CATT LABORATORY

RITIS User Group

Web Meeting | February 11, 2021

In collaboration with THE EASTERN TRANSPORTATION COALITION

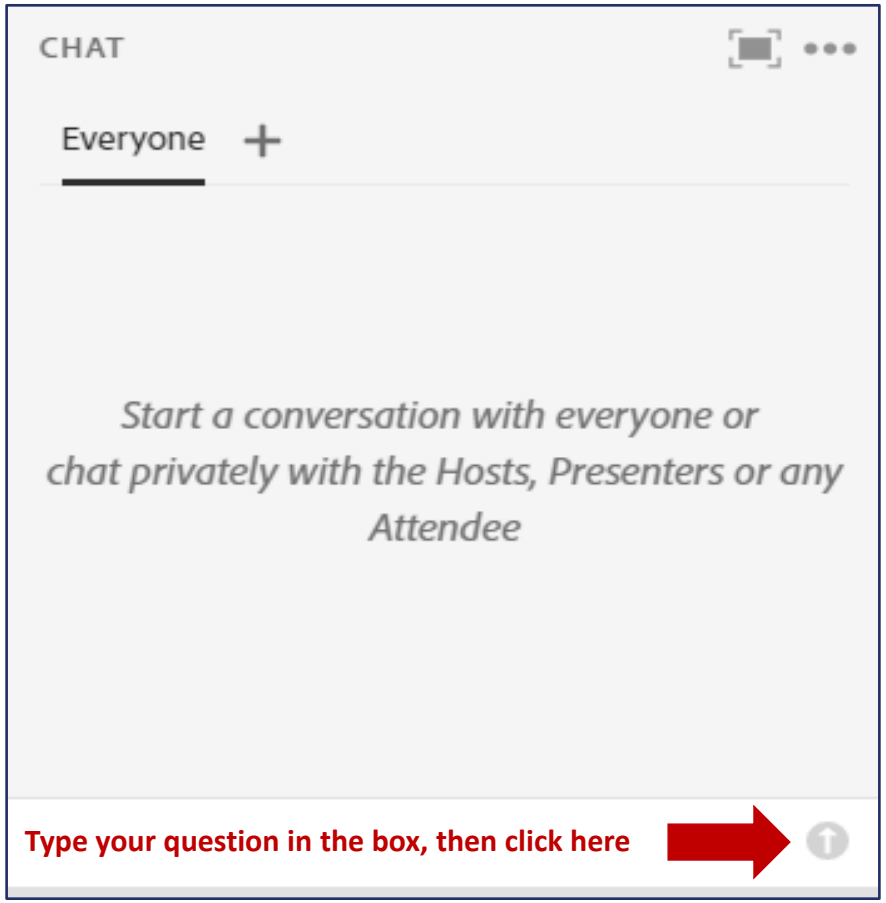
Web Meeting & Audio Information

- Participants will be in “Listen Only” mode throughout the web meeting
- Please press *0 to speak to an operator for questions regarding audio
- Please call Justin for difficulties with the web or audio application
- **This web meeting will be recorded**

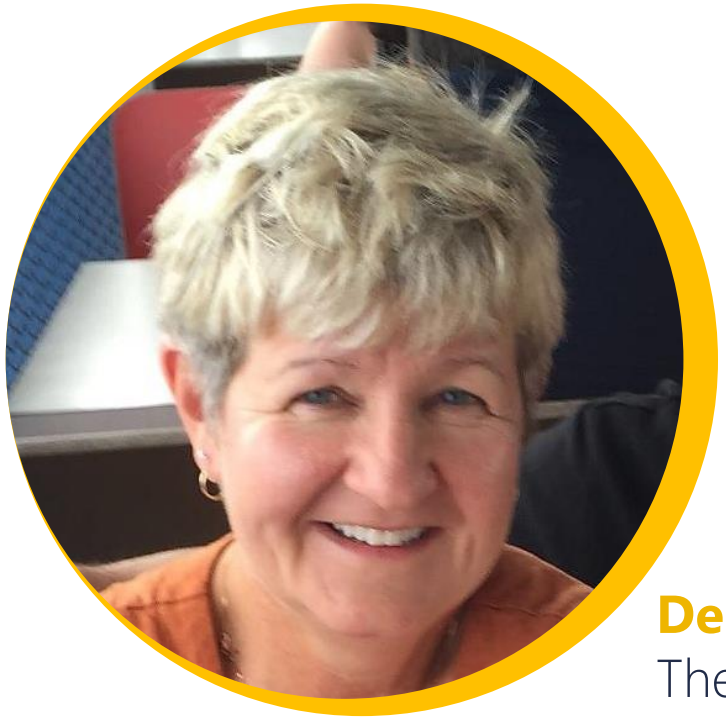
Make Comments & Ask Questions

IN THE CHAT BOX

- Please pose your questions using the **chat box**
- Questions will be monitored then answered by the speakers either at the end of their presentation or at the end of the web meeting



Coalition Update



THE EASTERN TRANSPORTATION COALITION

CONNECTING FOR SOLUTIONS

Denise Markow
The Eastern Transportation Coalition
TSMO Director

Coalition Update

RECENT

- ✓ **Traveler Information Web Roundtable –** November 19, 2020
- ✓ **Traffic Data Marketplace (previously VPPIII) RFI Meetings** – December 2020
- ✓ **TVER Working Group: Tolling Apps - The Agency Perspective** – December 15, 2020
- ✓ **TSMO Web Meeting: Hurricane Traffic Volumes Pilot Results: States' Experience with Real-time Connected Vehicle Data** – January 28, 2021

UPCOMING

- ✓ **Traveler Info Services Virtual Summit –** April 1, 2021
- ✓ **RITIS User Group Web Meeting** – May 6, 2021

Welcome & Introductions

Matt Glasser
Assistant State Traffic Engineer, Georgia DOT
RITIS User Group Co-chair

Today's Meeting

Welcome and Introductions	Denise Markow, TETC
Spotlight Presentation: Transportation Energy Analytics Dashboard	Stan Young, NREL Mark Franz, UMD CATT Lab
New RITIS Tools and Recent Enhancements	Michael Pack, UMD CATT Lab
New RITIS Enhancement Working Group	Matt Glasser, Georgia DOT
Agency Input Session	Michael Pack, UMD CATT Lab
Wrap Up and Remaining Questions	Matt Glasser

Today's Speakers

Michael Pack
UMD CATT Lab
Director

Mark Franz
UMD CATT Lab
Faculty Specialist

Stan Young
National Renewable Energy Lab
Advanced Transportation & Urban Scientist

Meeting Participants

Agencies						
AECOM	City of Charlotte, NC	Georgia DOT	Macon-Bibb County Office of Planning & Zoning	MWVCOG	Old Colony Planning Council	Southern New Hampshire Planning Commission
AEM	City of Greensboro, NC	Georgia Office of Planning (RS&H)	Maricopa Association of Governments	Nashua Regional Planning Commission	Oregon DOT	Southwestern Pennsylvania Commission
Alexandria Transit Company (DASH)	City of Independence, MO	Gresham Smith	Maryland DOT	National Renewable Energy Laboratory	PANYNJ	State of Rhode Island - Division Planning
Arapahoe County	City of Springfield, MO	Gwinnett County	Maryland DOT-SHA	New Jersey DOT	Paulding County DOT	Tennessee DOT
Atkins	Connecticut DOT	Illinois DOT	Maryland Transportation Authority	New Jersey Sports & Exposition Authority	Pennsylvania DOT	Tri-County Regional Planning Commission
Atlanta Regional Commission	Cubic	INRIX	Massachusetts DOT	New York State Thruway Authority	Pennsylvania Turnpike Commission	University of Maryland
Auble LLC	District DOT	Iowa Northland Regional Council of Governments	Mead & Hunt	NJTPA	Pioneer Valley Planning Commission	University of Maryland CATT Lab
Autoreturn	Division of Statewide Planning	Iteris	Metric Engineering, Inc	North Carolina DOT	PlanRVA	University of Tennessee
Baltimore Metropolitan Council	Durham-Chapel Hill-Carrboro MPO	ITRE	Metropolitan Atlanta Rapid Transit Authority (MARTA)	North Carolina DOT (VHB)	Rhode Island DOT	US DOT/FHWA
Bartow County Government	DVRPC	Jacobs Engineering	Michigan DOT	North Central PA Regional Planning and Development Commission	Rockingham Planning Commission	Vermont AOT
Central Massachusetts Regional Planning Commission	FHWA	Kingsport Metro TPO	Montachusett Regional Planning Commission	Northern Virginia Transportation Authority	San Diego Association of Governments (SANDAG)	Virginia DOT
Central Texas Regional Mobility Authority	Florida DOT	Knoxville Regional TPO	Montgomery County (MD)	OCPC	Sensys Networks	
Chattanooga TPO	Florida's Turnpike Enterprise	Louisiana DOTD	Montgomery County Planning Department	Ohio DOT	SJTPO	
City of Centennial, CO	Gannett Fleming	Lowcountry Council of Governments	MWCOG	Ohio Turnpike and Infrastructure Commission	South Carolina DOT	

Spotlight Presentation: Transportation Energy Analytics Dashboard

Stan Young, *Advanced Transportation & Urban Scientist, NREL*

and

Mark Franz, *Faculty Specialist, University of Maryland CATT Lab*

Agenda

- TEAD Overview Team
  - Vision
  - Objectives
  - Framework
- **Demo**
- Future TEAD Roadmap / Enhancement
- Next Steps

The vision for TEAD …

- Soon Energy and GHG will become as much a part of transportation planning as safety, congestion and travel time. TEAD integration with RITIS will bridge to that world.
- Though just a start – TEAD is envisioned to assess ….
  - Will state level policy goals for Electric vehicles have an impact on GHG?
  - How do we track both EV uptake, and its impact on emissions?
  - Will a proposal light-rail or BRT expansion be more impactful than incentiving ZEV adoption?
  - To what extent is recurring congestion contributing to GHG and emissions on our roadway system?
  - Will investment in signal retiming have significant emissions benefits? … or …
  - How much GHG and emissions were saved from last years signal retiming effort?

TEAD Team

- Project Sponsor:
  - Department of Energy- Vehicle Technology Office (DOE-VTO)
- Principle Investigators:
  - Michael Pack (CATT Lab)
  - Stanley Young (NREL)
  - Mark Franz (CATT Lab)

DOE Funded Initial TEAD Objectives –

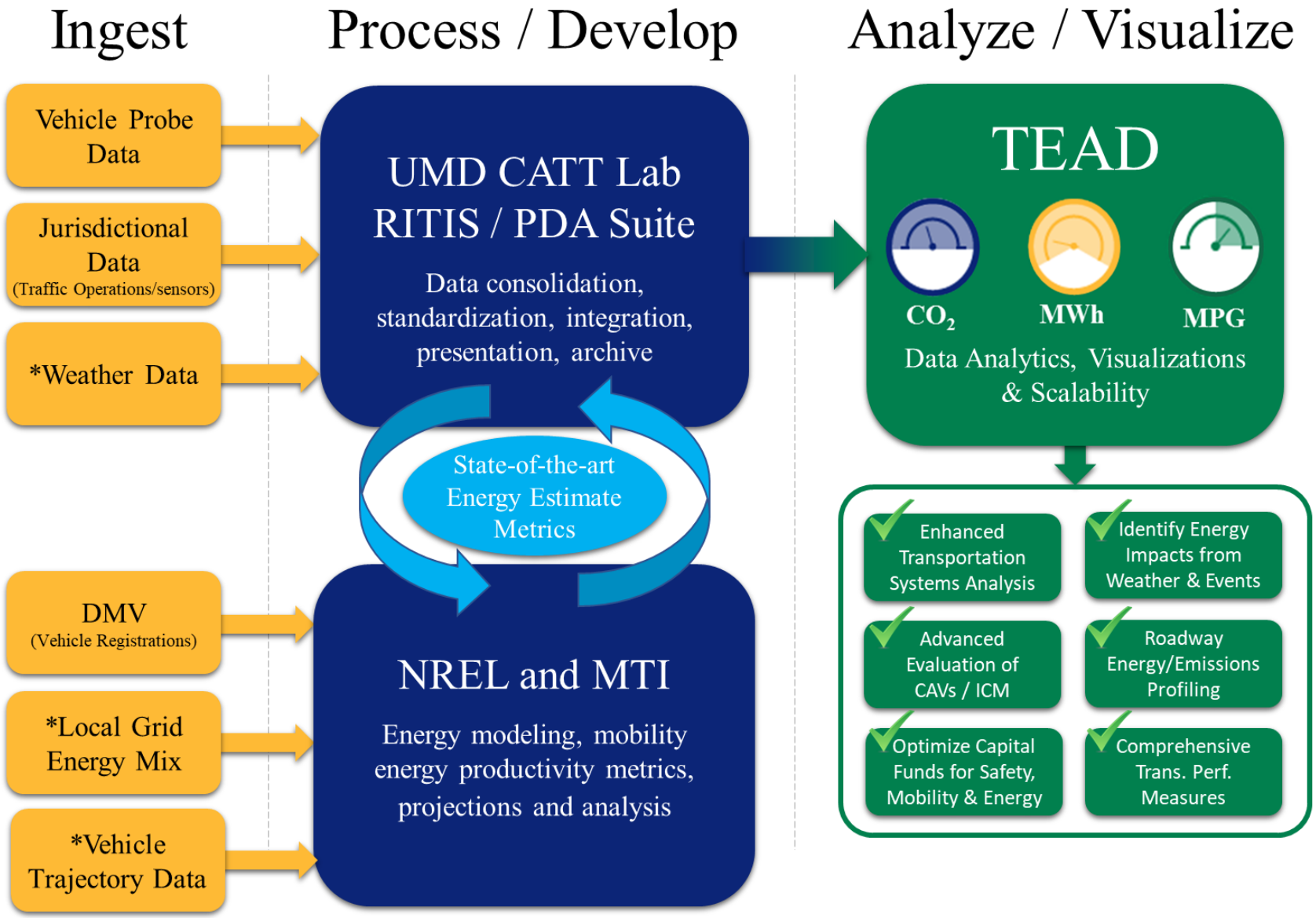
Objectives

1. Develop and validate methodologies for roadway energy and emissions metrics for historical, real-time, and near future predictive analysis
2. Create an online tool to measure and visualize transportation energy and emissions metrics
3. Demonstrate benefits via real-world case studies developed by transportation agency partners

Impact

- Real-time and predictive energy use and emissions tool to promote integration of sustainability into operational decisions
- Deep-dive historical tools to automate the development of key metrics and visualizations
- All work guided by end users to ensure end products are practice ready

TEAD Framework



Pilot Applications

1. Columbus, OH
2. Washington, DC

*indicates future enhancement

TEAD Tools

DASHBOARD

Create your own personal dashboards to monitor corridor performance in regions of interest.

Tutorial Help

Probe Data Analytics Suite

Welcome, Jenny | My History | Help | Tutorials | Logout

Dashboard

+ Add widget | Select a dashboard...

Energy and Emissions Table

Corridor	Energy Usage (Route-E) Historic Average	Energy Usage (Route-E) Current	Energy Usage (Bayesian Model) Historic Average	Energy Usage (Bayesian Model) Current	Energy Usage (Bayesian Model) +2.5 Hours in the Future	CO2 Emissions Historic Average	CO2 Emissions Current	CO2 Emissions +2.5 Hours in the Future	NOX Emissions Last Year	NOX Emissions Current	NOX Emissions +2.5 Hours in the Future
US-50 EB	186 BTUs/min	186 BTUs/min	186 BTUs/min	186 BTUs/min	↗ 200 BTUs/min	111 tons/min	112 tons/min	↗ 120 tons/min	111 tons/min	292 tons/min	↗ 120 tons/min
US-29 WB	182 BTUs/min	↘ 162 BTUs/min	192 BTUs/min	↘ 162 BTUs/min	164 B	99 tons/min	98 tons/min	99 tons/min	99 tons/min	98 tons/min	99 tons/min
I-395 EB	151 BTUs/min	↘ 148 BTUs/min	151 BTUs/min	↘ 148 BTUs/min	151 BTUs/min	70 tons/min	70 tons/min	70 tons/min	70 tons/min	12 tons/min	70 tons/min
I-295 NB	152 BTUs/min	152 BTUs/min	152 BTUs/min	152 BTUs/min	155 BTUs/min	92 tons/min	↘ 64 tons/min	62 tons/min	92 tons/min	↘ 82 tons/min	62 tons/min
DC-295 EB	149 BTUs/min	↗ 158 BTUs/min	179 BTUs/min	↗ 158 BTUs/min	149 BTUs/min	65 tons/min	67 tons/min	65 tons/min	65 tons/min	67 tons/min	65 tons/min
MD-650 WB	141 BTUs/min	140 BTUs/min	121 BTUs/min	140 BTUs/min	141 BTUs/min	82 tons/min	↘ 58 tons/min	57 tons/min	82 tons/min	↘ 72 tons/min	57 tons/min

Energy use is expected to increase by 8% relative to the current condition

Decrease of 5% or more | Increase of 5% or more

Showing 4 of 5 Metrics

Using NPMRDS (Truck and passenger vehicles) data.

Updated May 29, 2020 12:47 PM (39s ago)

Energy and Emissions Table

Corridor	Energy Usage (Route-E) Historic Average	Energy Usage (Route-E) Current	Energy Usage (Bayesian Model) Historic Average	Energy Usage (Bayesian Model) Current	Energy Usage (Bayesian Model) +2.5 Hours in the Future	CO2 Emissions Historic Average	CO2 Emissions Current	CO2 Emissions +2.5 Hours in the Future	NOX Emissions Historic Average	NOX Emissions Current	NOX Emissions +2.5 Hours in the Future
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US-29 WB	182 BTUs/min	↘ 162 BTUs/min	192 BTUs/min	↘ 162 BTUs/min	164 BTUs/min	99 tons/min	98 tons/min	99 tons/min	99 tons/min	98 tons/min	99 tons/min
I-395 EB	151 BTUs/min	↘ 148 BTUs/min	151 BTUs/min	↘ 148 BTUs/min	151 BTUs/min	70 tons/min	70 tons/min	70 tons/min	70 tons/min	12 tons/min	70 tons/min
I-295 NB	152 BTUs/min	152 BTUs/min	152 BTUs/min	152 BTUs/min	155 BTUs/min	92 tons/min	↘ 64 tons/min	62 tons/min	92 tons/min	↘ 82 tons/min	62 tons/min
DC-295 EB	149 BTUs/min	↗ 158 BTUs/min	179 BTUs/min	↗ 158 BTUs/min	149 BTUs/min	65 tons/min	67 tons/min	65 tons/min	65 tons/min	67 tons/min	65 tons/min
MD-650 WB	141 BTUs/min	140 BTUs/min	121 BTUs/min	140 BTUs/min	141 BTUs/min	82 tons/min	↘ 58 tons/min	57 tons/min	82 tons/min	↘ 72 tons/min	57 tons/min

Decrease of 5% or more | Increase of 5% or more

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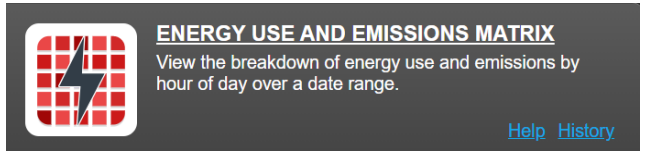
Updated May 29, 2020 12:47 PM (39s ago)

TEAD Tools



Probe Data Analytics Suite – Welcome, Jenny | My History | Help | Tutorials | Logout

Energy Use and Emissions Matrix - I-270 Northbound between I-270 (SPUR) and MD-121

Sunday, August 16, 2015 to Friday, August 21, 2015

Vehicle Type: All

Display: Total Energy Use (Route-E)

Total Energy Usage (BTUs): 0k – 90k+ | No data | 10k | 60k | 80k | 90k

Energy Use in BTUs

Using the Route-E Model

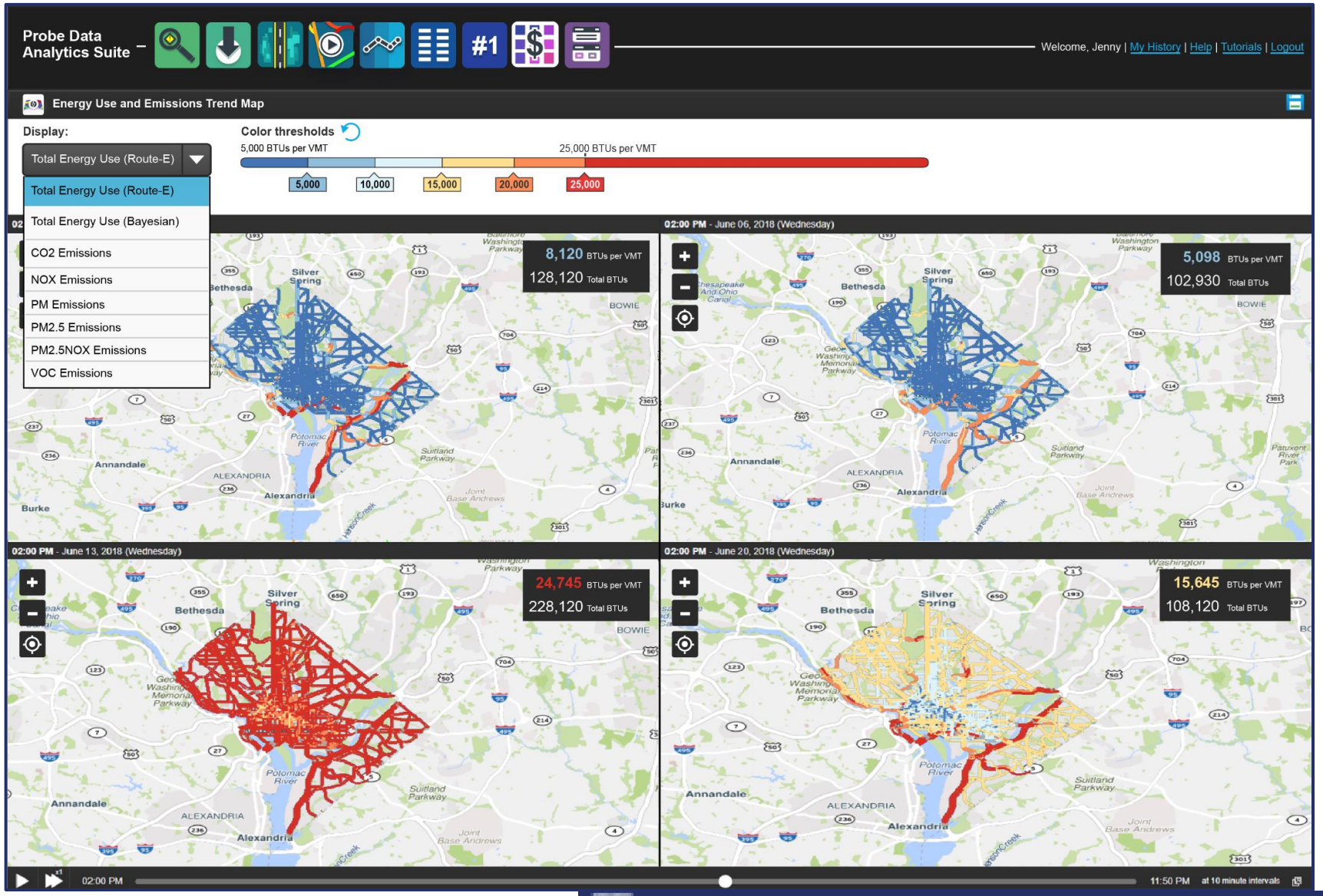
	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 AM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Daily Totals
Sun 8/16/15	0.2k	0.1k	0.1k	0.1k	0.1k	0.2k	0.2k	0.0k	0.1k	0.0k	0.1k	10.4k	0.1k	0.2k	14.4k	0.5k	0.5k	18.6k	21.1k	14.3k	22.5k	10.8k	40.1k	50.2k	Sun 27.7k
Mon 8/17/15	0.4k	0.1k	0.1k	0.2k	0.1k	0.1k	0.3k	22.7k	18.8k	0.3k	0.2k	0.0k	0.1k	0.2k	0.3k	18.0k	12.3k	17.5k	15.4k	0.0k	0.1k	0.2k	0.2k	0.2k	Mon 58.5k
Tue 8/18/15	0.1k	0.2k	0.1k	0.0k	0.0k	11.1k	0.0k	0.0k	5.2k	0.2k	0.1k	0.3k	0.1k	0.4k	0.1k	13.0k	19.3k	85.0k	19.2k	0.0k	0.1k	0.1k	0.2k	0.1k	Tue 49.6k
Wed 8/19/15	0.1k	0.1k	0.1k	0.1k	0.0k	0.2k	0.2k	17.7k	9.6k	0.9k	0.2k	0.1k	0.1k	0.1k	11.7k	10.0k	19.8k	19.0k	19.3k	15.9k	0.2k	0.2k	0.3k	0.2k	Wed 71k
Thu 8/20/15	0.1k	0.0k	0.1k	0.2k	0.2k	15.7k	10.5k	12.3k	19.2k	12.0k	0.2k	0.4k	17.1k	18.7k	13.7k	85.2k	86k	93.1k	90.4k	81.2k	12.8k	0.3k	0.2k	0.1k	Thu 315.7k
Fri 8/21/15	0.1k	0.0k	0.1k	0.0k	0.0k	0.1k	0.1k	83.7k	82.1k	13.2k	10.6k	10.6k	11.1k	17.6k	81k	85.7k	69.4k	83.9k	12k	15.3k	0.2k	0.2k	0.4k	0.2k	Fri 197.6k
Hourly Totals	0.9k	0.6k	0.6k	0.6k	0.4k	3.6k	11.3k	36.4k	55k	6.5k	1.3k	1.9k	8.8k	17.1k	26.1k	72.1k	107.3k	192.2k	134.3k	32.8k	5.9k	1.8k	1.3k	0.9k	Grand Total 720, 071

TEAD Tools

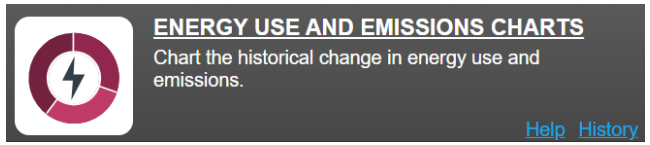
ENERGY USE AND EMISSIONS TREND MAP

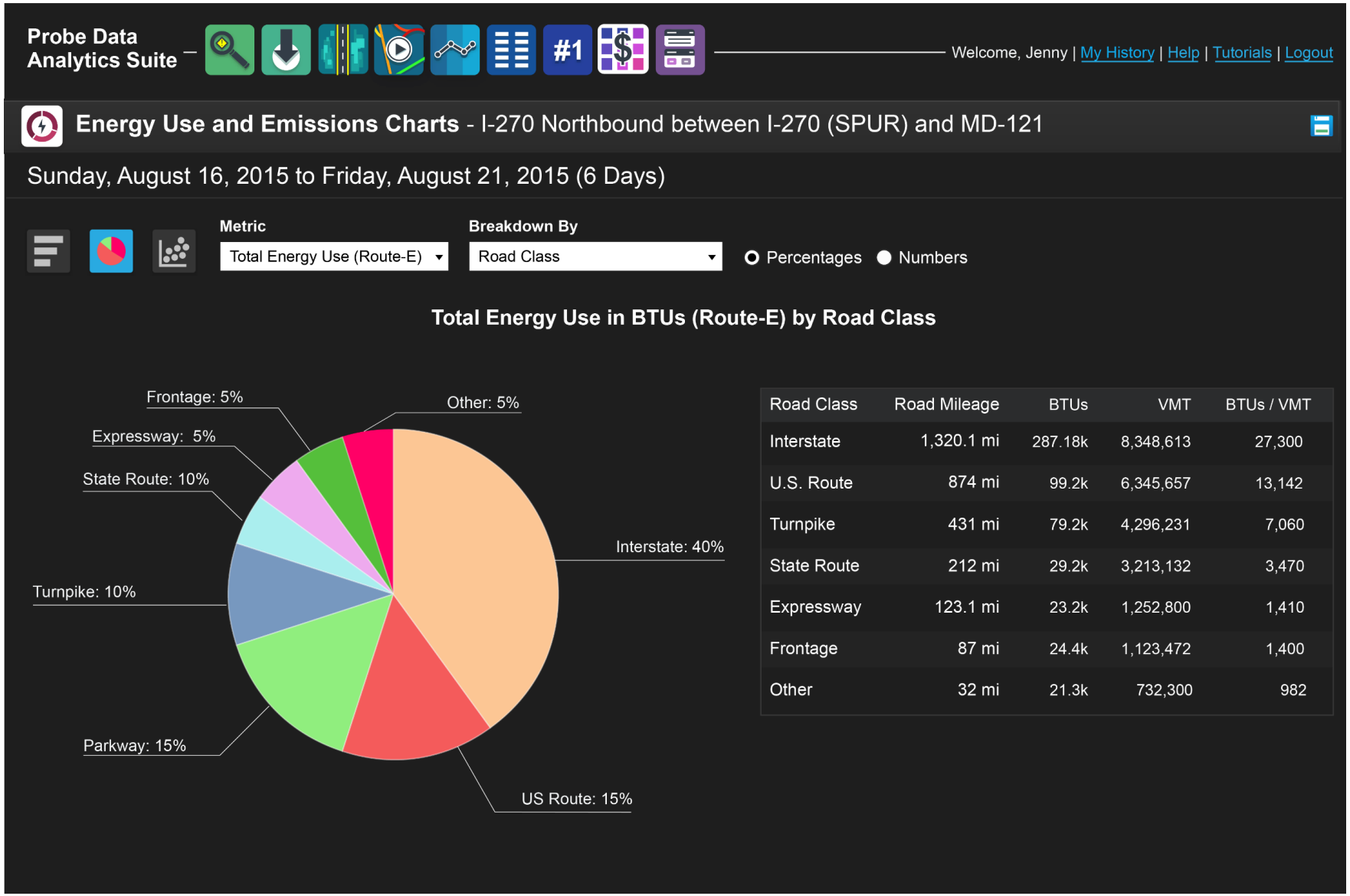
Create animated maps showing changes in energy use and emissions.

Help History



TEAD Tools

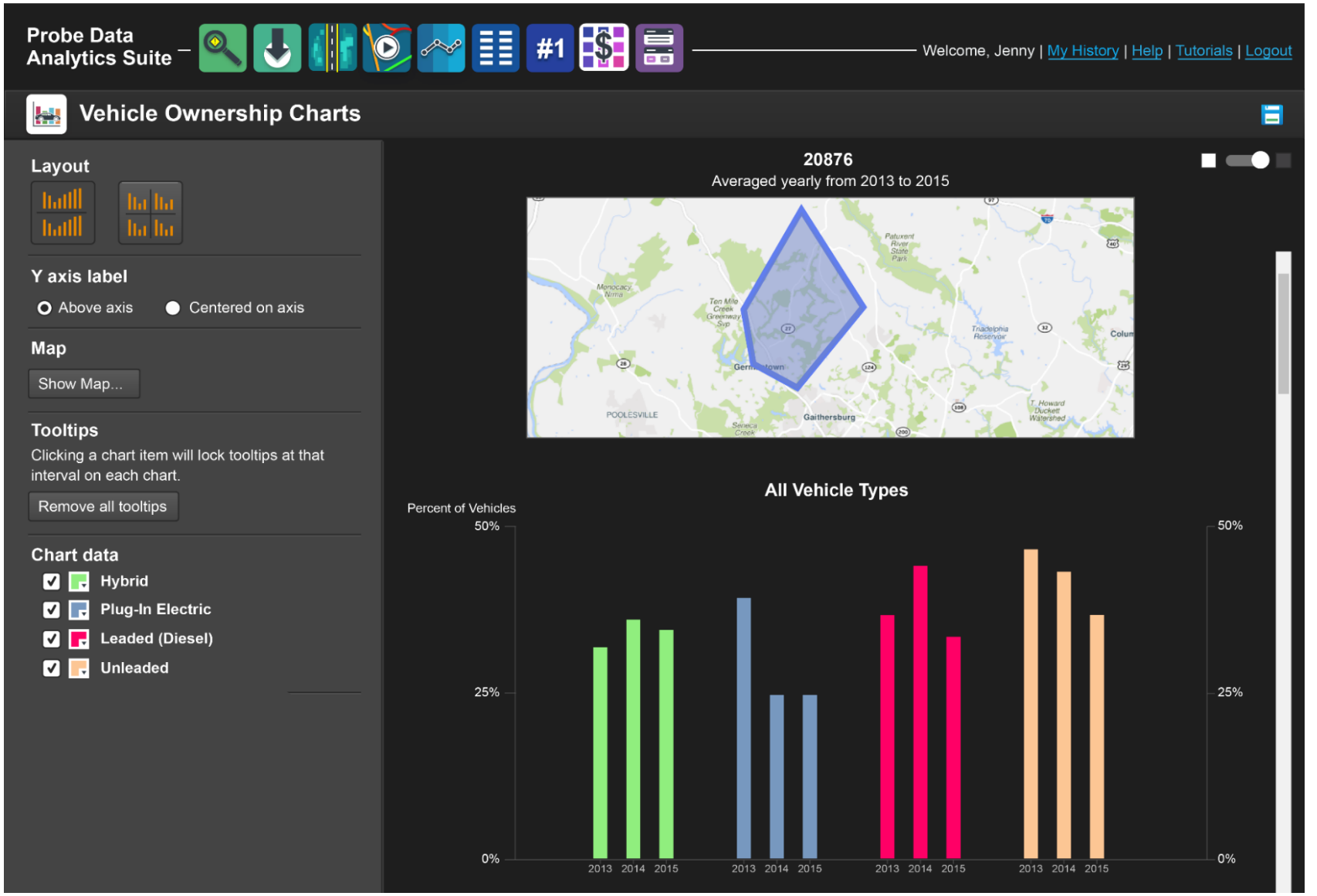




Road Class	Road Mileage	BTUs	VMT	BTUs / VMT
Interstate	1,320.1 mi	287.18k	8,348,613	27,300
U.S. Route	874 mi	99.2k	6,345,657	13,142
Turnpike	431 mi	79.2k	4,296,231	7,060
State Route	212 mi	29.2k	3,213,132	3,470
Expressway	123.1 mi	23.2k	1,252,800	1,410
Frontage	87 mi	24.4k	1,123,472	1,400
Other	32 mi	21.3k	732,300	982

TEAD Tools

VEHICLE OWNERSHIP CHARTS
Chart vehicle ownership by zip code on a yearly basis.
Help



TEAD Next Steps

GET MORE ETC Members access to TEAD!!!

Pursuing TEAD Enhancement funding for:

1. Refined **FREIGHT** vehicle energy use and emission modeling
2. **SIGNALIZED INTERSECTION** energy use and emission modeling
3. Integrate real-time volume estimation
4. Integrate road grades into modeling
5. Extensive state motor vehicle registration data for vehicle/powertrain types
6. Sources of excessive energy/emissions pie charts
7. **MOBILITY ENERGY PRODUCTIVITY**

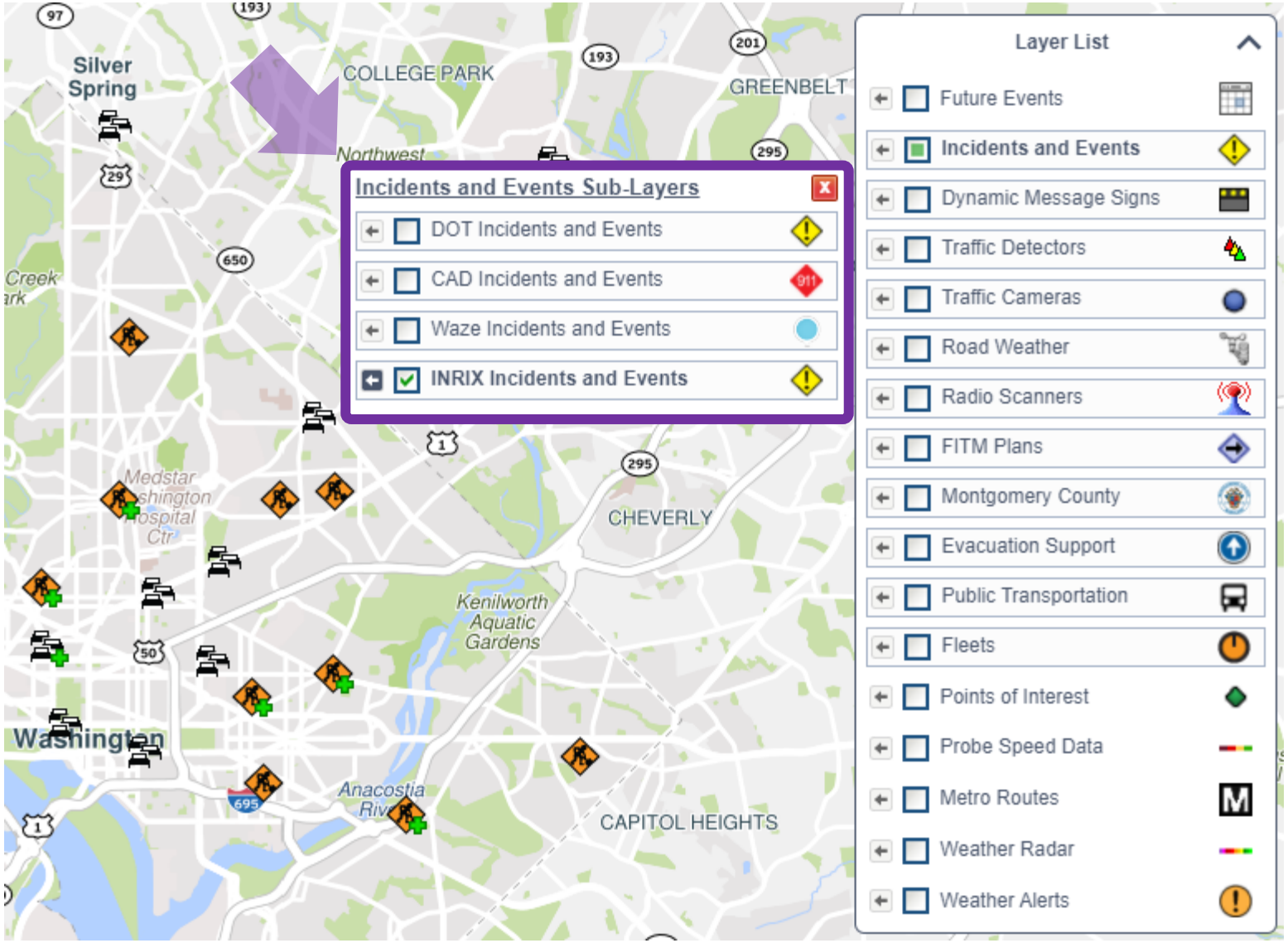
RITIS | PROBE DATA ANALYTICS SUITE

New RITIS Tools and Recent Enhancements

Michael Pack
UMD CATT Lab
Director

RITIS

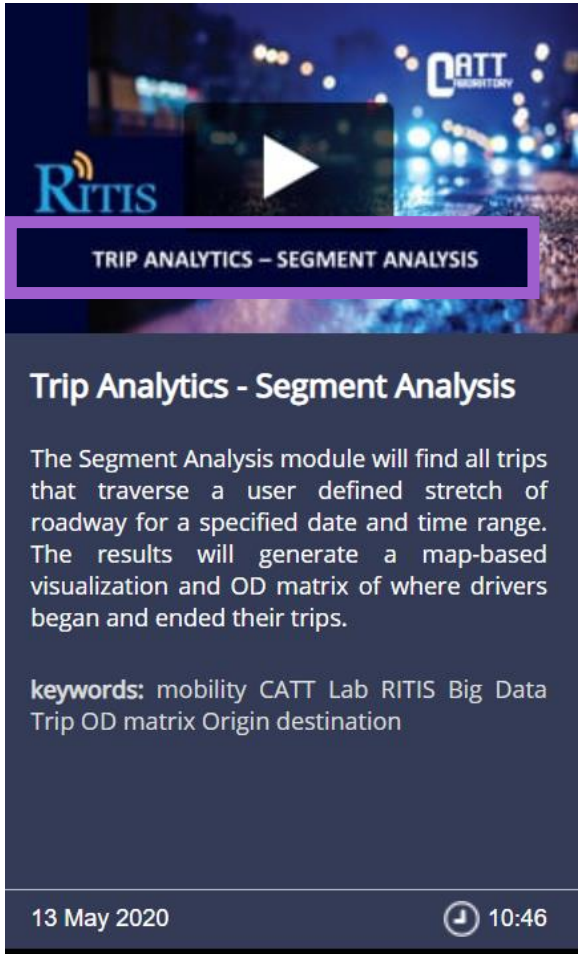
1. Added a feature for administrative power users to more easily filter and close active events, replicating how events are filtered elsewhere in RITIS.

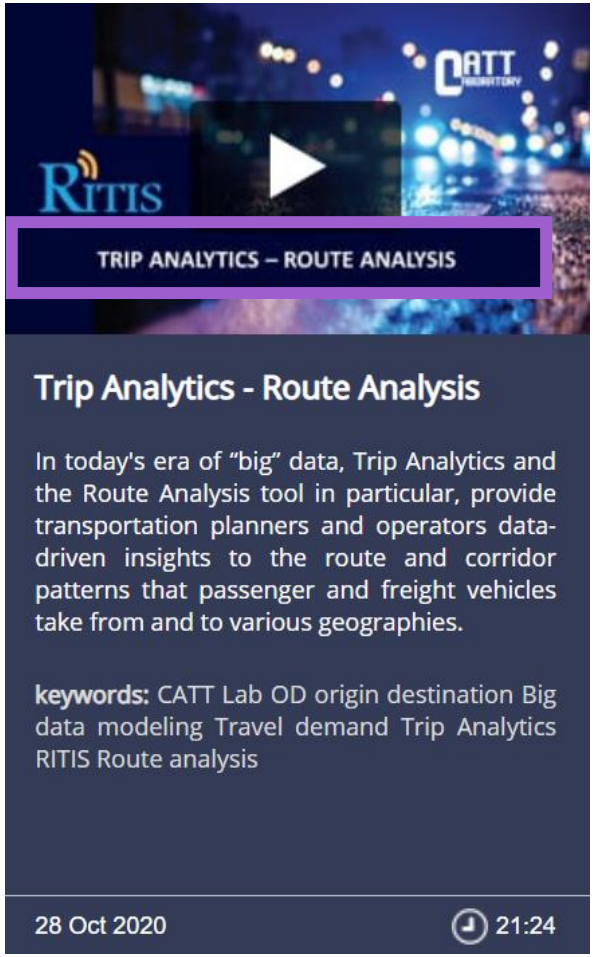


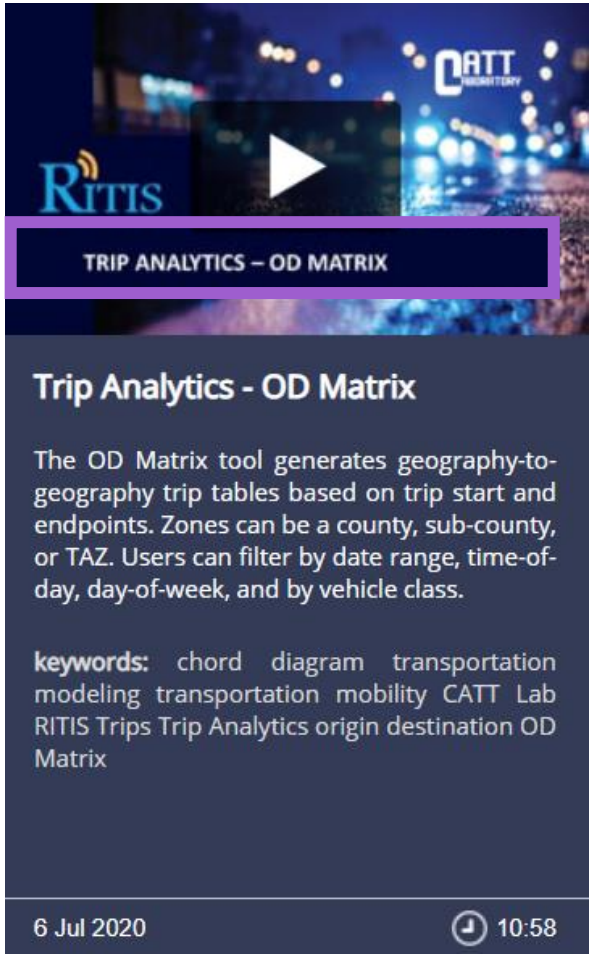
For other enhancements, data sources and corrected issues, go to: https://ritis.org/release_notes

RITIS

2. Added additional video tutorials to the help page for Trip Analytics Segment Analysis, Route Analysis, and Trip Analytics OD Matrix.







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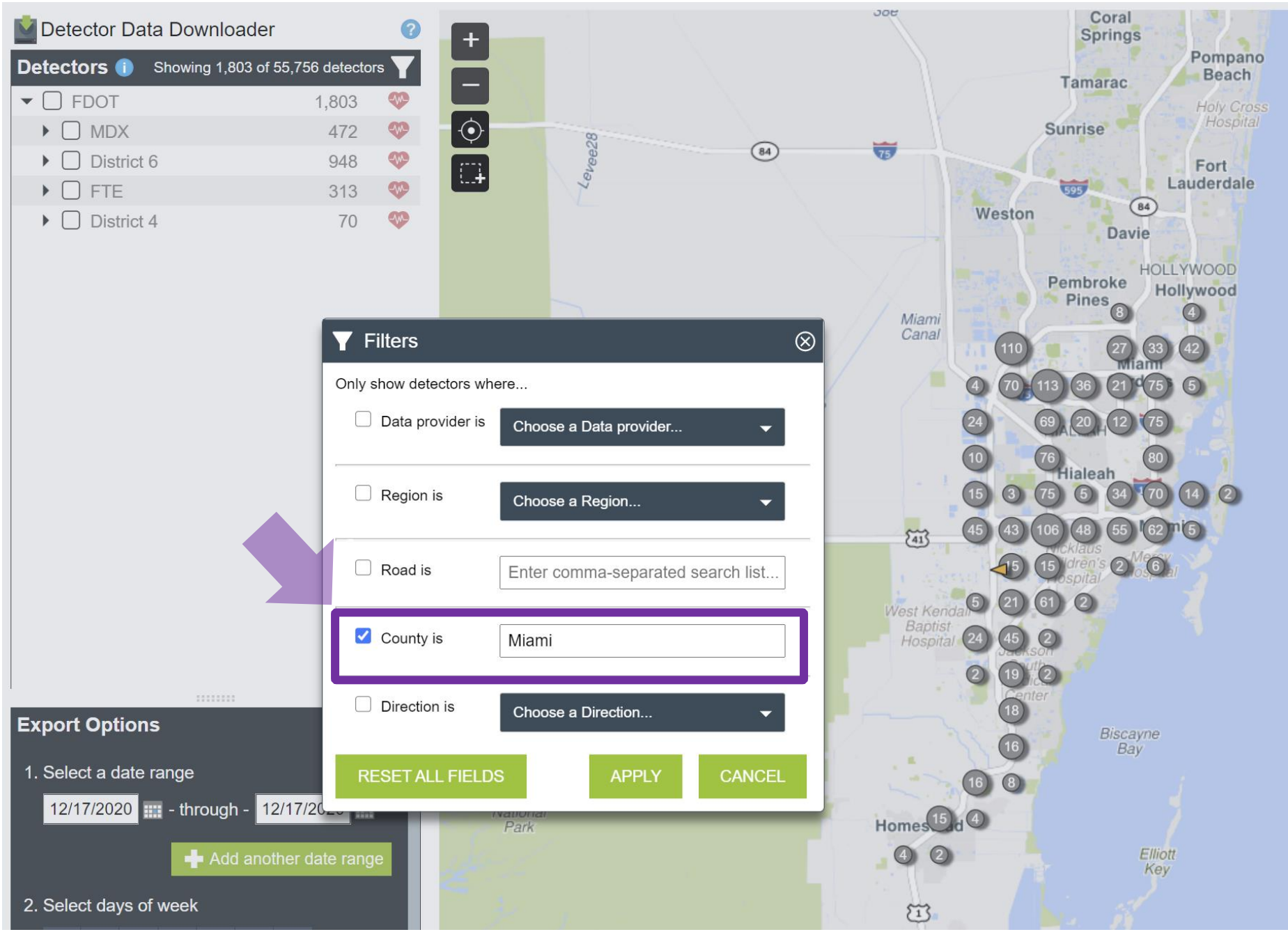
RITIS

3. Filters panel in Detector Data Downloader now includes an option to filter detectors by county.



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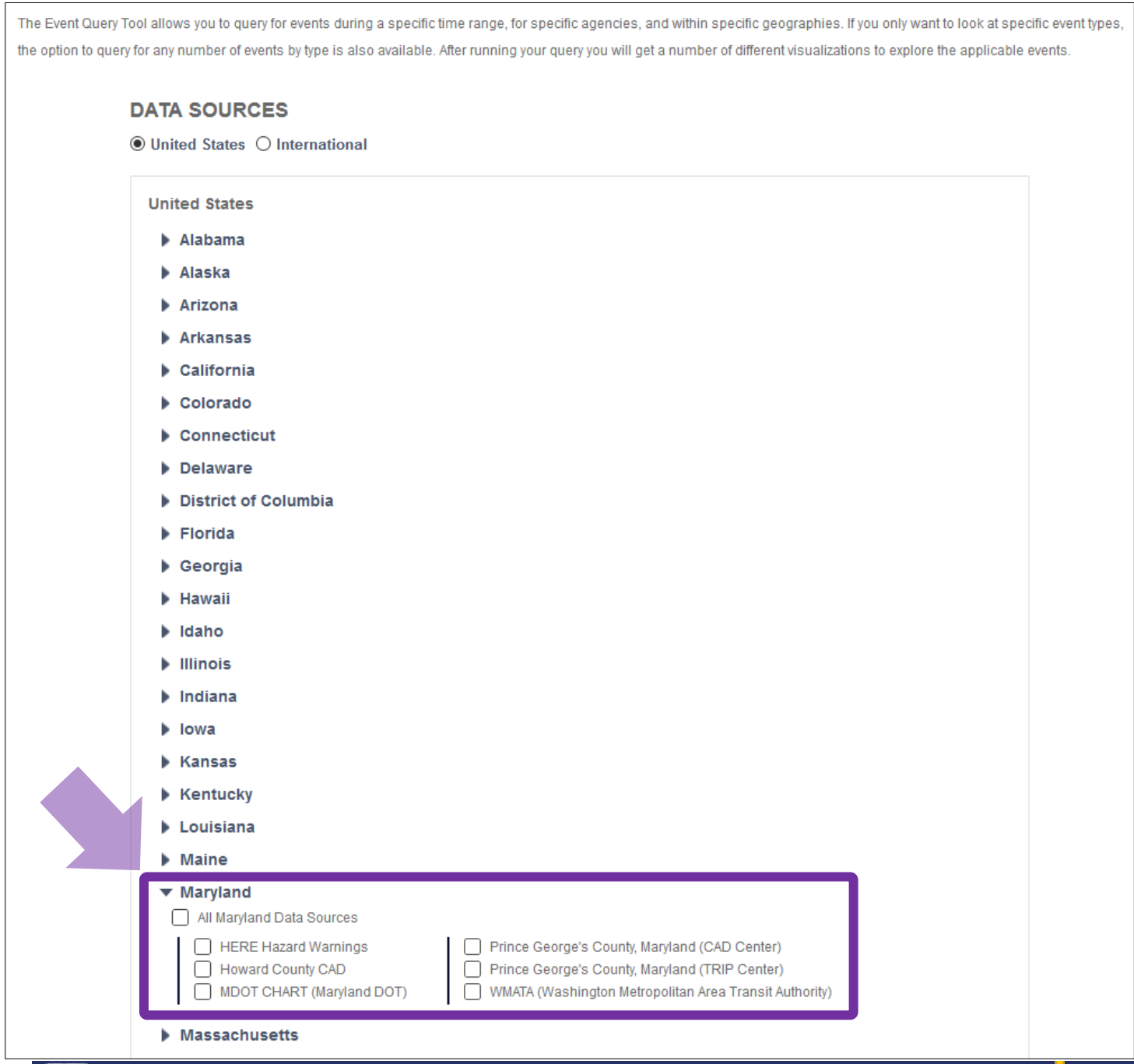
RITIS

4. A new data source selection interface was added to the Event Query Tool to provide more granular state-level control when selecting data sources.



For other enhancements, data sources and corrected issues, go to:
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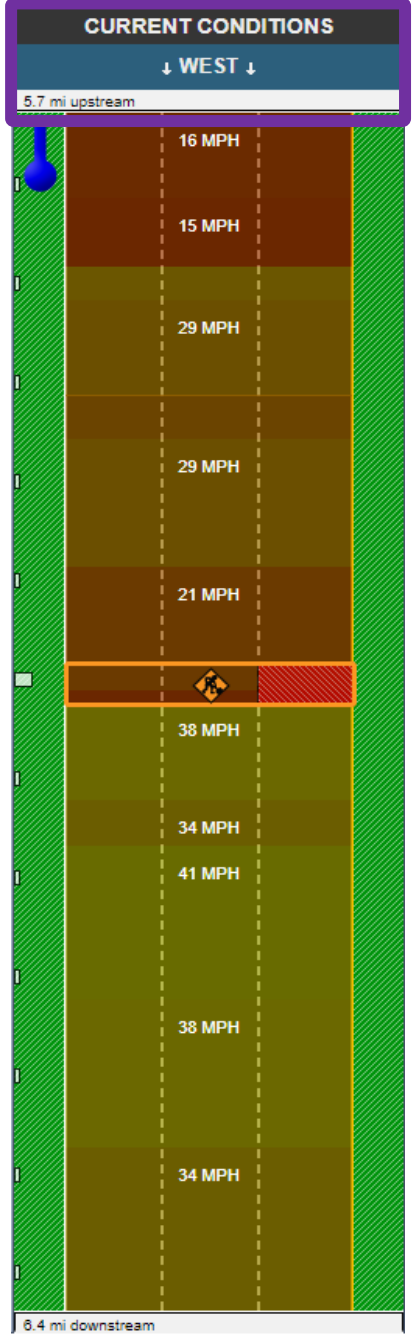
RITIS

5. The WZPMA Current Conditions pane on the work zone profile page has been improved on single direction road segments to only show information relevant to the travel direction of the segment.



PDA Suite

1. Various small enhancements and minor bug fixes

2. Release of the Energy Use and Emissions Tools

I-270 NB between I-270 (SPUR) and MD-121 — **Energy Use Matrix**

	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 AM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Daily Totals
Sun 8/16/15	0.2k	0.1k	0.1k	0.1k	0.1k	0.2k	0.2k	0.0k	0.1k	0.0k	0.1k	10.4k	0.1k	0.2k	14.4k	0.5k	0.5k	18.6k	21.1k	14.3k	22.5k	10.8k	40.1k	50.2k	Sun 27.7k
Mon 8/17/15	0.4k	0.1k	0.1k	0.2k	0.1k	0.1k	0.3k	22.7k	18.8k	0.3k	0.2k	0.0k	0.1k	0.2k	0.3k	18.0k	12.3k	17.5k	15.4k	0.0k	0.1k	0.2k	0.2k	0.2k	Mon 58.5k
Tue 8/18/15	0.1k	0.2k	0.1k	0.0k	0.0k	11.1k	0.0k	0.0k	5.2k	0.2k	0.1k	0.3k	0.1k	0.4k	0.1k	13.0k	19.3k	85.0k	19.2k	0.0k	0.1k	0.1k	0.2k	0.1k	Tue 49.6k
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Fri 8/21/15	0.1k	0.0k	0.1k	0.0k	0.0k	0.1k	0.1k	83.7k	82.1k	13.2k	10.6k	10.6k	11.1k	17.6k	81k	85.7k	69.4k	83.9k	12k	15.3k	0.2k	0.2k	0.4k	0.2k	Fri 197.6k
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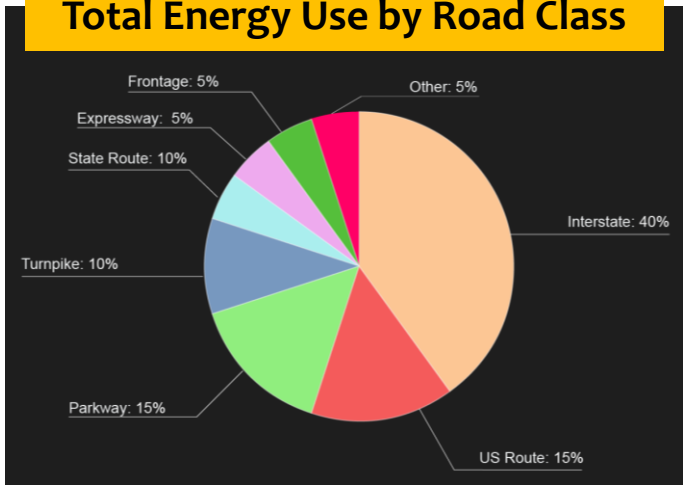
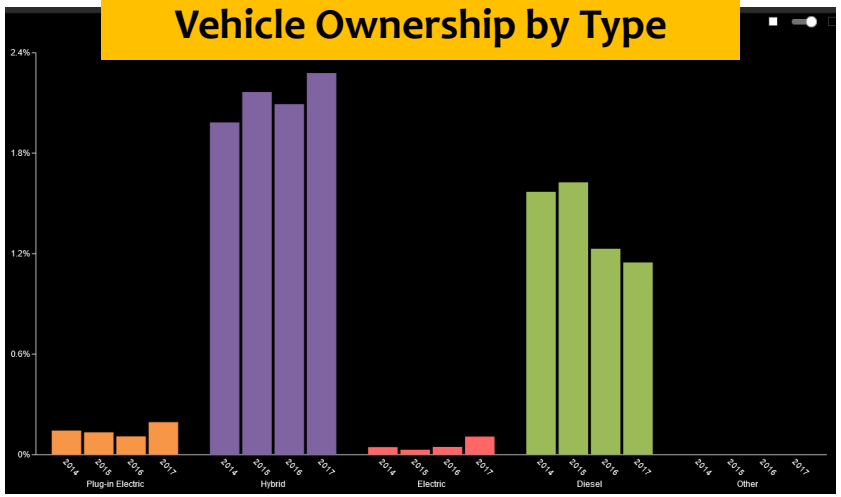
Total Energy Usage (BTUs)
0k — 90k+
10k 60k 80k 90k

Total Energy Use by Road Class



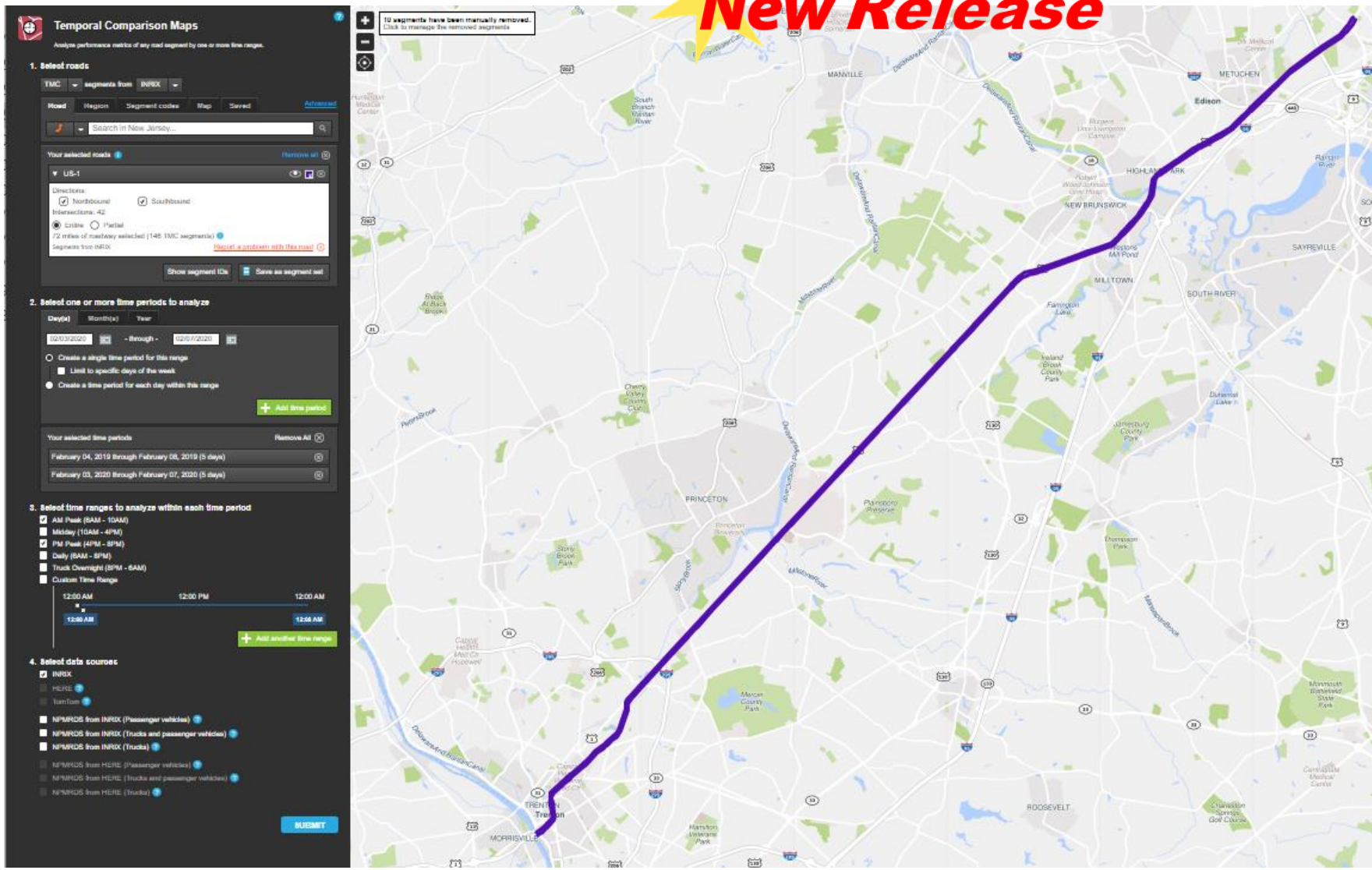
Vehicle Ownership by Type



For more of the latest update info, go to: https://pda.ritis.org/suite/updates/

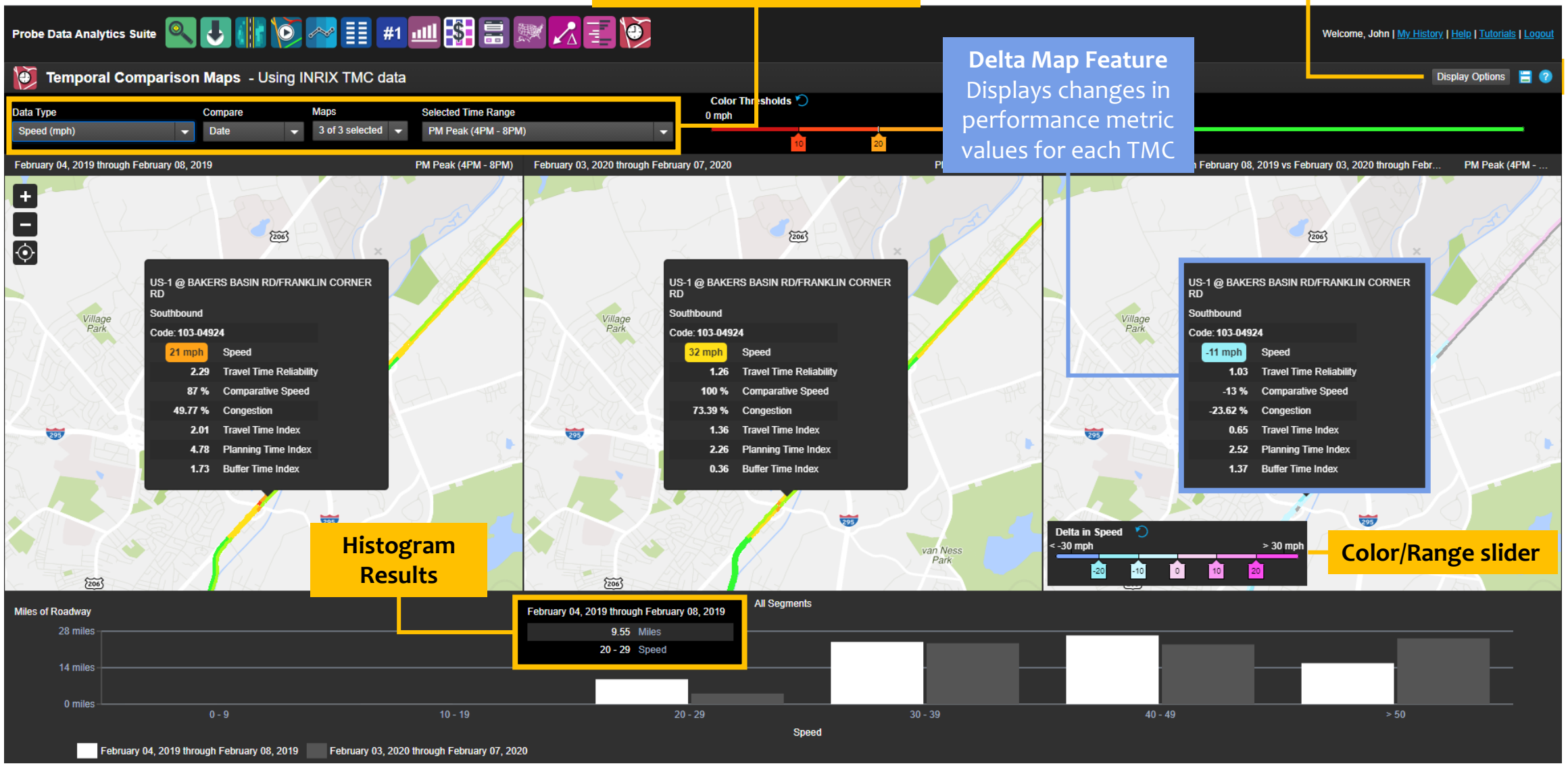
PDA Suite

3. Temporal Comparison Maps allows you to analyze how conditions have changed between (up to) **seven** different time periods, performance metrics and times of day.



For more of the latest update info, go to: https://pda.ritis.org/suite/updates/

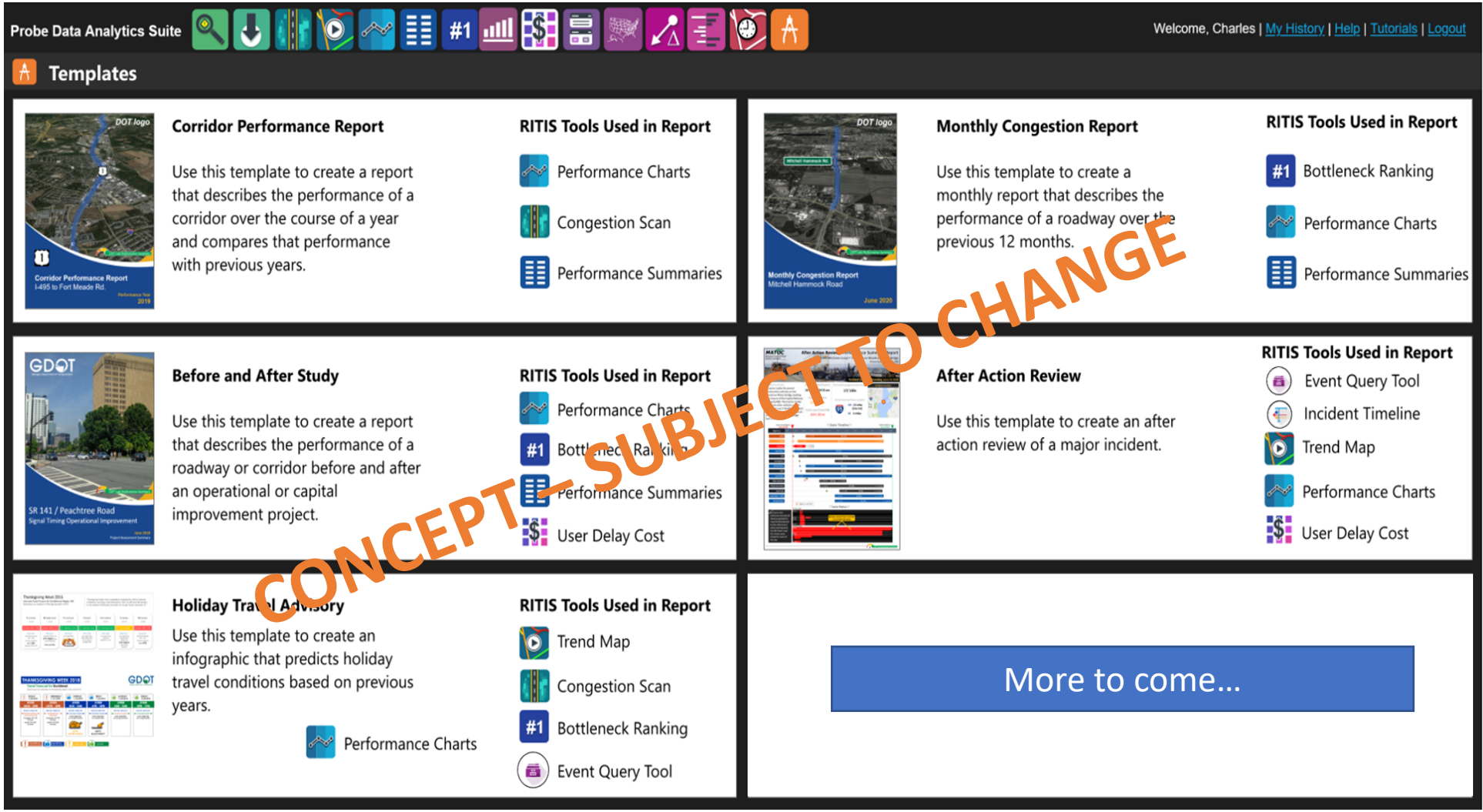
PDA Suite



For more of the latest update info, go to: https://pda.ritis.org/suite/updates/

Performance Reporting (work-in-progress)

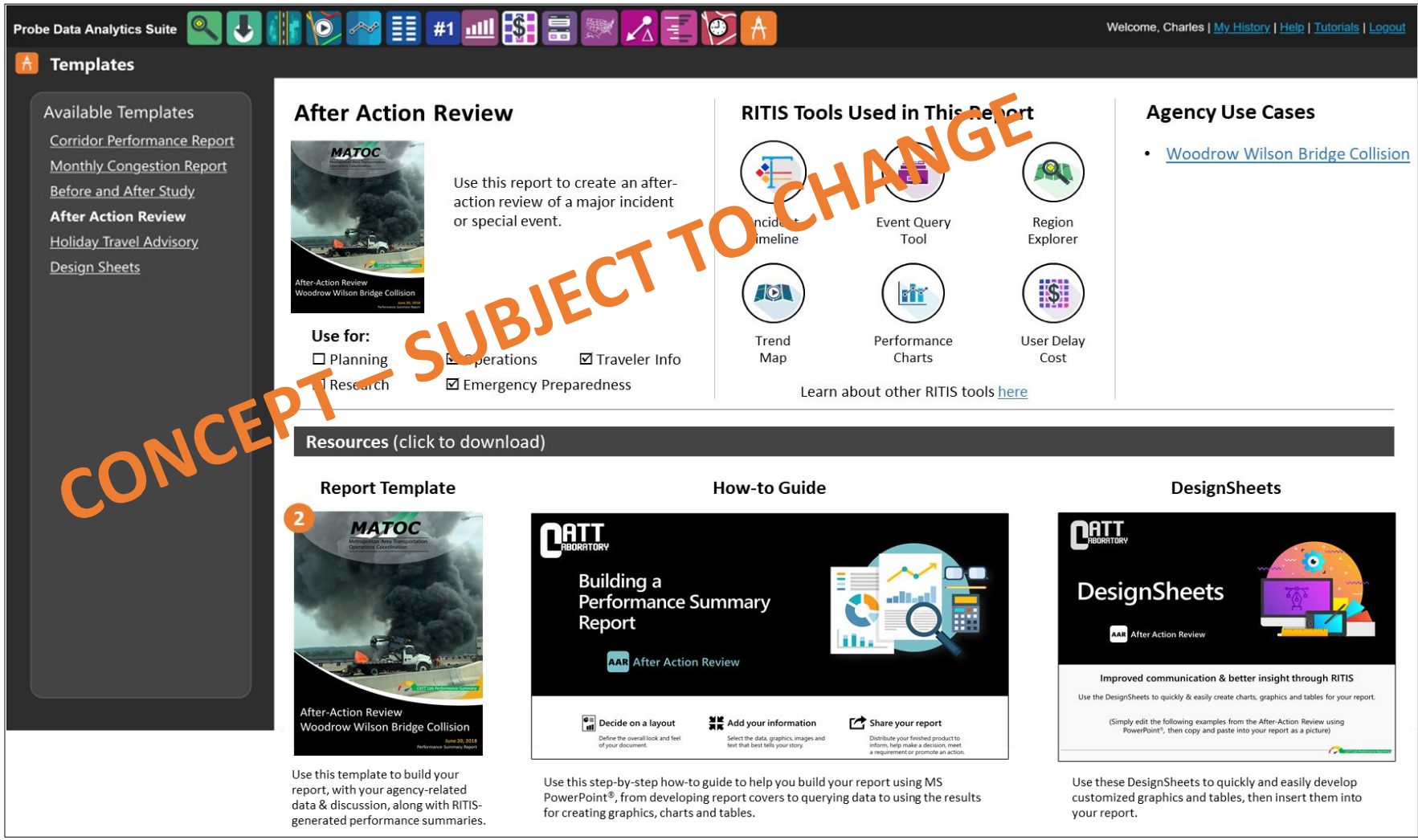
4. Developing a space on PDA Suite to house Performance Reporting Templates



For more of the latest update info, go to: https://pda.ritis.org/suite/updates/

Performance Reporting (work-in-progress)

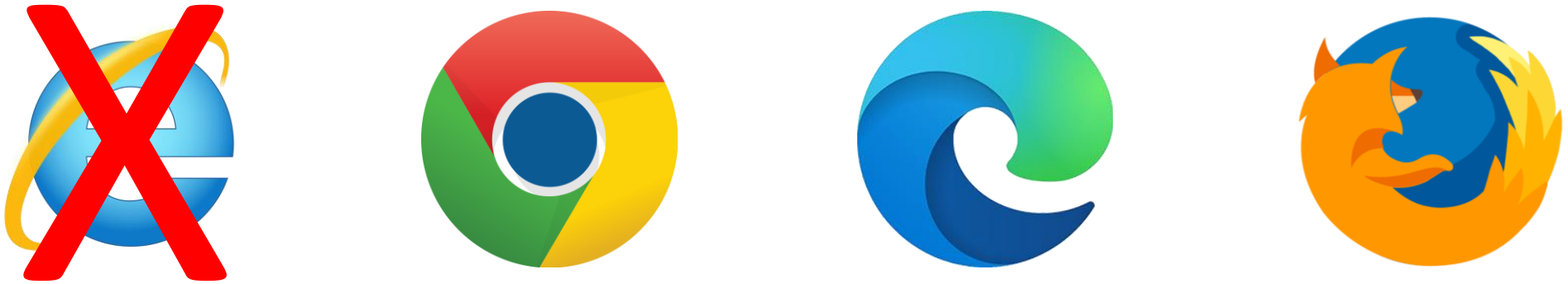
5. Access and download Report Templates, How-to Guides & DesignSheets, and view agency use cases, all in one location



For more of the latest update info, go to: https://pda.ritis.org/suite/updates/

Reminder

On March 9, 2021 the Probe Data Analytics Suite will no longer support Internet Explorer. Please switch to Chrome, Edge, or Firefox before then.

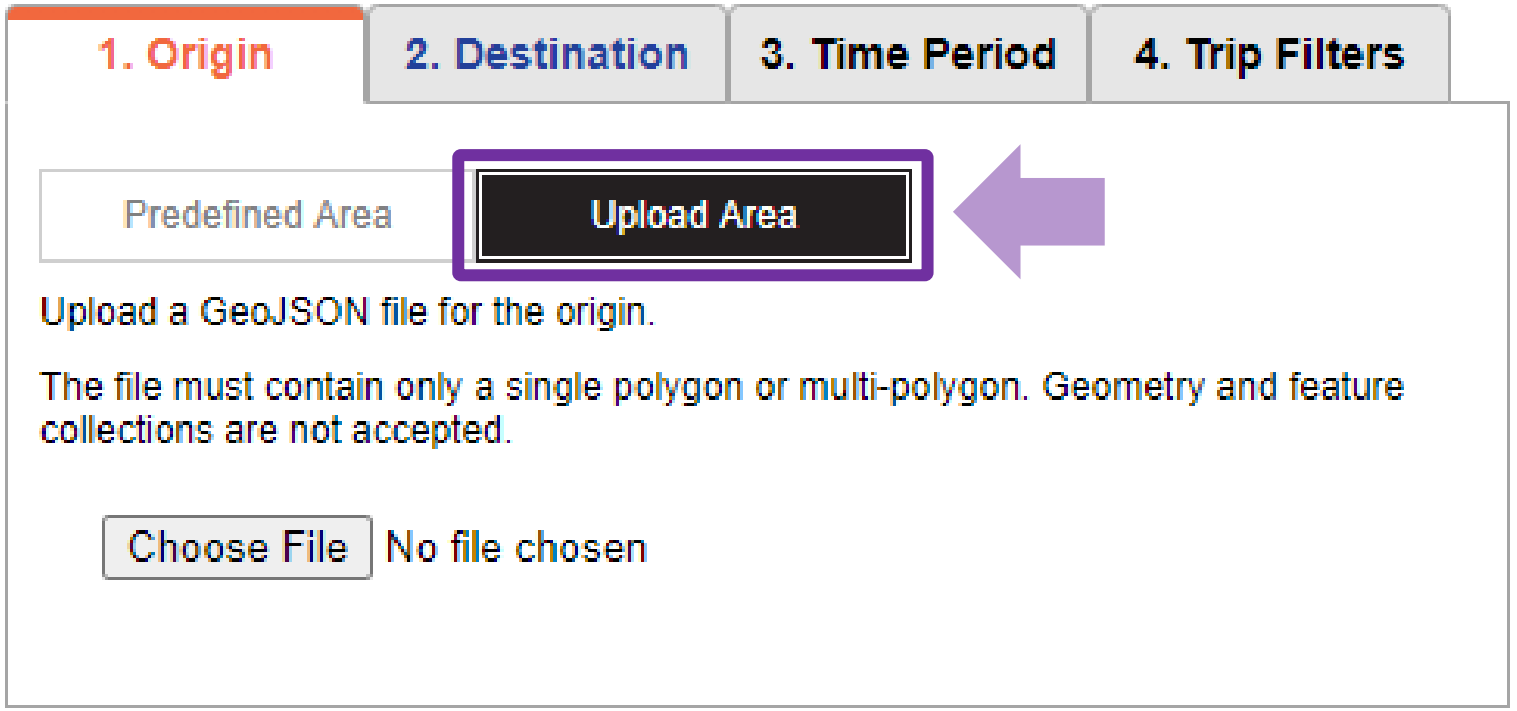


For more of the latest update info, go to: https://pda.ritis.org/suite/updates/

Trip Analytics

1. Various bug fixes and functionality improvements across the tools (OD Matrix, Segment Analysis, Route Analysis

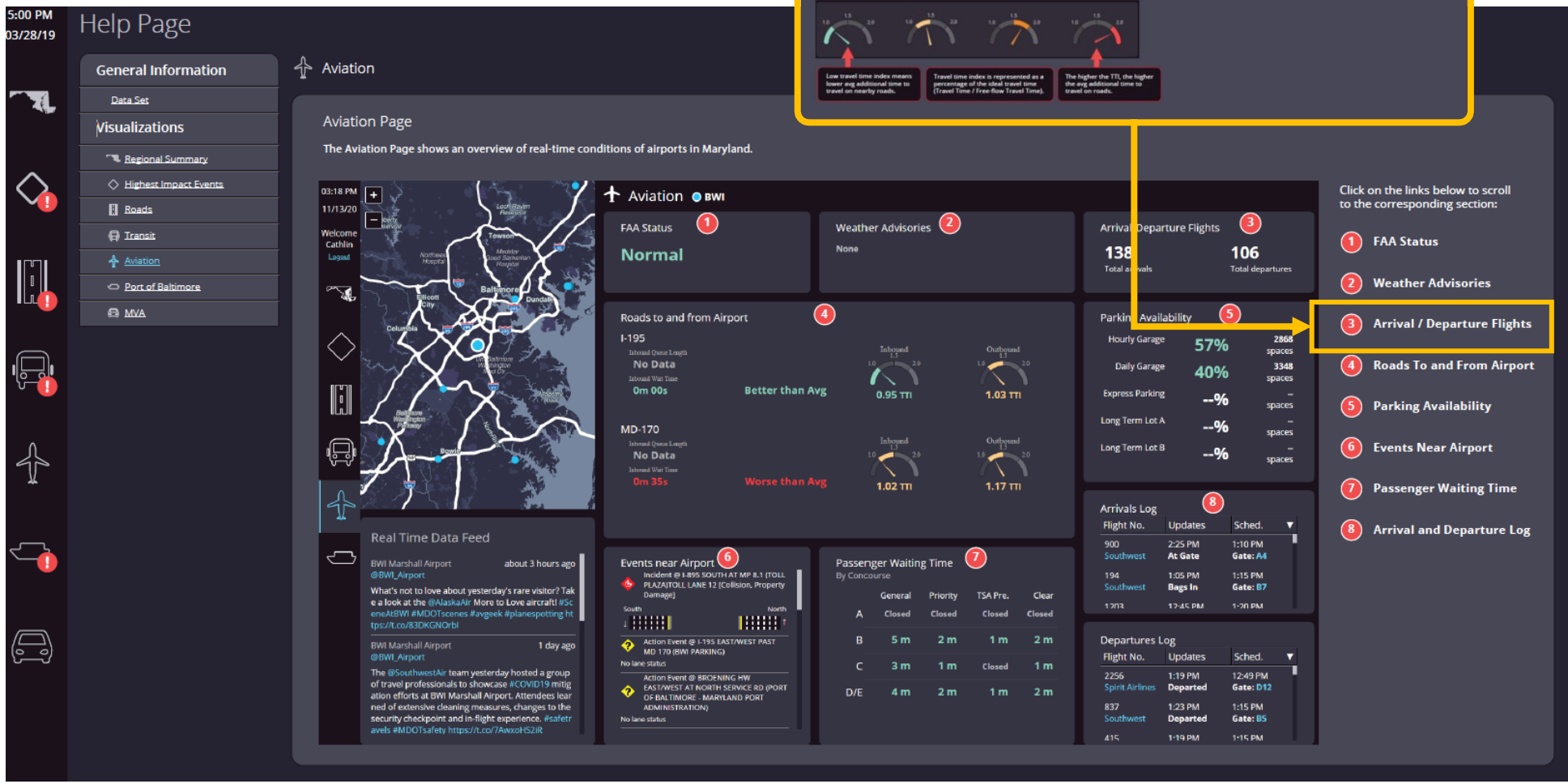
2. You can now define a custom analysis area by uploading a GeoJSON file (most GIS software have an option to export to GeoJSON)



For more of the latest update info, go to: https://trips.ritis.org/new

Common Operating Platform

1. New Help pages clearly explain every widget and function

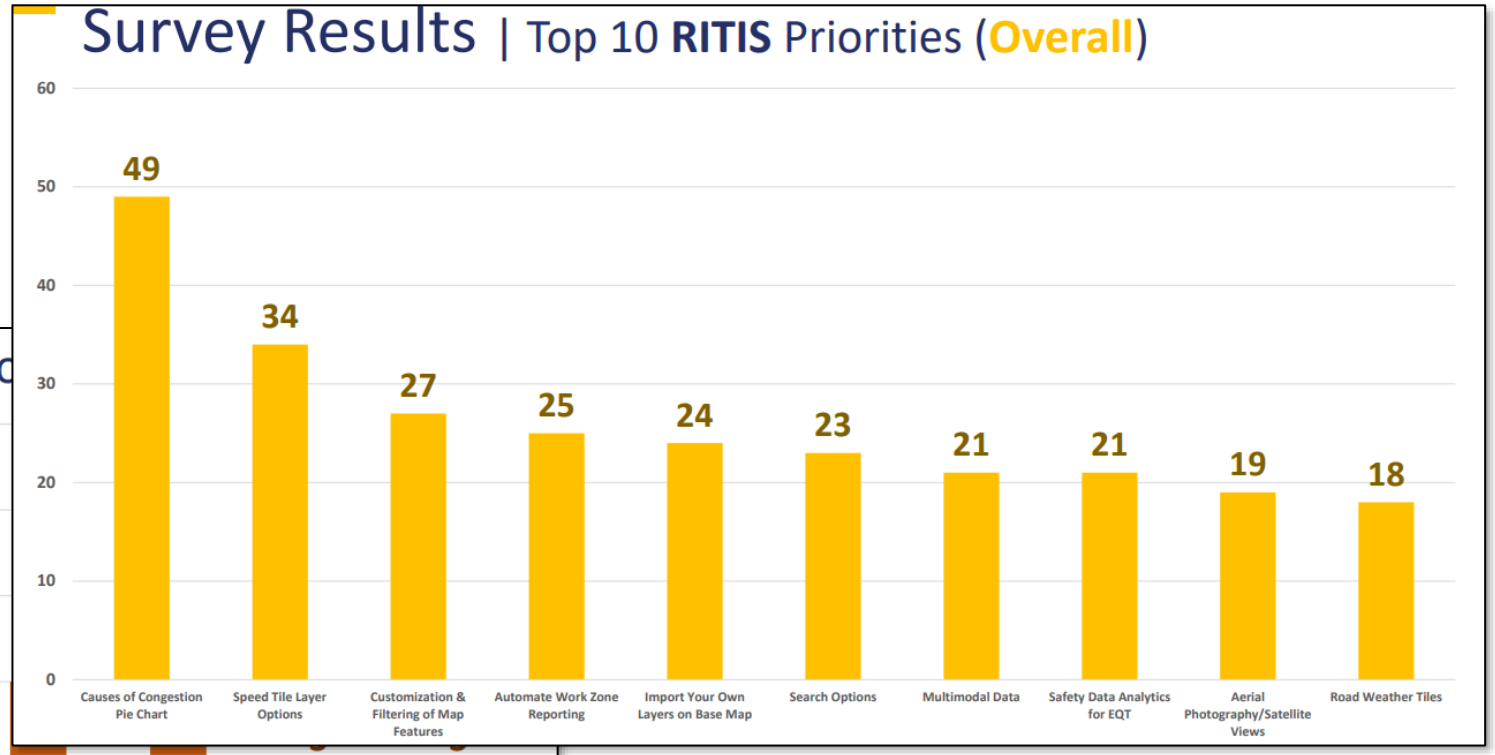


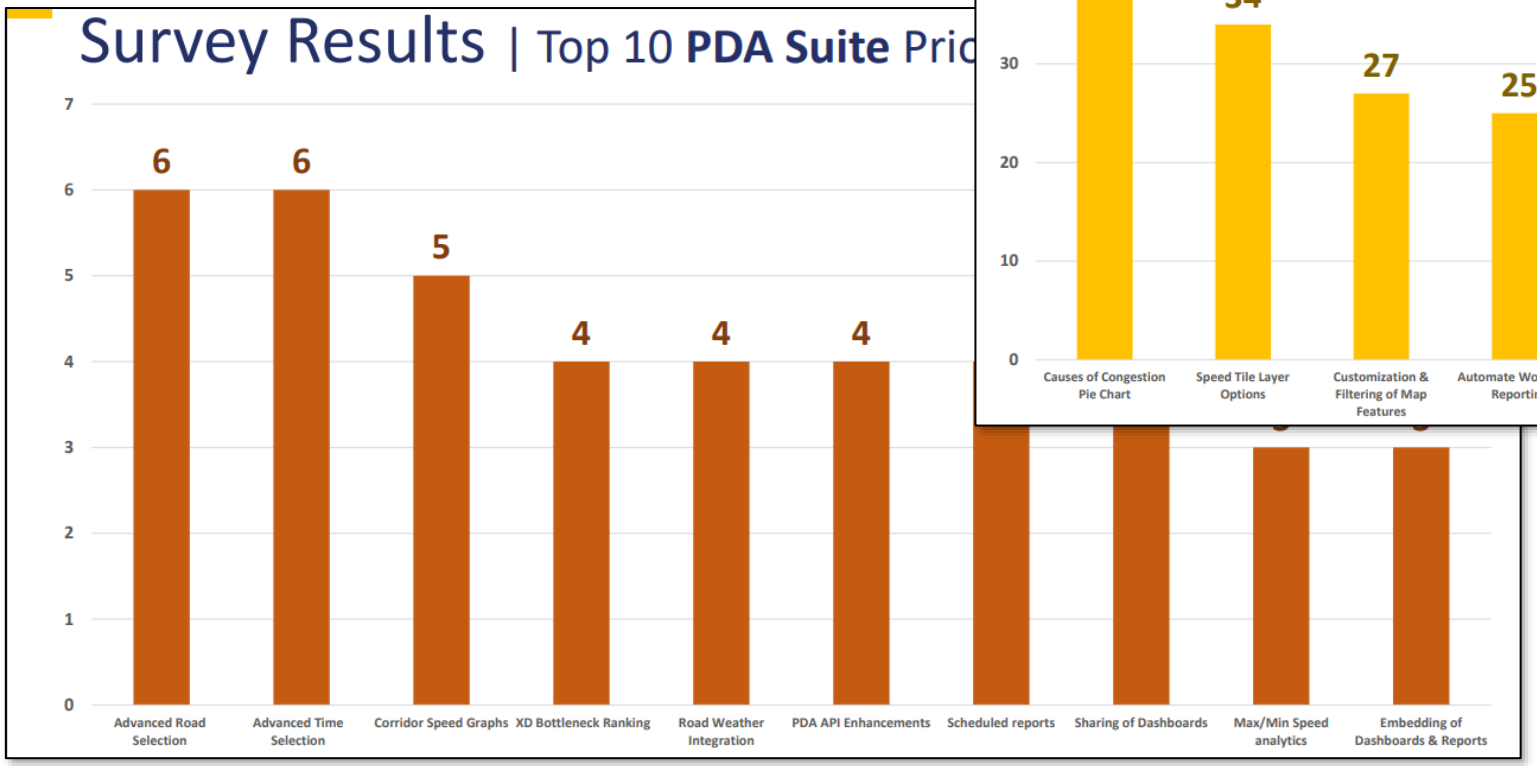
RITIS | Probe Data Analytics suite

New RITIS Enhancement Working Group

Matt Glasser
Assistant State Traffic Engineer
Georgia DOT

Turning Words into Actions





RITIS Enhancement Working Group Poll

Are you interested in being part of the RITIS Enhancement Working Group?

- Yes, definitely!
- Possibly – can you please reach out to me?
- Not at this time

Georgia Department of Transportation

To join the RITIS Enhancement User Group, please contact

Matthew Glasser
404.635.2838
mglasser@dot.ga.gov

RITIS | PROBE DATA ANALYTICS SUITE

Agency Input Session

Michael Pack
UMD CATT Lab
Director

We want to hear from you!

Wrap Up

Matt Glasser
Assistant State Traffic Engineer, Georgia DOT
RITIS User Group Co-chair

Questions?



Denise Markow (TETC)	dmarkow@tetcoalition.org	301.789.9088
Joanna Reagle (Logistics)	jreagle@kmjinc.com	610.228.0760
Michael Pack (CATT Lab)	PackML@umd.edu	
RITIS Tech Support	support@ritis.org	
PDA Suite Tech Support	pda-support@ritis.org	

Thank you!

CATT LABORATORY

THE EASTERN TRANSPORTATION COALITION

CONNECTING FOR SOLUTIONS