NEW YORK STATE ASSOCIATION OF MPOs
MODELING WORKING GROUP
December 6, 2019

Conference Call
9:30 AM – 10:30 AM

MEETING NOTES

Participating

- Chris O'Neill, CDTC (Chair)
- Ali Afshar, NYMTC
- Michael Chiume, NYMTC
- Jim Davis, NYSDOT
- Rich Denbow, CS
- Jason Deshaies, SMTC
- Emily Dozier, DCTC
- Mark Grainer, NYSDOT
- Eric Krans, AVAIL
- Catherine Lawson, AVAIL
- Alex Muro, AVAIL
- David Staas, UCTC
- Courtney Taylor, ECTC
- Andrew Tracy, CDTC
- Dylan Tuttle, DCTC

1. Introductions

Alex Muro (AVAIL) opened the meeting and welcomed the participants.

2. NPMRDS Tools – On Dev

The AVAIL team provided an update on recent tool development activity.

- The team showed and discussed the conflation view in the macro tool.
- The team will soon add the ability to switch the view to different segments between two datasets (TMC and RIS). These will be collapsed into one layer, with the user choosing which way to view them.
- The team is working on new methods of route creation. They will add a polygon select function and box select function, which will allow reports to be produced for selected areas. Users will be able to select data for the views.
- The team loaded Highway Data Services data and showed views.

- The new data will allow more precise analysis of congestion, and help us look at congestion measures on the expanded network. This will also allow us to do congestion analysis for projects.
- Comment from Syracuse – They looked at state counts and speeds, which provides continuous coverage, but speeds are at a single point. NPMRDS provides average speed over a travel segment. They are looking at ways to account for this difference and to discuss findings based on the differences. Both data points serve good purposes and can tell you different things.

3. Integrating NPMRDS data into the CDTC's Congestion Management Process

Chris O'Neill gave a presentation on the work CDTC is doing to use NPMRDS data during development of the new CMP.

- The updated CMP will be integrated into CDTC's New Visions 2050 Plan. Work is underway on the CMP and on the Plan.
- CDTC identified an ITS Priority Network.
- A key planning principle for CDTC is that reliable traffic flow is often more important than reducing congestion. Managing traffic flows is critical, and congestion management is more cost effective than adding new lanes. With these principles in mind, travel reliability is an important performance measure for the New Visions 2050 Plan update.
- The federal LOTTR and TTTR measures are being used. These measures don't apply as well to the corridor level. CDTC uses the Planning Time Index (PTI) for corridor level analysis.
- Chris showed graphs to demonstrate reliability along several corridors using the PTI measure, as well as a table of average speed, 95th percentile speed, and PTI for the corridors. This is a great example of creating custom segments by adding TMCs together along a corridor. Looking at the individual TMC level is not as useful.
- CDTC is also looking at Peak Hour Excessive Delay (PHED) calculations using NPMRDS data for the region. CDTC has been using this measure for several years based on model data. Chris showed a map of locations in the region with a PHED greater than 30,000 hours. Based on analysis performed, certain locations keep showing up on the map no matter how the data is sliced.
- Chris discussed the congestion management strategies that have been developed for the CMP and recommendations for implementation (see slides for more information).
- Regarding the regional traffic signal timing program recommendation, Emily Dozier remarked that it would be helpful for the AVAIL NPMRDS tool to have functionality to screen corridors to determine which ones would benefit from signal timing adjustment. The WG discussed signal adjustment issues and emphasized that it's important to look at overall delay along a corridor including delay on side streets, instead of focusing only on reducing delay on the mainline roads.
- Chris discussed the recommendation to create an inventory of signalized intersections. This could include several types of information including type of signal and type and age of controller. When doing signal timing, it's easier to upgrade signals that have more modern controller technology.

- Chris concluded by saying that overall, the NPMRDS data added clarity to congestion analysis, which will help explain congestion issues and strategies to the public and decision makers.
- Comment from Syracuse – they found that many of the small segments in the database cause issues with data analysis. They cleared up many of these issues by removing the "less than 10 percent" segments. Another strategy is to combine small segments with adjacent segments.

4. Next Meeting

The next MWG meeting will take place on January 10, 2020.

Capital District Transportation Committee
New Visions for a Quality Region

New Visions 2040

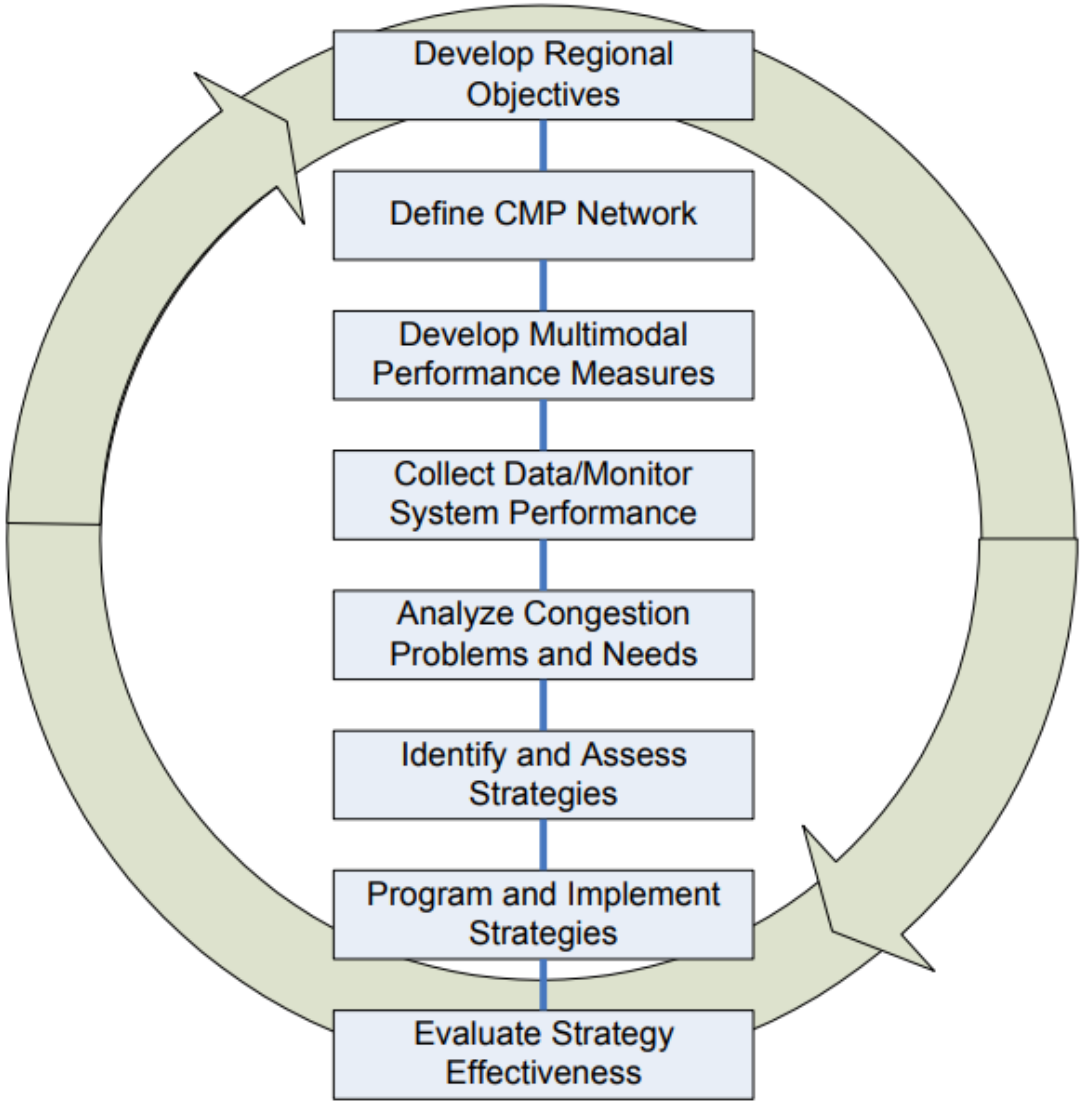
September 2015

Integrating NPMRDS data into the CDTC's Congestion Management Process

December 6, 2019

CDTC
Capital District Transportation Committee

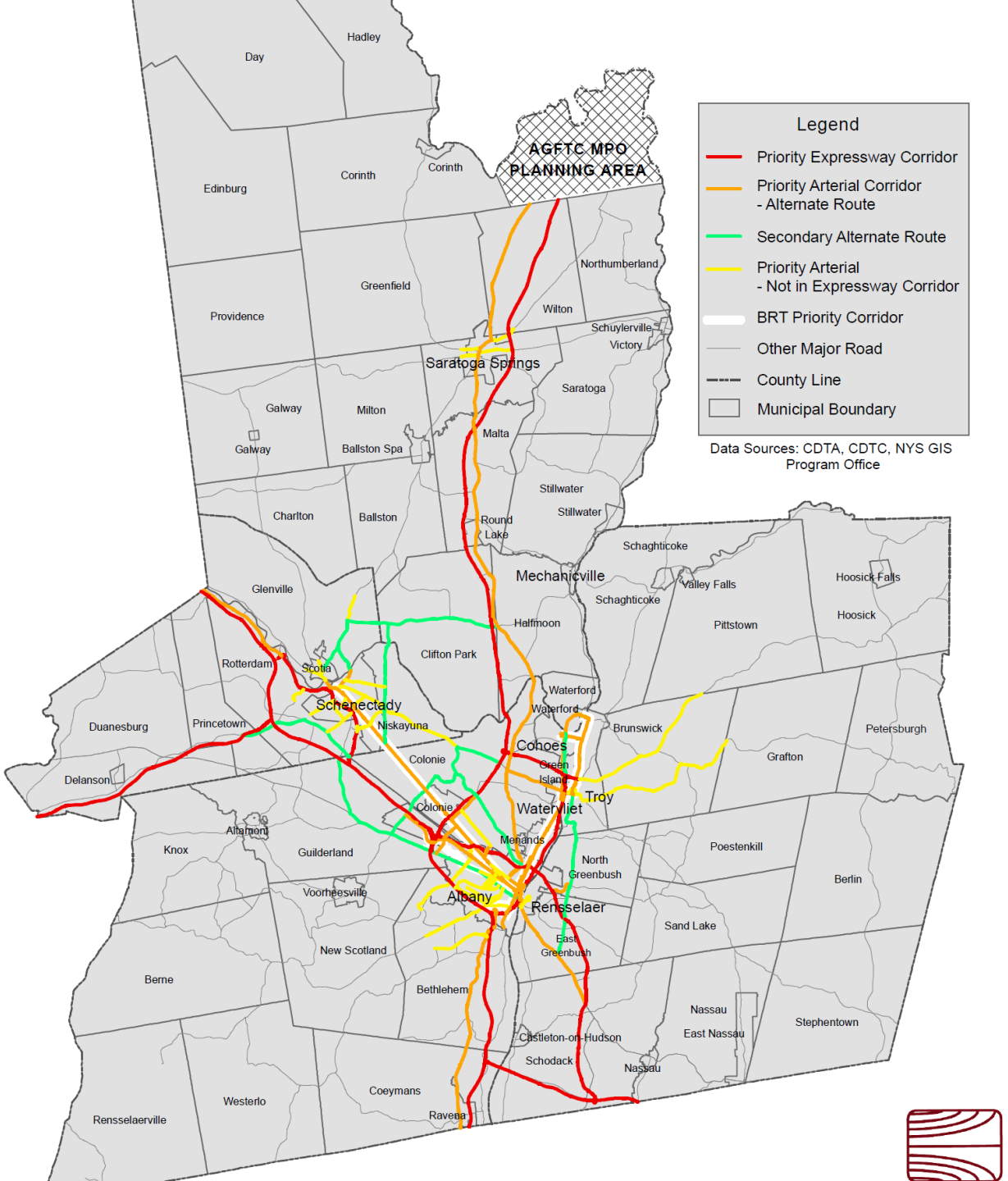
Congestion Management Process: Eight Required Steps



CDTC New Visions 2050 Plan Update

- New Visions 2040 is the long range regional transportation plan for the Capital District
- We are updating the New Visions Plan and the CDTC Congestion Management Process
- The draft has been presented to the Regional Operations and Safety Advisory Committee

Congestion Management Network: the Intelligent Transportation System Priority Network



Planning and Investment Principles

Travel Reliability – Reliable traffic flow is more important than reducing congestion – traffic congestion is often a sign of an area's economic vitality.

- *Managing traffic flows on the Capital Region expressway and arterial system is critical for both economic and social reasons.*

- *Congestion Management is much more cost effective than highway capacity increases or new lanes. Congestion alone does not justify increasing highway capacity or adding new lanes.*

- *Congestion management actions will include traffic management center improvements, incident management, managed lanes, managed tolls, traffic information technology, traffic signal coordination, parking management, and travel demand management strategies such as supporting more transit, pedestrian, and bicycle travel, carpooling, vanpooling, carsharing, bikesharing, and flexible work hours.*

- *Some congestion is acceptable when the community deems it acceptable, or when it results from balancing the needs of other transportation modes such as pedestrian, bicycle, and transit.*

CDTC New Visions 2050 Plan Update

- **<u>Travel Reliability</u> – An important performance measure for CDTC and required by the FAST Act**
  - *We can't eliminate all congestion, but we can manage congestion.*

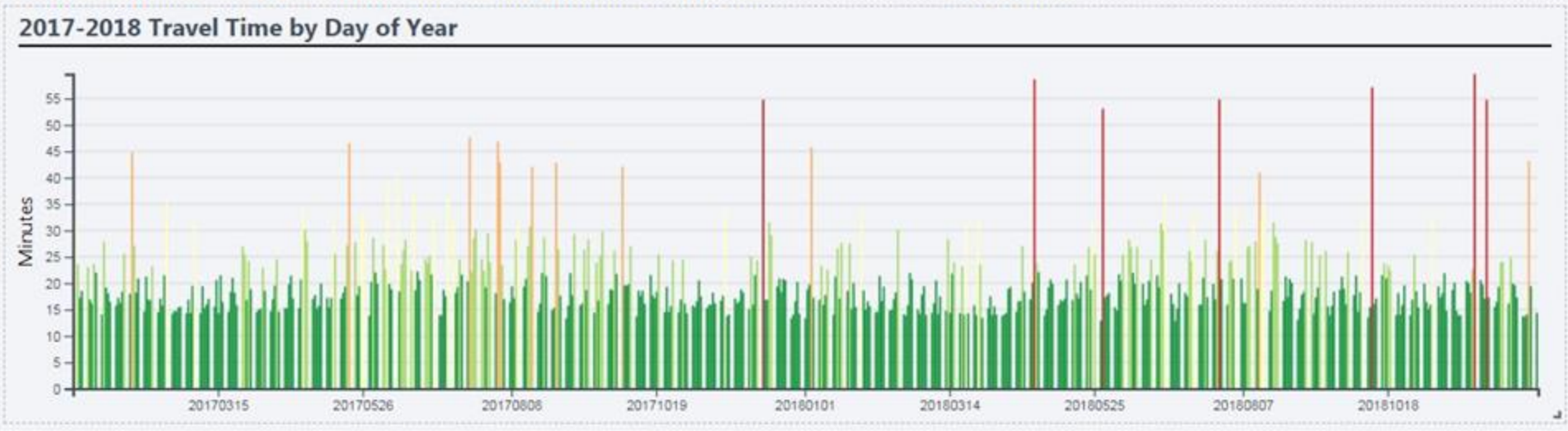
Performance Measures: Measures of Reliability

- LOTTR (Level of Travel Time Reliability) and TTTR (Truck Travel Time Reliability)
- For corridor level analysis CDTC has used the Planning Time Index (PTI) measure of reliability:
- For the PM Peak, PTI is defined as:

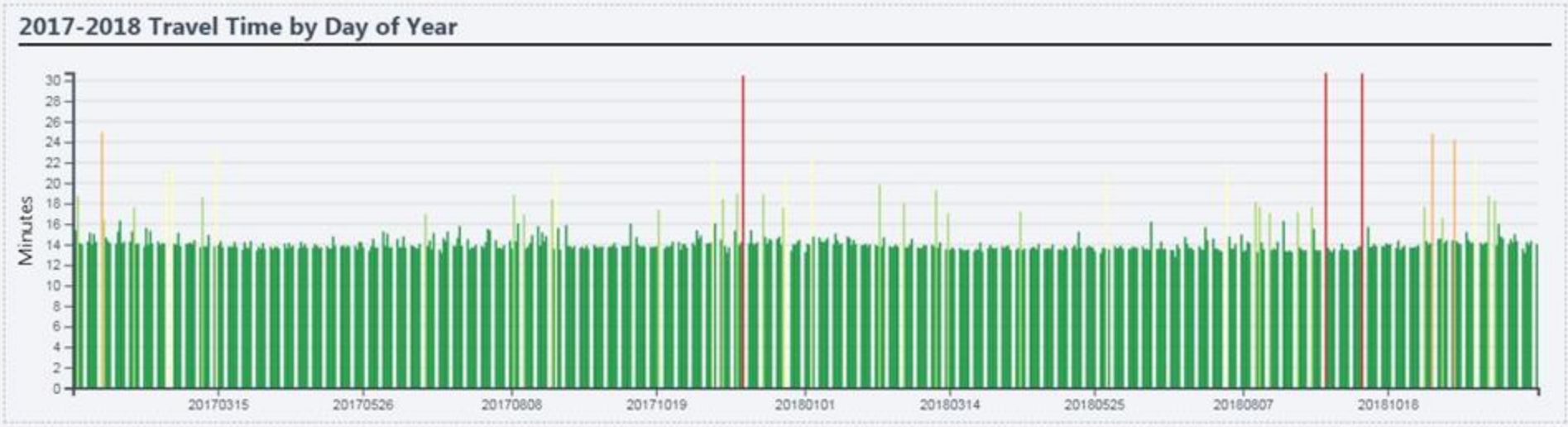
PM Peak 95% travel time / freeflow travel time

- Reliability is a difficult concept to explain to the average person, so NPMRDS graphs really make it clear.

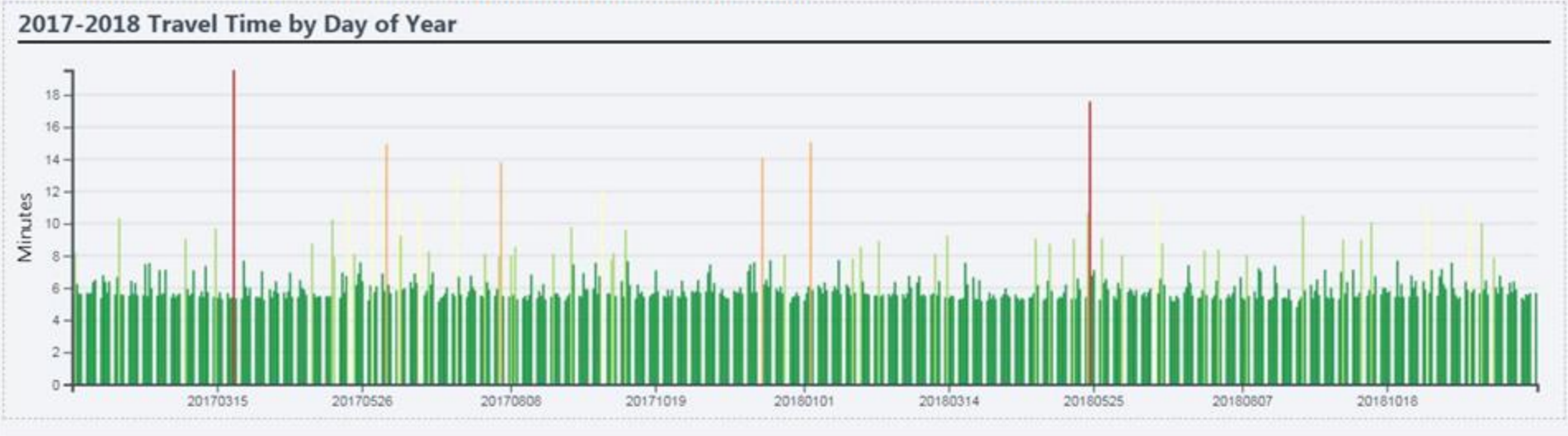
Northway, Exit 1-9, Weekday PM Peak Period, Northbound PTI= 3.24



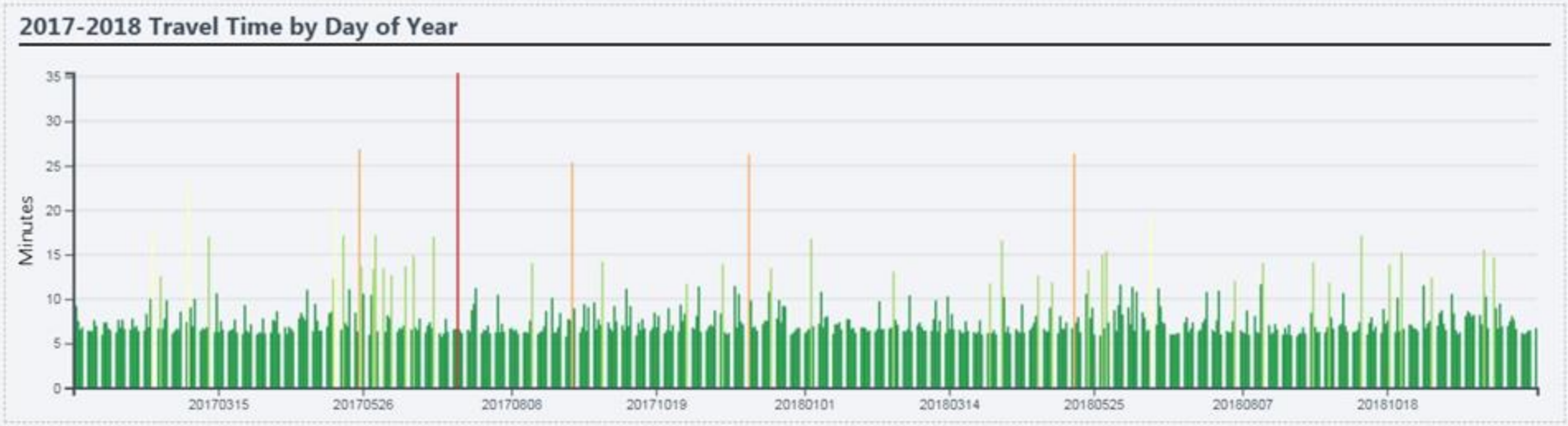
Northway, Exit 9-1, Weekday PM Peak Period, Southbound PTI= 1.35



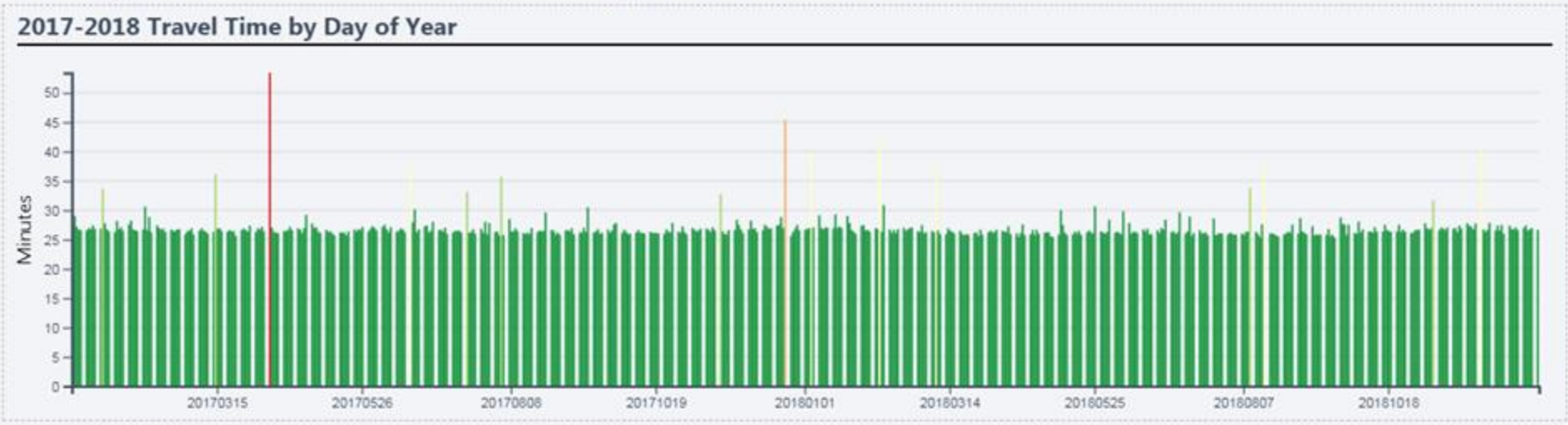
I-90, Northway to I-787, Weekday PM Peak Period, Eastbound PTI= 2.03



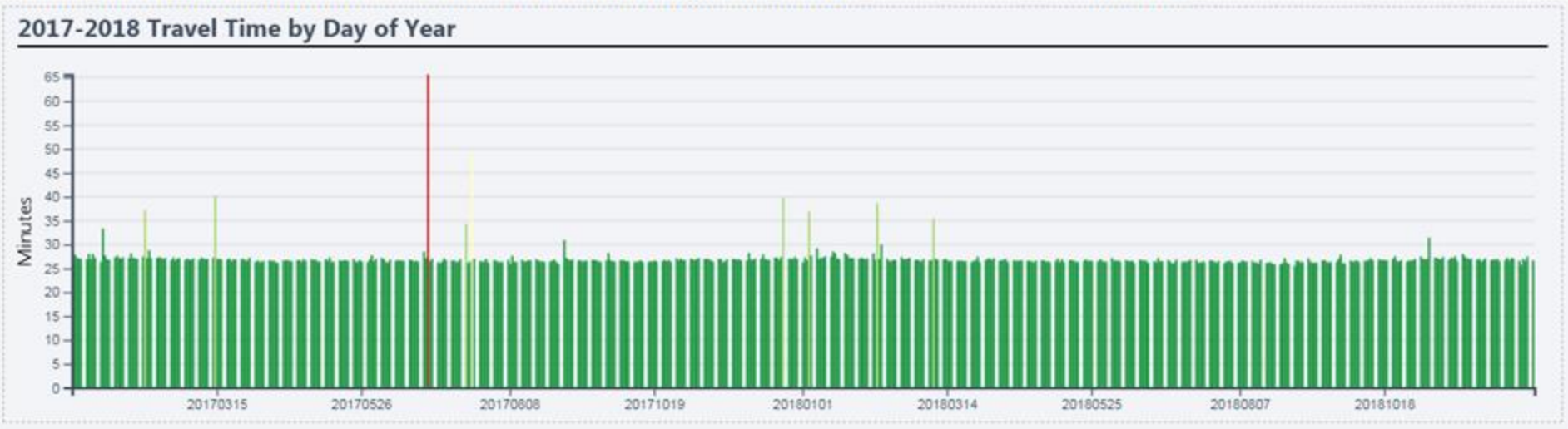
I-90, I-787 to Northway, Weekday PM Peak Period, Westbound PTI= 2.80



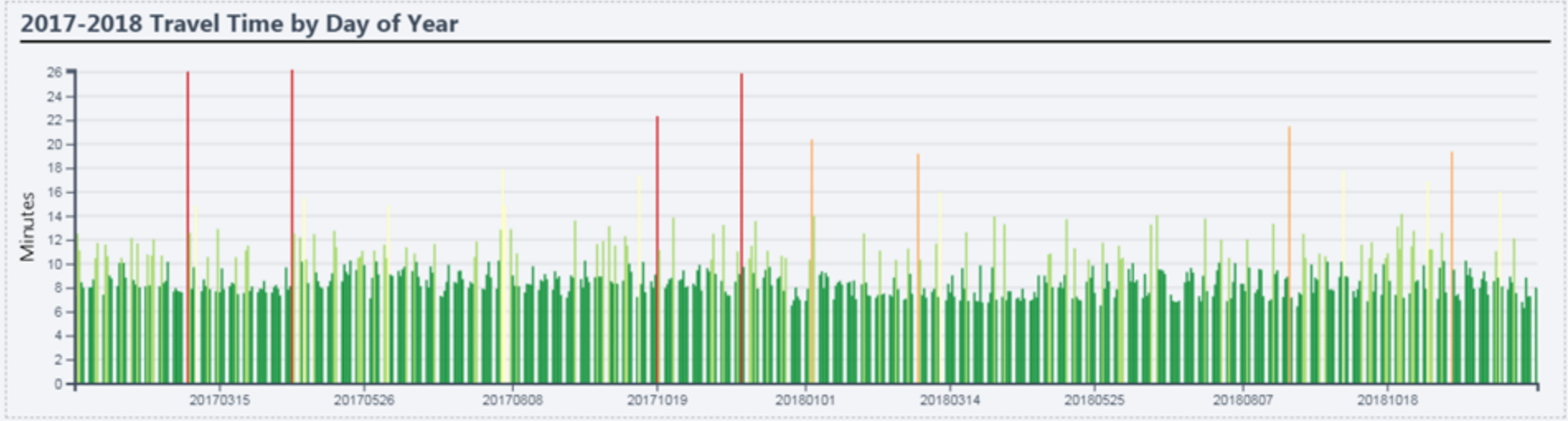
Northway from Exit 9 to Hudson River, Weekday PM Peak Period PTI= 1.21



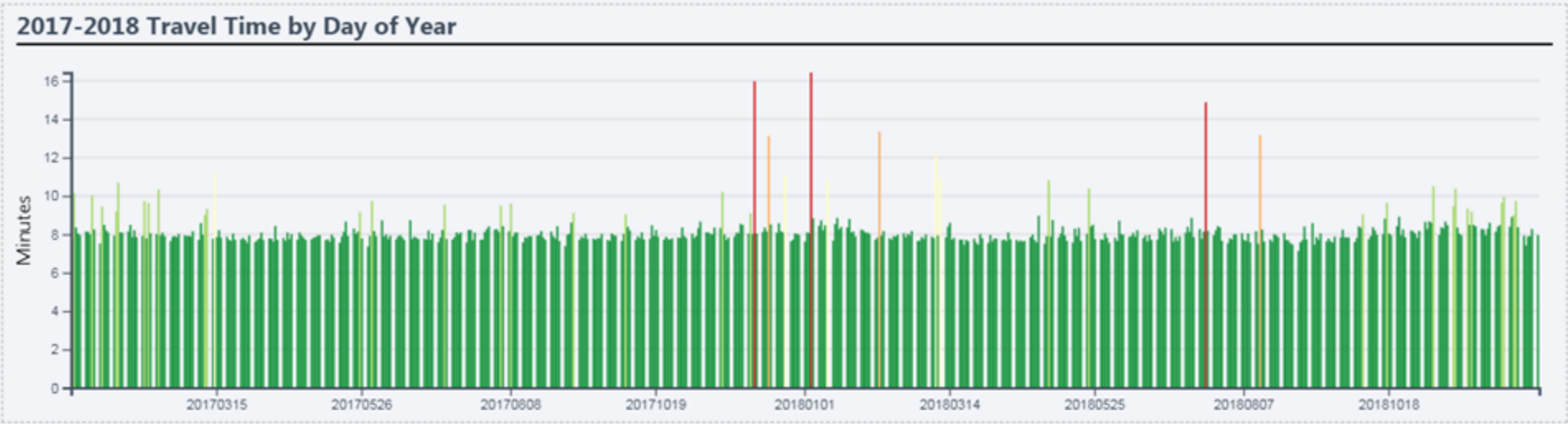
Northway from Hudson River to Exit 9, Weekday PM Peak Period PTI= 1.15



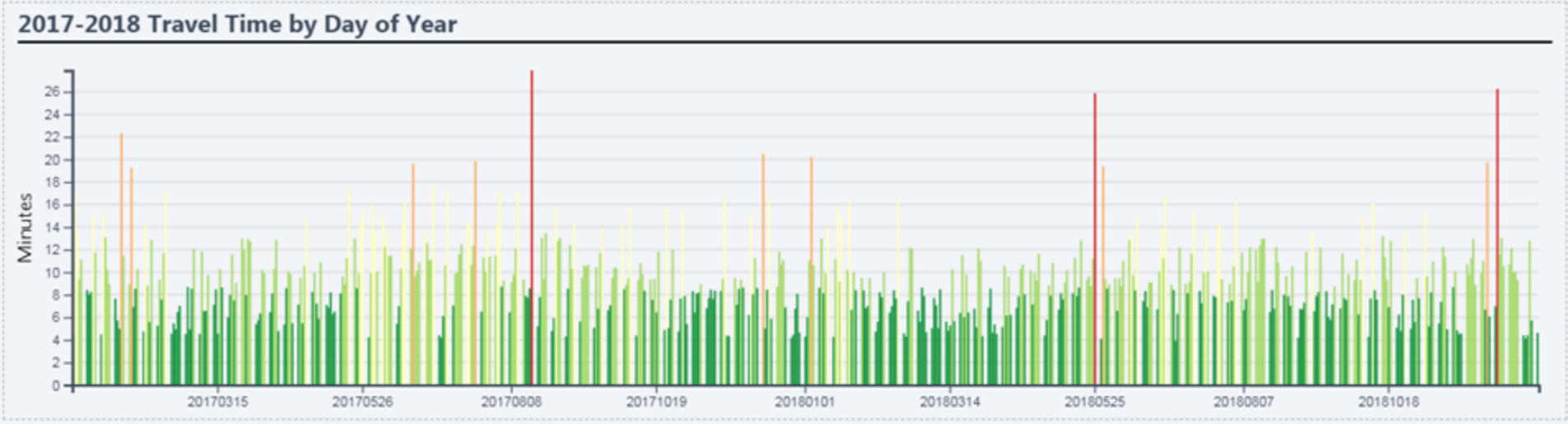
I-787, Route 20 to Route 7, Weekday PM Peak Period, Northbound PTI= 2.74



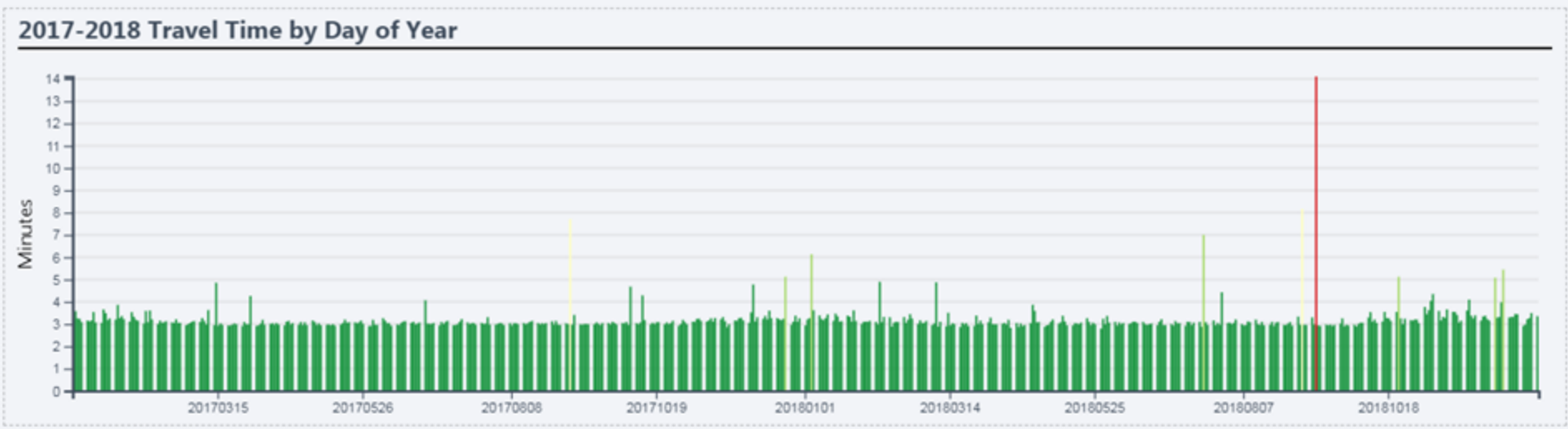
I-787, Route 7 to Route 20, Weekday PM Peak Period, Southbound PTI= 1.46



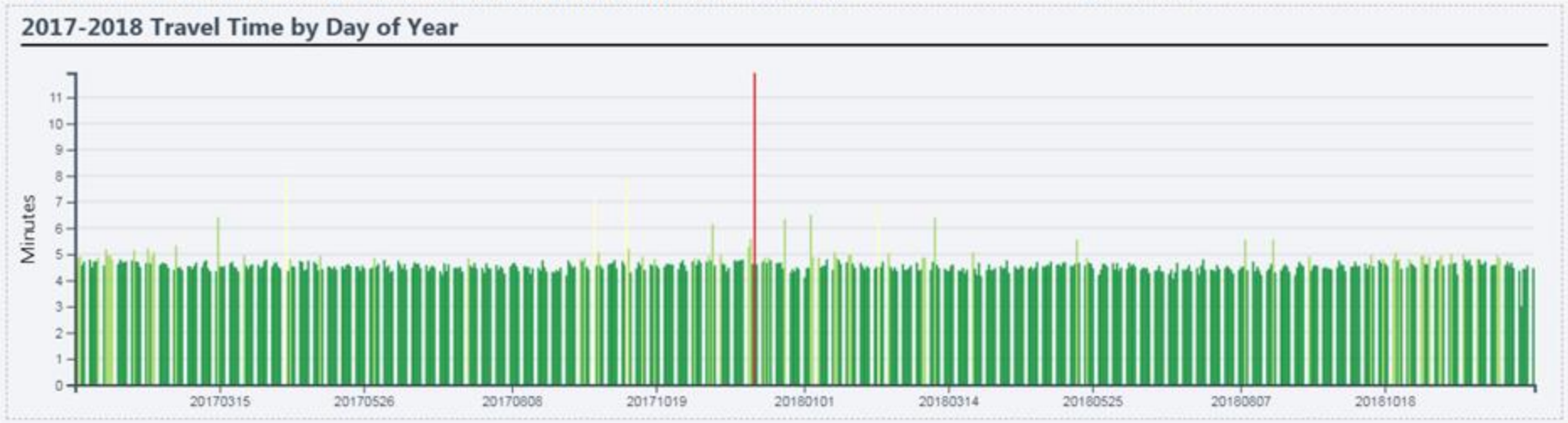
Route 7 from I-787 to Northway Northbound, Weekday PM Peak Period PTI= 4.83



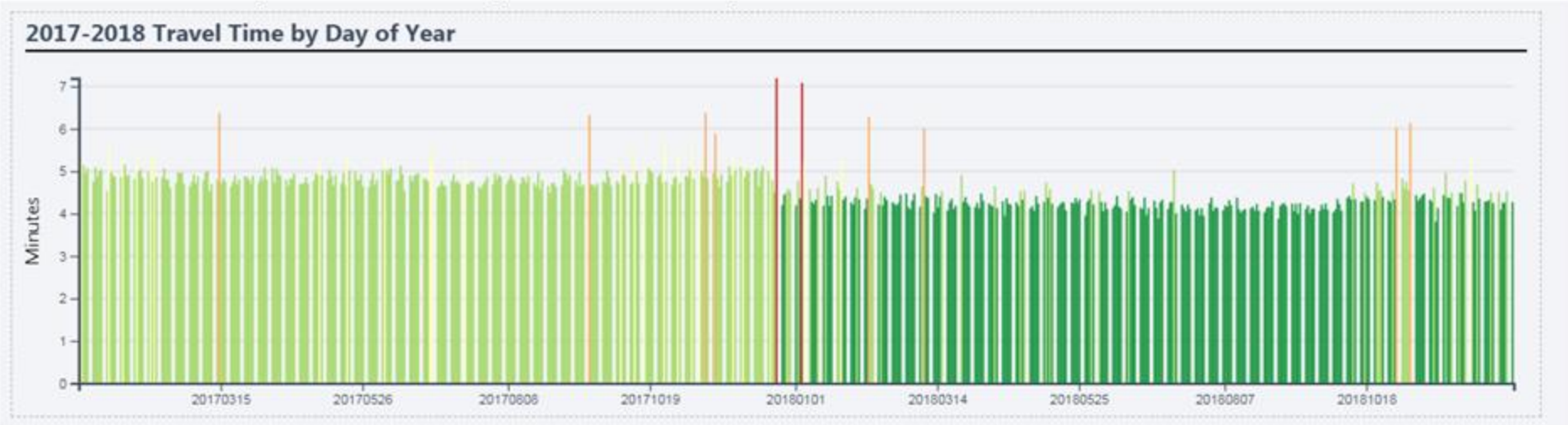
Route 7 from Northway to I-787, Weekday PM Peak Period PTI= 1.45



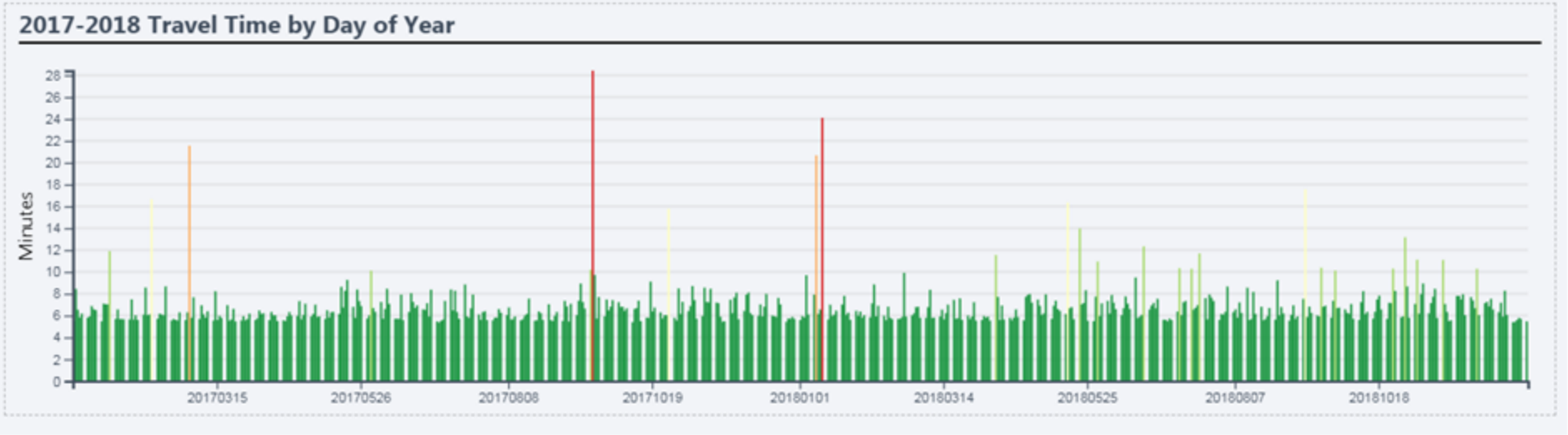
I-890 from Thruway Exit 25 to Exit 4, Weekday PM Peak Period PTI= 1.55



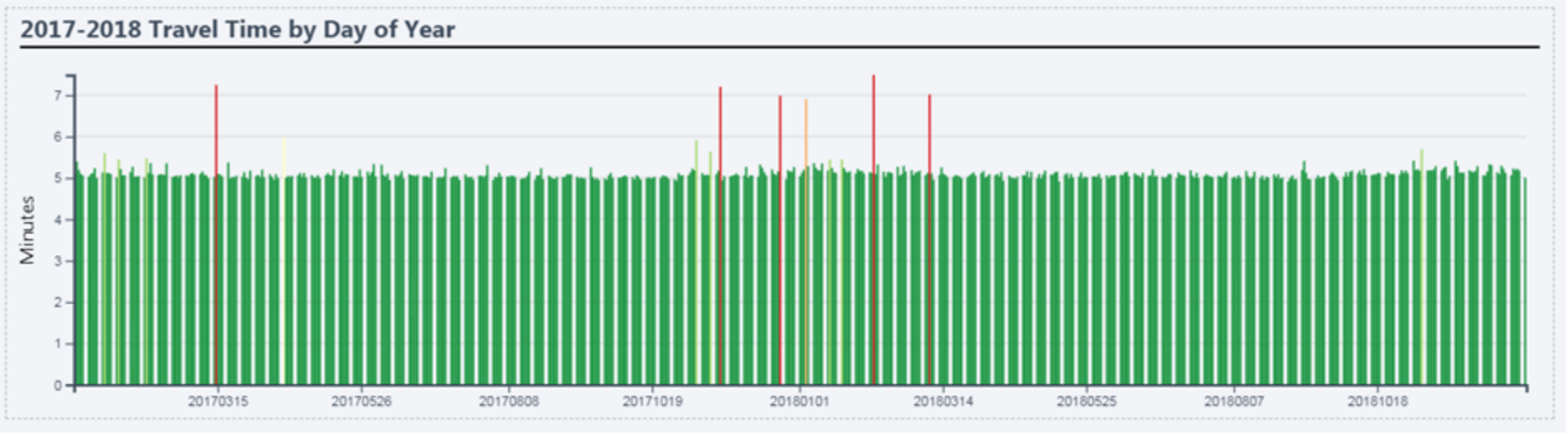
I-890 from Thruway Exit 4 to Thruway Exit 25, Weekday PM Peak Period PTI= 1.57



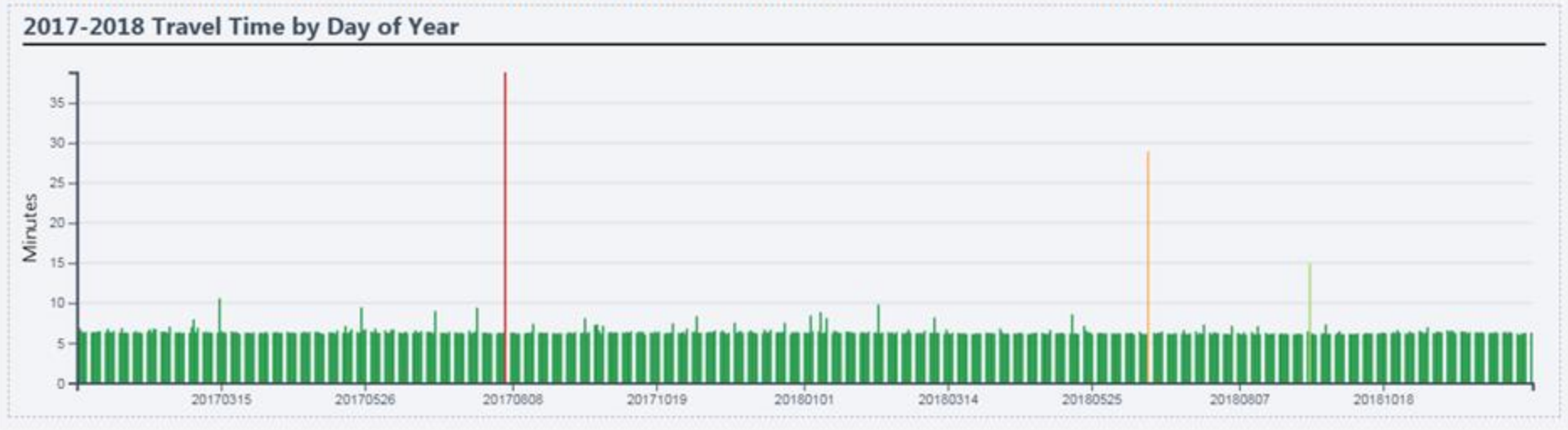
Thruway I-90 from Exit 24 to Exit 25, Weekday PM Peak Period PTI= 2.18



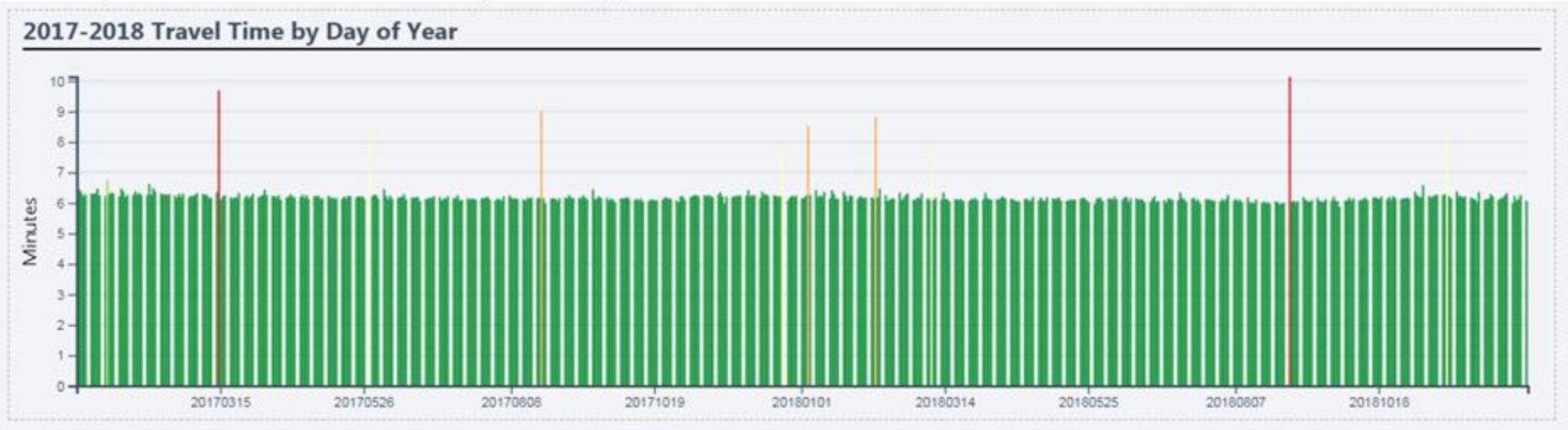
Thruway I-90 from Exit 25 to Exit 24, Weekday PM Peak Period PTI= 1.15



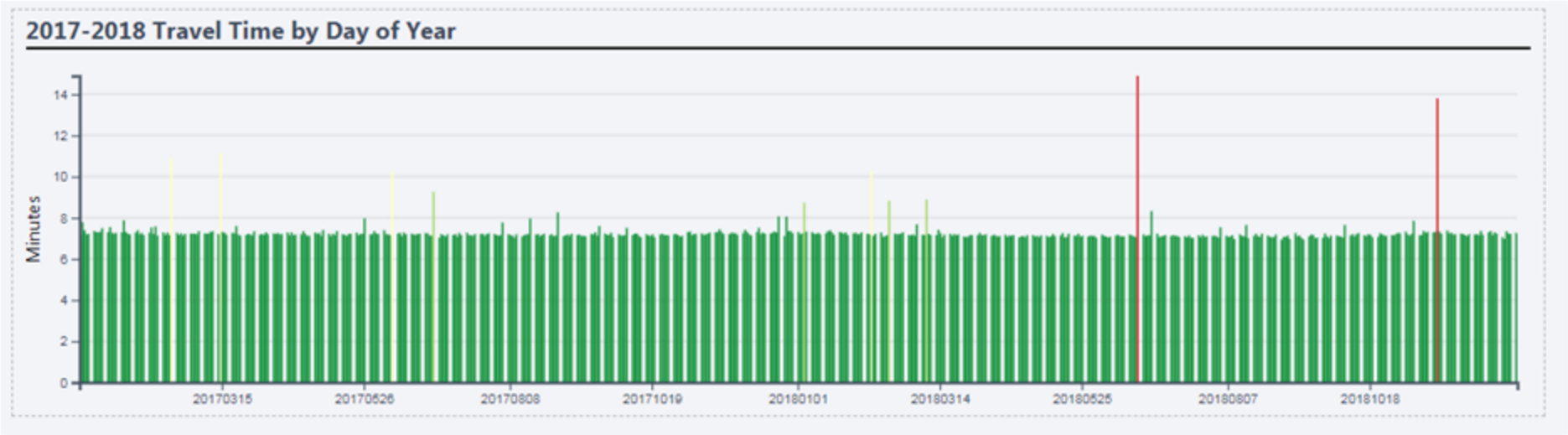
Thruway I-87 from Exit 23 to Exit 24, Weekday PM Peak Period PTI= 1.15



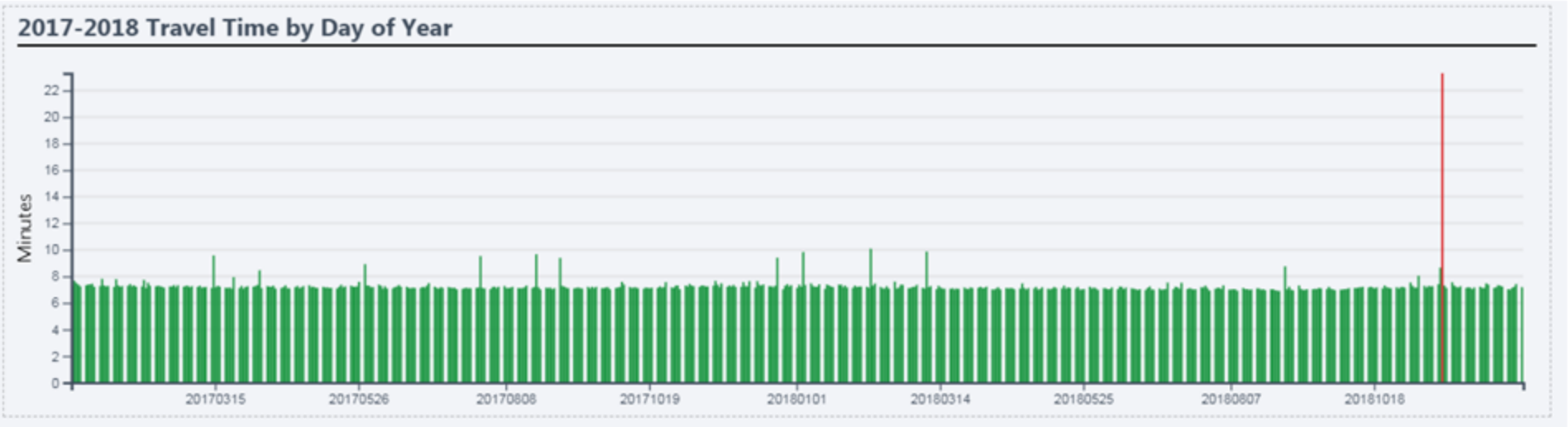
Thruway I-87 from Exit 24 to Exit 23, Weekday PM Peak Period PTI= 1.10



Thruway I-87 from Exit 21A to Exit 23, Weekday PM Peak Period **PTI= 1.11**



Thruway I-87 from Exit 23 to Exit 21A, Weekday PM Peak Period **PTI= 1.14**



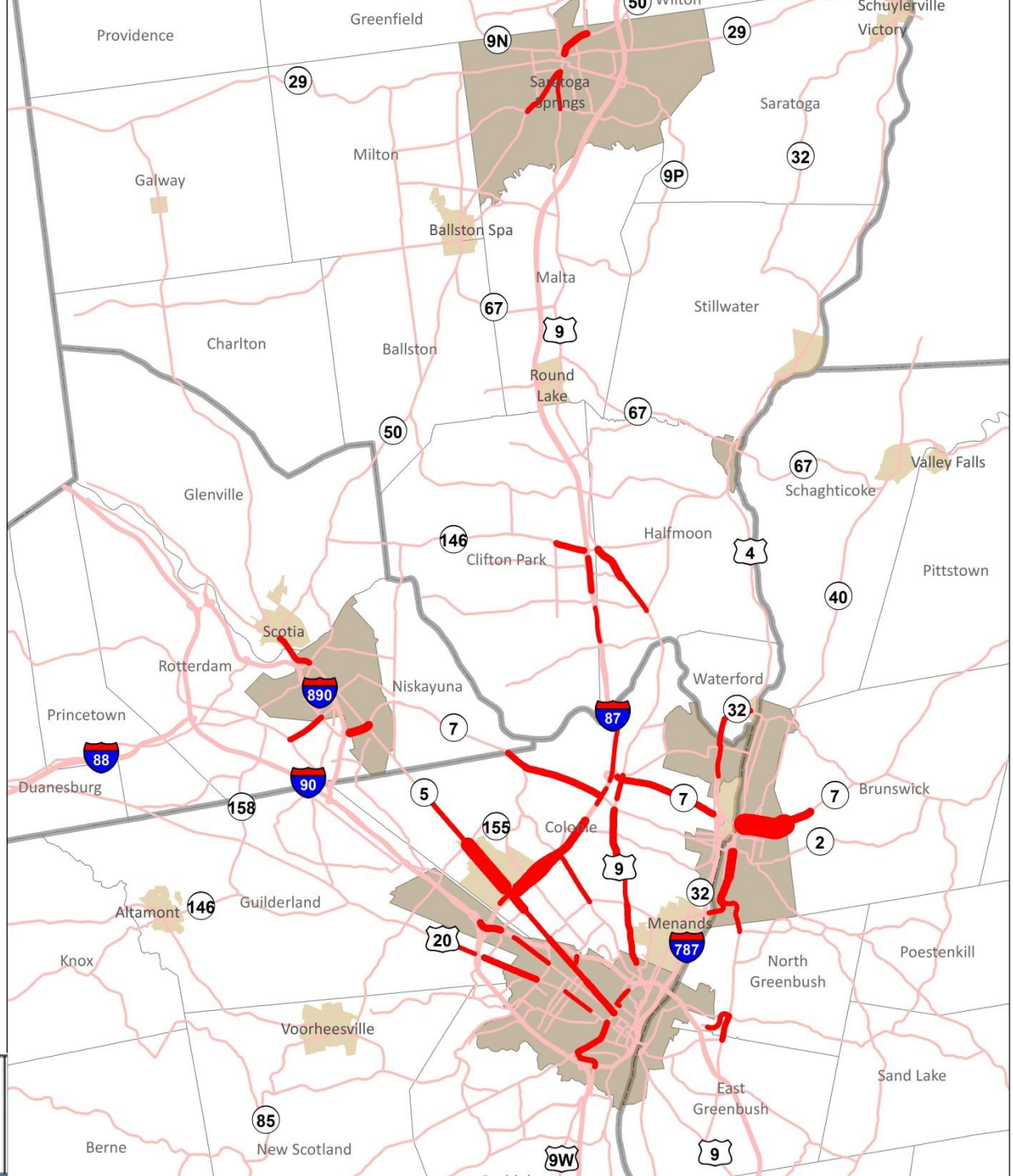
2018 Weekday Average Speed, 95th Percentile Speed, and Planning Time Index

	PM Peak Hour			AM Peak Hour		
Corridor	Average Speed (mph)	95th Percentile Speed (mph)	Planning Time Index	Average Speed (mph)	95th Percentile Speed (mph)	Planning Time Index
Northway, Exits 1-9, Northbound	39.7	20.1	3.24	60.4	54.8	1.20
Northway, Exits 9-1, Southbound	58.1	48.6	1.35	48.1	30.1	2.23
Northway, Exit 9 to Hudson River, Northbound	65.7	58.3	1.21	65.7	59.8	1.18
Northway, Hudson River to Exit 9, Southbound	65.9	60.9	1.15	63.9	59.3	1.34
I-90, I-787 to Northway, Westbound	44.4	22.3	2.80	56.2	48.3	1.30
I-90, Northway to I-787, Eastbound	51.1	31.4	2.03	54.7	45.1	1.41
I-90, Patroon Island Bridge to Exit 12, Eastbound	60.5	51.4	1.29	60.9	53.9	1.23
I-90, Exit 12 to Patroon Island Bridge, Westbound	61.3	52.6	1.28	58.1	44.7	1.50
I-787, Route 7 to Exit 23, Southbound	54.4	42.0	1.51	49.3	32.8	1.94
I-787, Exit 23 to Route 7, Northbound	45.6	26.0	2.43	55.9	49.2	1.27
Route 7, I-787 to Northway, Westbound	26.8	12.8	4.83	54.8	45.9	1.37
Route 7, Northway to I-787, Eastbound	55.3	44.4	1.45	44.6	23.9	2.70
I-890, Thruway Exit 25 to Exit 4, Westbound	53.5	39.8	1.55	52.9	41.7	1.48
I-890, Exit 4 to Thruway Exit 25, Eastbound	52.2	39.3	1.57	53.4	42.6	1.45
I-890, Exit 4 to Thruway Exit 26, Westbound	53.6	41.0	1.49	53.3	42.8	1.43
I-890, Thruway Exit 26 to Exit 4, Eastbound	53.9	41.0	1.49	53.6	43.4	1.41
Thruway, Exit 21A to Exit 23	64.5	61.4	1.11	63.3	60.6	1.12
Thruway, Exit 23 to Exit 21A	63.6	58.7	1.14	64.5	60.6	1.11
Thruway, Exit 23 to Exit 24	62.7	59.0	1.15	65.1	62.0	1.10
Thruway, Exit 24 to Exit 23	64.2	61.1	1.10	63.9	60.0	1.12
Thruway, Exit 24 to Exit 25	48.6	29.7	2.18	61.7	56.5	1.15
Thruway, Exit 25 to Exit 24	62.5	57.7	1.15	50.4	32.1	2.06
Thruway, Exit 25 to Exit 26	62.2	53.9	1.25	62.9	55.2	1.22
Thruway, Exit 26 to Exit 25	63.9	58.2	1.16	62.5	58.4	1.16
Thruway, Exit 21A to Massachusetts State Line	60.4	54.7	1.17	59.9	53.9	1.19
Thruway, Massachusetts State Line Exit 21A	60.5	55.2	1.19	61.7	55.2	1.19
I-88, Thruway to Route 20	55.6	43.6	1.41	55.6	44.2	1.41
I-88, Route 20 to Thruway	58.1	47.6	1.35	59.0	48.7	1.32

Performance Measures: Peak Hour Excessive Delay

- This measure is calculated using the NPMRDS data.
- Excessive delay means the extra amount of time spent in congested conditions defined by speed thresholds that are lower than a normal delay threshold. The speed threshold used by CDTC is 20 miles per hour or 60 percent of the posted speed limit, whichever is greater.
- So for example, if the speed limit on an expressway is 65 mph, the threshold for calculating excess delay would be 39 mph.

Peak Hour Excessive Delay (PHED) - 2018



PHED ≤ 30,000

PHED = 30,001-127,000

Source: NPMRDS accessed via npmrds.availabs.org on 10/30/19

Peak Hour Excessive Delay (PHED):
The extra amount of time spent in congested conditions defined by speed thresholds that are lower than a normal delay threshold. The speed threshold is 20 MPH or 60 % of the posted speed limit, whichever is greater. PHED is calculated in person hours.

Congestion Management Strategies

1. **The Capital Region Transportation Management Center-** incident management
2. **Travel Demand Management:** transit, pedestrian, bicycle modes; carpooling, vanpooling, carshare, bikeshare
3. **Traffic Signal Technology and Intersection Improvements**
4. **Arterial Management and Land Use Planning**
5. **The I-87/US 9 Integrated Corridor Management Plan**

Implementation of the Congestion Management Process: Recommendations

- **Funding for Operations** – CDTC should continue to support funding for operations, including the TMC, traffic signals, ITS innovations, improved project selection process for ITS/signals. At a minimum, funding should continue at existing levels. While existing funding at the federal and state level is often set up for capital projects, funding for operations provides essential improvements to traffic flow and traffic reliability, as well as improvements to transit systems.

- **Major Highway Expansion Should Not Be Considered** – CDTC should continue its strong policy that congestion management is much more cost effective than highway capacity increases or new lanes; and that congestion alone does not justify increasing highway capacity or adding new lanes. Because of other less expensive strategies, and because of changing transportation technologies, major highway expansion (adding through lanes for several miles or more) should not be considered. CDTC policy does not support increasing road capacity by constructing new lanes.

- **Right-size our existing roadways** – Because some of the roads in our region were built years ago based on higher-than-actual forecasted traffic, some of these roads have unused capacity. These roads should be right-sized so that underutilized right-of-way can be used to improve access for other modes of transportation, such as pedestrian, bicycling, and transit.

Implementation of the Congestion Management Process: Recommendations

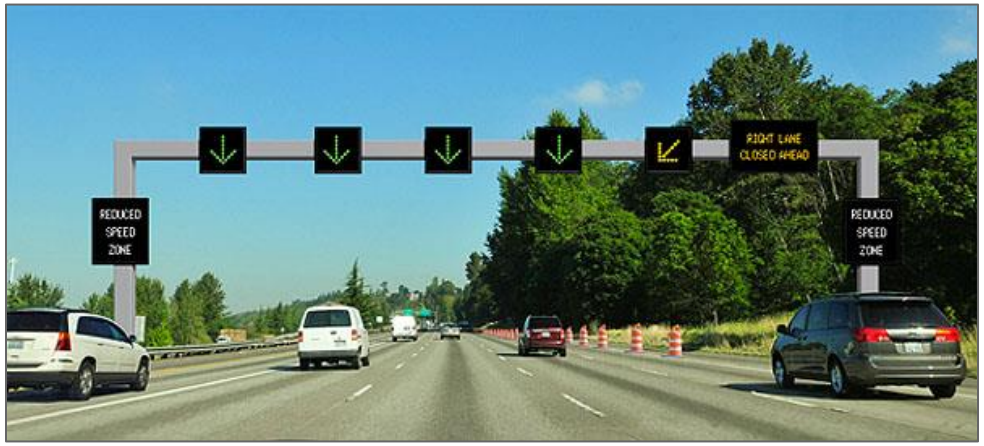
- **Community Traffic Engineering Services Program** – CDTC should explore the option of establishing a community traffic engineering services program. Under this potential program, CDTC would partner with a municipality to hire a traffic engineering consultant to provide intersection signal analysis, traffic counts, or analysis of potential operational improvements or ITS improvements. Municipalities would need to apply for funding for this program.

- **Regional Traffic Signal Timing Program** –CDTC should establish a Regional Traffic Signal Timing Program to conduct a data-driven, performance measure-based screening of regional arterials to determine which would benefit most from timing optimization. The program can also ensure that safe pedestrian crossing intervals are present at all signalized intersections. The program should also proactively monitor signal performance and make timing changes in response to land use changes or shifting travel demand.

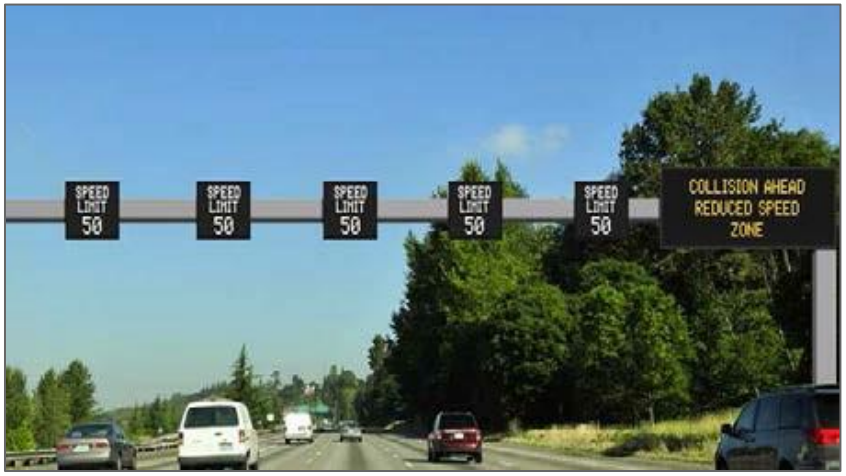
- **Active Traffic Management Strategies** – CDTC should further evaluate active traffic management (ATM) strategies, including speed harmonization and Dynamic Lane Assignment (DLA) for the Northway as national experience increases. Further national experience will help NYSDOT and CDTC determine if ATM strategies are a good fit for the Capital District.

Recommendation: Active Traffic Management Strategies

Dynamic Lane Control:



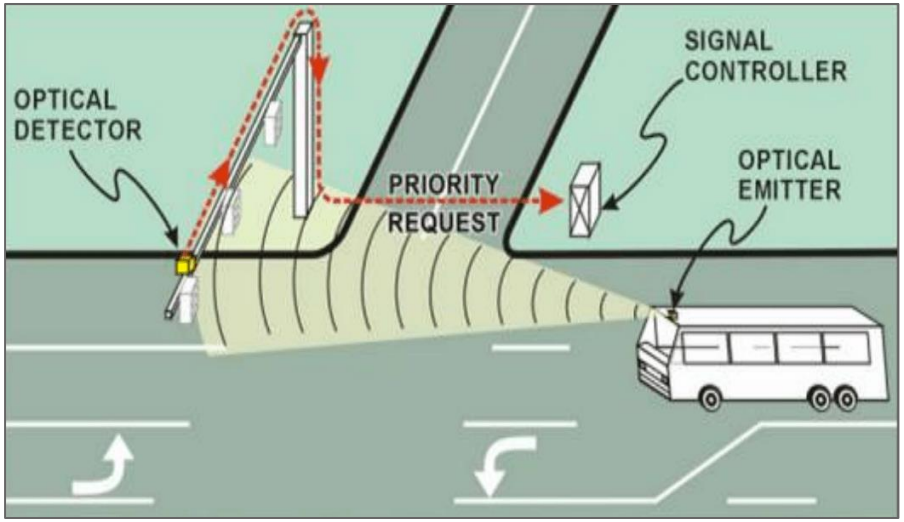
Dynamic Speed Limits:



Recommendation: Active Traffic Management Strategies

Queue warning:

Transit signal priority:



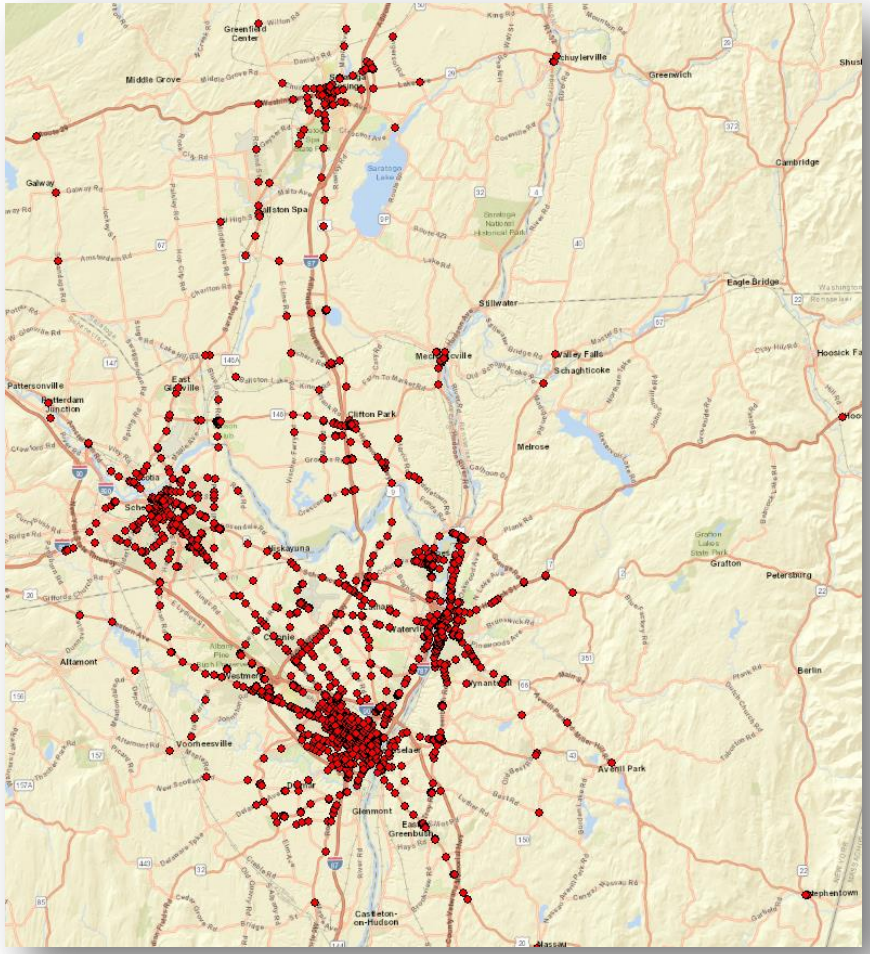
Recommendation: Traffic Incident Management Committee

As discussed at prior ROSAC meetings:

- A Traffic Incident Management Committee should be formed that will meet regularly and assess management of recent incidents and plan for upcoming events.
- Emergency service providers, State Police, NYSDOT staff and others should be included.

Recommendation: Inventory of signalized intersections

- Signals are a crucial component of the transportation system
- Inventory could include:
  - Type of signal
  - Operating agency
  - Type/age of controller
  - Type of timing plan
  - Presence/functionality of vehicle detection
  - Support structure
  - Safety features (head type, backplates)
  - Bike/ped facilities



CDTC recommends:

- Soliciting signal operators for data
- Compiling region-wide geodatabase
- Gap assessment
- Form plan to fill gaps (based on received data)

Implementation of the Congestion Management Process: Recommendations

- **Classification of Signalized Arterials** – CDTC should adopt a data-driven approach to prioritizing corridors for traffic signal upgrades and transit ITS deployment. Signalized arterials should be mapped and classified based on traffic volumes, transit use, access management, signal delay, travel time reliability, safety, and other factors.

- **Automated Traffic Signal Performance Measures Pilot** –Signals with vehicle detection can record and archived high-resolution operations data when the appropriate software is installed on the controller. This data can be used for modeling purposes, signal retiming, and for planning future improvements.

- **Regional Transportation Systems Management Operations (TSMO) Plan** – CDTC will develop a Regional Transportation Systems Management Operations Plan. The TSMO Plan would be developed in accordance with Federal guidance on Advancing Metropolitan Planning for Operations.