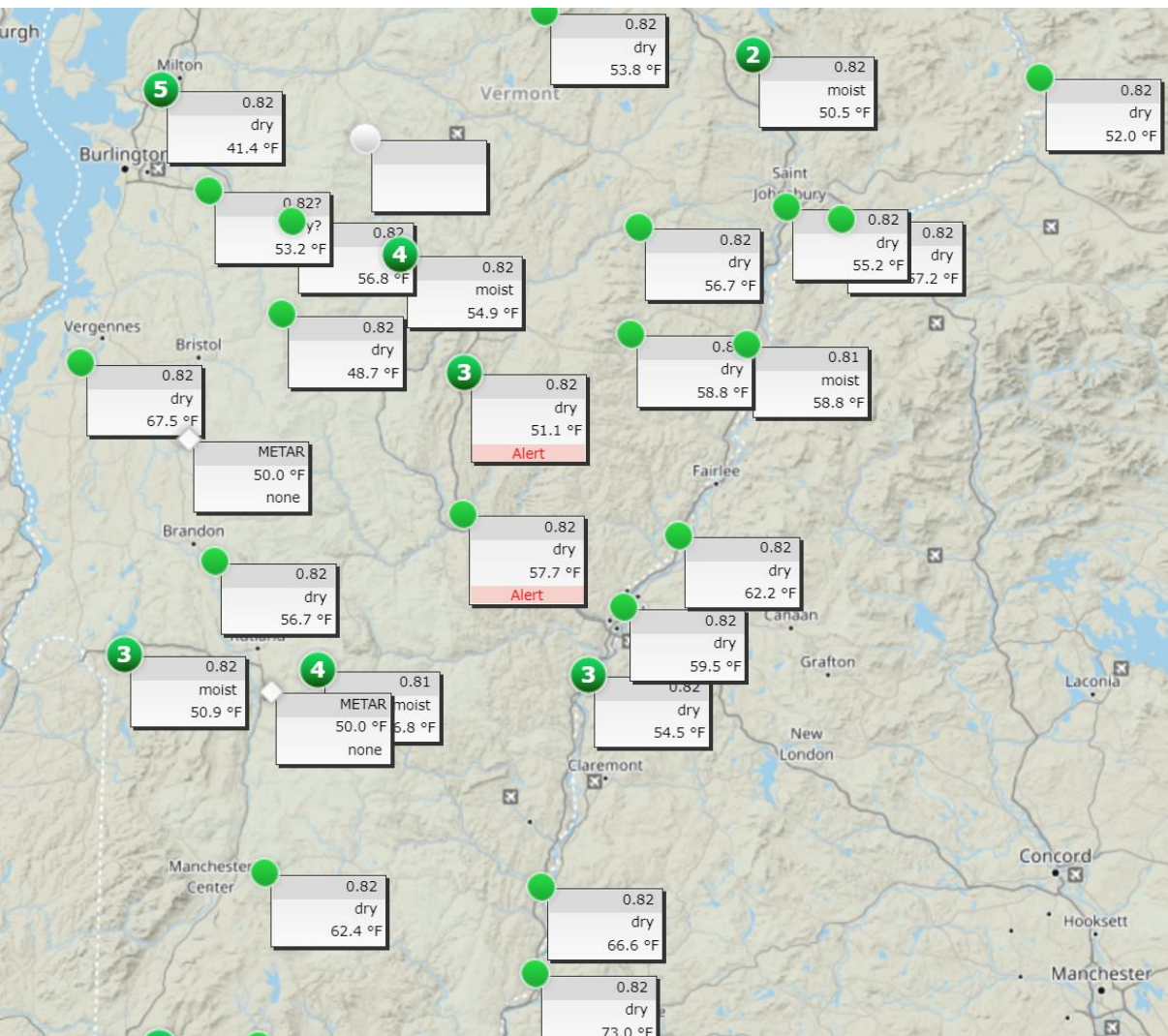


Vermont Road Weather Information Systems



ITS Mission: Implement transportation technologies to support the VTrans Mission to provide excellent customer service and ensure the safe and efficient movement of people and goods.

Ryan Knapp
Chief, Transportation Management Center (TMC)
24/7 Contact for VTrans Mobility & Operations Support
AOT.TMC@vermont.gov
802-828-2648



Overview

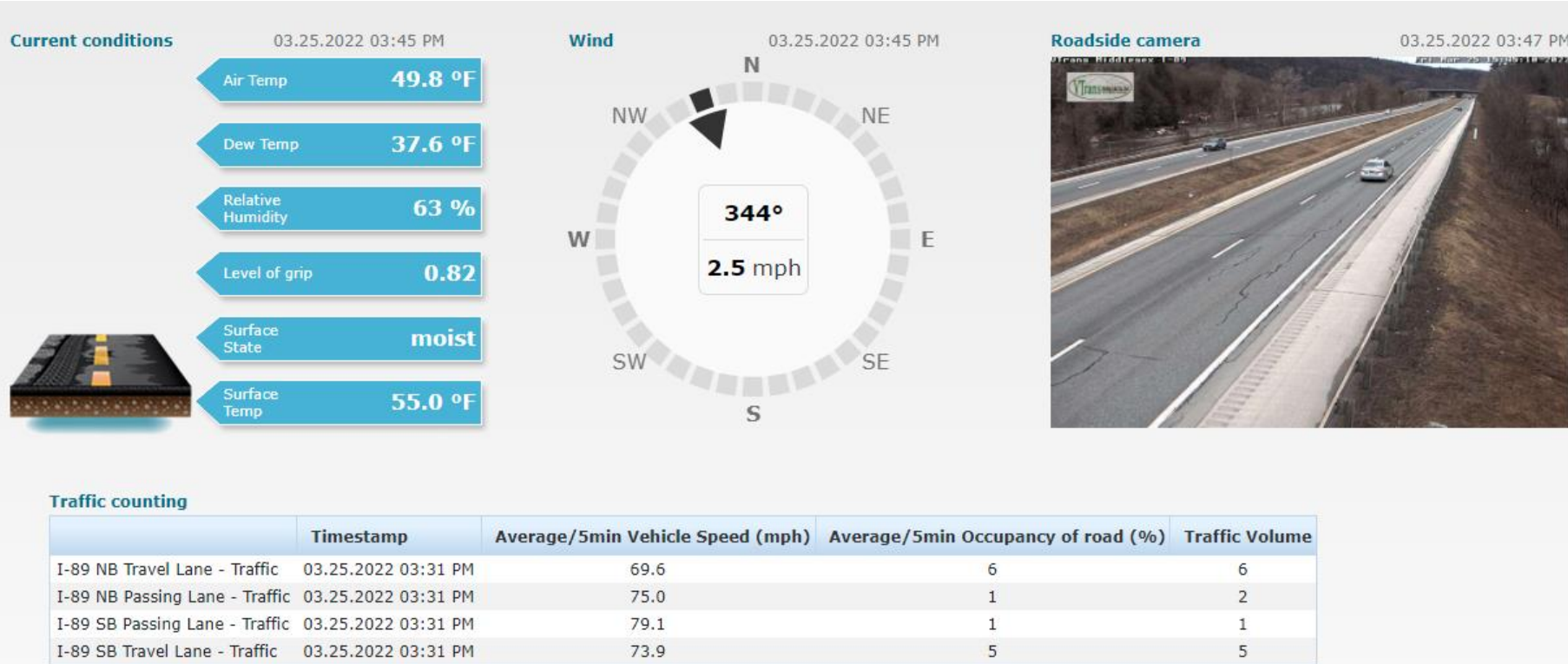
- RWIS Infrastructure
- Standard Equipment & Data
- Determining RWIS Locations
- Use cases
- Challenges
- Virtual RWIS

Infrastructure

- 49 RWIS Stations
- Installed and maintained by VTrans
- Cellular communication
- Solar power
- Four installations per year



Standard Equipment & Data



- Air temperature
- Surface Temperature
- Level of grip
- Surface state
- Wind speed and direction
- Wind gusts
- Relative humidity
- Visibility
- CCTV
- Wavetronix
 - Travel speeds
 - Traffic volumes
 - Occupancy
 - Queue detection

Determining RWIS Locations



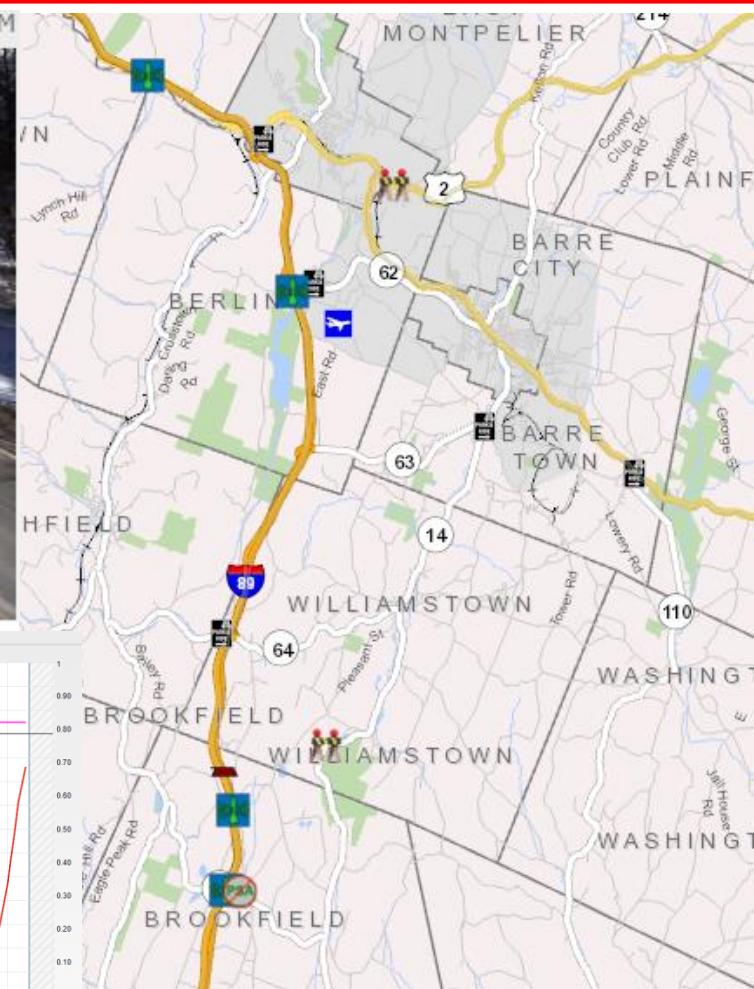
- District needs
- Anecdotal feedback
- Meteorological trends
- Blind spots
- AC Power
- Cellular coverage
- Accessibility

Use Cases

- Alerts
- Verification & Dispatching
- Road conditions
- DMS Activation
- NEC Integration
- After Action Reports

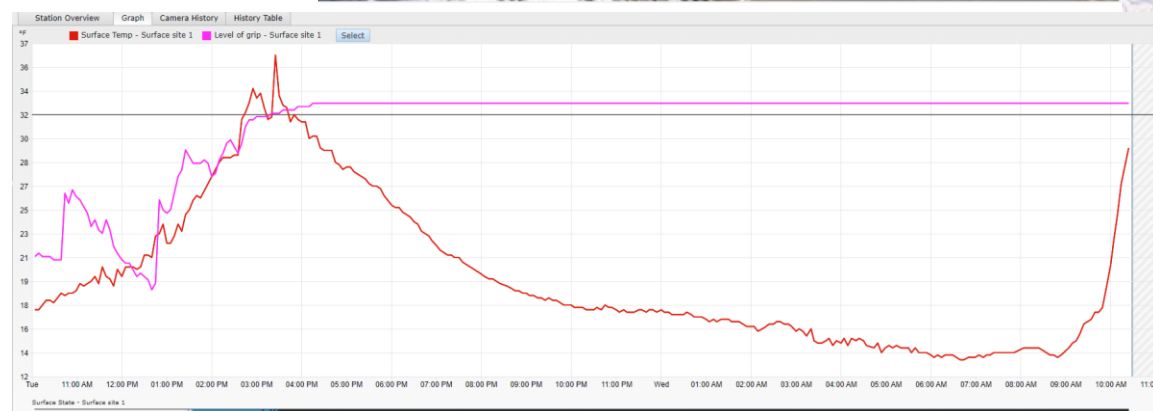
Roadside camera

03.30.2022 10:16 AM



Station Quick Status

Id: 124:rwis:station:Vermont
Name: BERLIN RWIS
Roadway: I-89 South
OpStatus: Active
Temp: 30.74
Precip Type:
Friction: 82



Use Cases

Alerts

- Tool Transportation Area Maintenance Supervisors (TAMS)
- Grip, surface temperature, surface state, etc.
- Email/SMS
- Color coding

Verification & Dispatching

- Salt/Plow requests
- Contacting TAMS
- Tool for TAMS
 - Refreeze potential
 - Timing of weather events
 - Snow fighting strategy –
 - Warm surface & Snow
 - Cold surface & snow
 - Conditions for sand use

Alert Type

Observation alerts
☒ Observation data alert *i*
☐ Missing data alert *i*

Forecast alerts
☐ New forecast available alert *i*
☐ Observation deviates from forecast alert *i*

New Alert - Observation data alert

Alert conditions

Alert me if*

Level of grip

falls below

0.6

[Add secondary condition](#)

Reset alert when*

Level of grip rises above the threshold for

1 hour

In any of the following stations

VTRANS - I-89 Berlin MM 50.10

VTRANS - I-89 Bolton MM 72.30

VTRANS - I-89 Bethel MM 25.40

VTRANS - US 4 Fair Haven MM 0.1

Select Stations

Notifications

Send notifications *i*

☐ Never
☒ When alert is triggered
☐ When alert is triggered and when alert is reset

Notification type

☒ Email ryan.knapp@vermont.gov *i*
☒ SMS

Trigger notification

Email subject *i*

☒ Default subject: "Station name: alert name"
☐ Custom subject

Message *i*

Alert settings

Alert name* *i*

Grip < 0.60

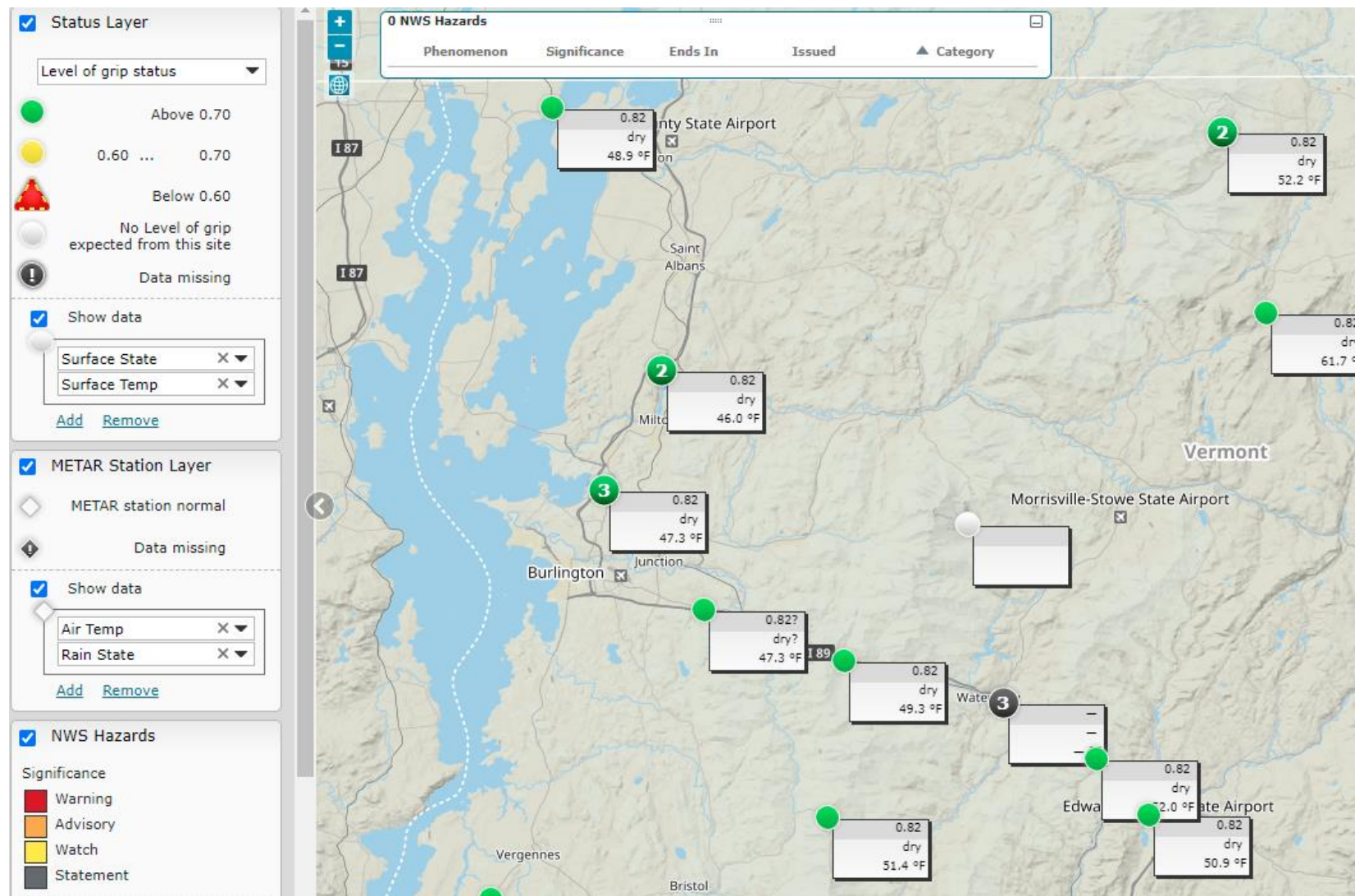
Alert state *i*

☒ Enabled
☐ Disabled

Use Cases

Road Conditions

- 511/TIS
 - Driving conditions by county
 - Surface state
 - Road grip
- Media Contacts & VTrans
 - Daily road conditions report
 - Incidents/Active closures
 - Abnormal congestion
 - VTrans snow fighting efforts
 - Expectations



Use Cases

New England Compass Integration

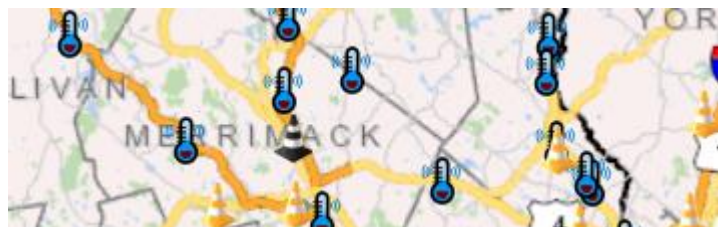
- Back end TMC operators
- Front facing 511/TIS

DMS Activation

- Auto
 - Road grip less than 0.60
 - Surface temperature less than 32F
- Manual

Air Temperature	37 °F	Visibility	1.10 miles
Wind Speed (avg)	2.46 mph	Wind Dir. (avg)	North
Surface Temperature	58 °F	Precipitation Type	None

Last updated: 03/30/2022 4:38 PM



Rule View

- Rule
 - Match RWIS Conditions
 - Expression
 - Friction
 - And
 - Surface Temp.
 - And
 - ID
 - Actions
 - Send DMS Message
 - Create Alarm

Item View

Friction is Less Than 60.00

Surface Temp. (F) is Less Than 32.00

☒ Occurrence Threshold On: 2 Off: 5

☒ Run Always

LOW
ROAD
GRIP

PROCEED
WITH
CAUTION

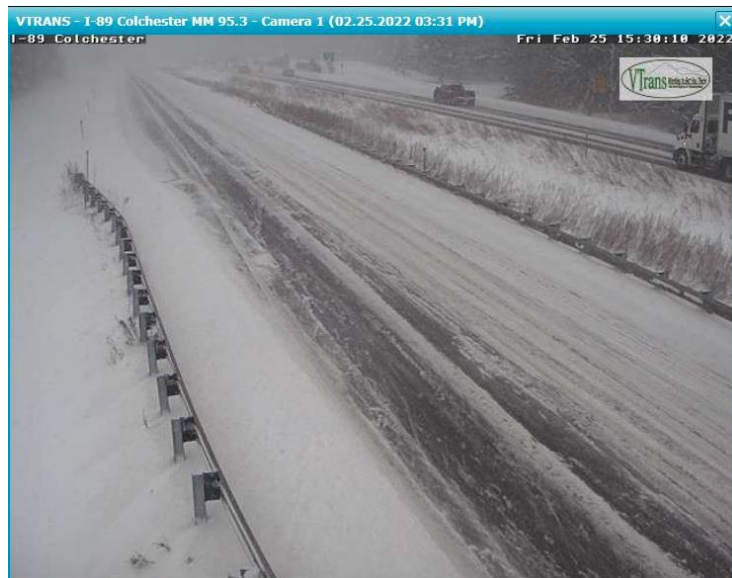
LOW
ROAD
GRIP

REDUCE
YOUR
SPEED

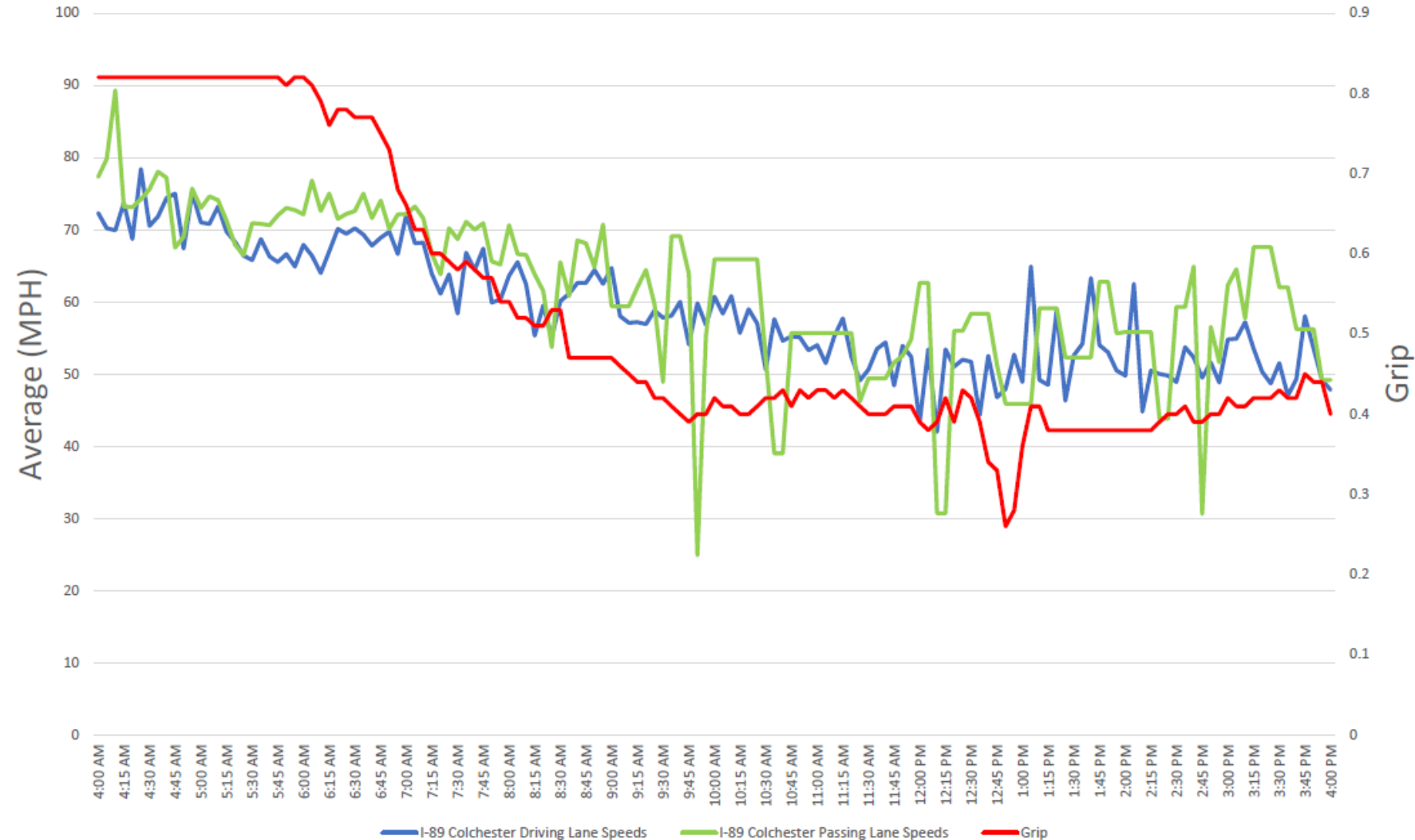
Use Cases

After Action Reports

- Internal inquiries
 - Speed reports
 - Driving conditions
 - Images
 - Road grip
- Vermont State Police



Average Speed I-89 Colchester 2/25 4am-4pm



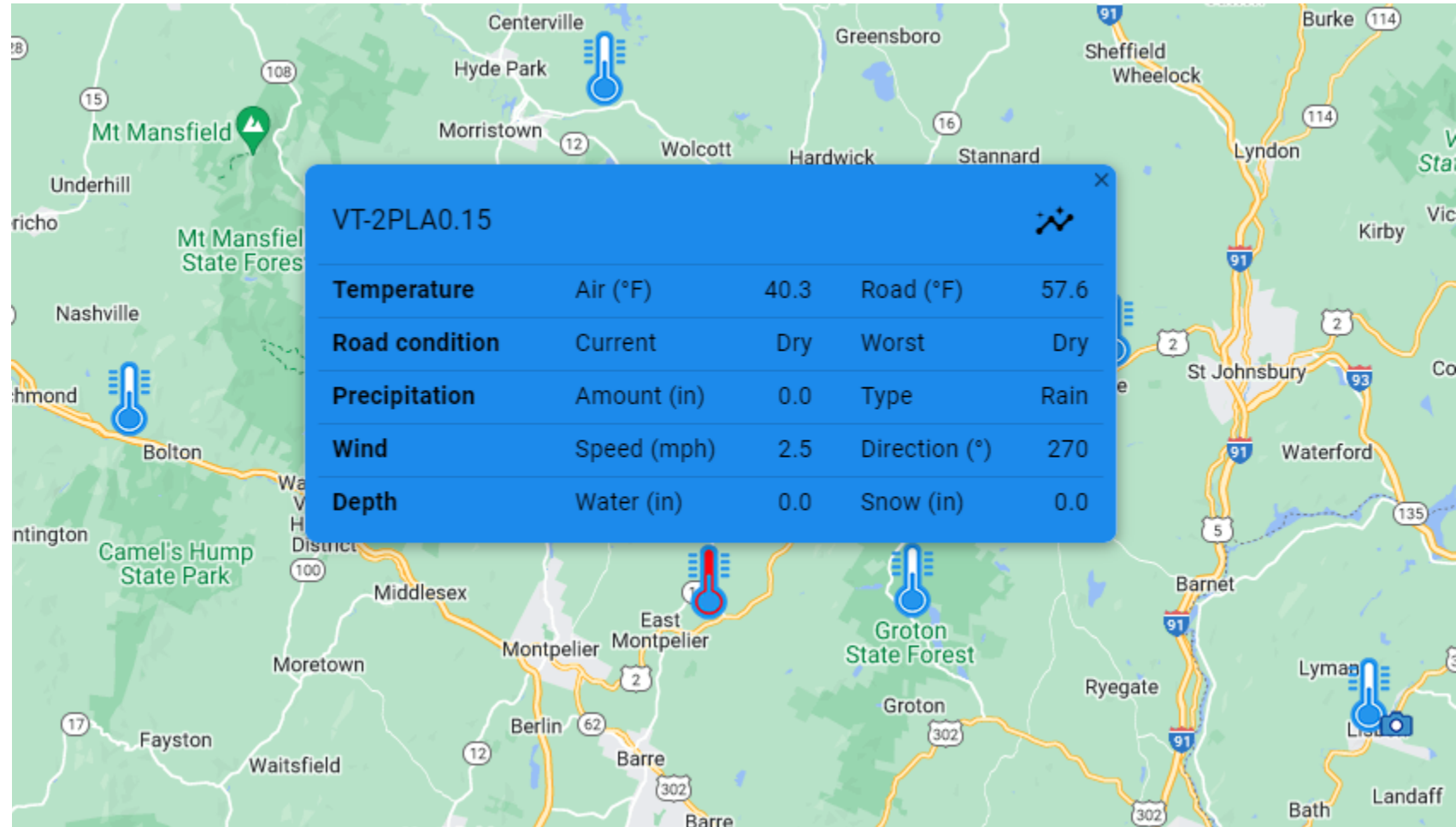
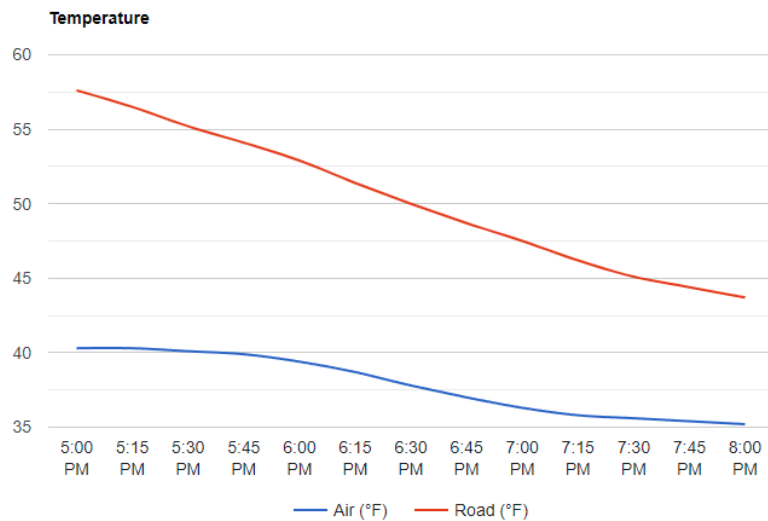
Challenges

- Solar/Power
- Batteries
- Vandalism
- Communication
- Downtime
- Propane backup
- Wind power supplement



Virtual RWIS?

- Viability?
- Validation?
- Actionable?
- 24+ test sites in VT



Questions?

VT Traveler Information Website - www.newengland511.org

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