

AN INTRODUCTION TO TRANSCOM'S DFE/SPATEL DATA ANALYSIS TOOL

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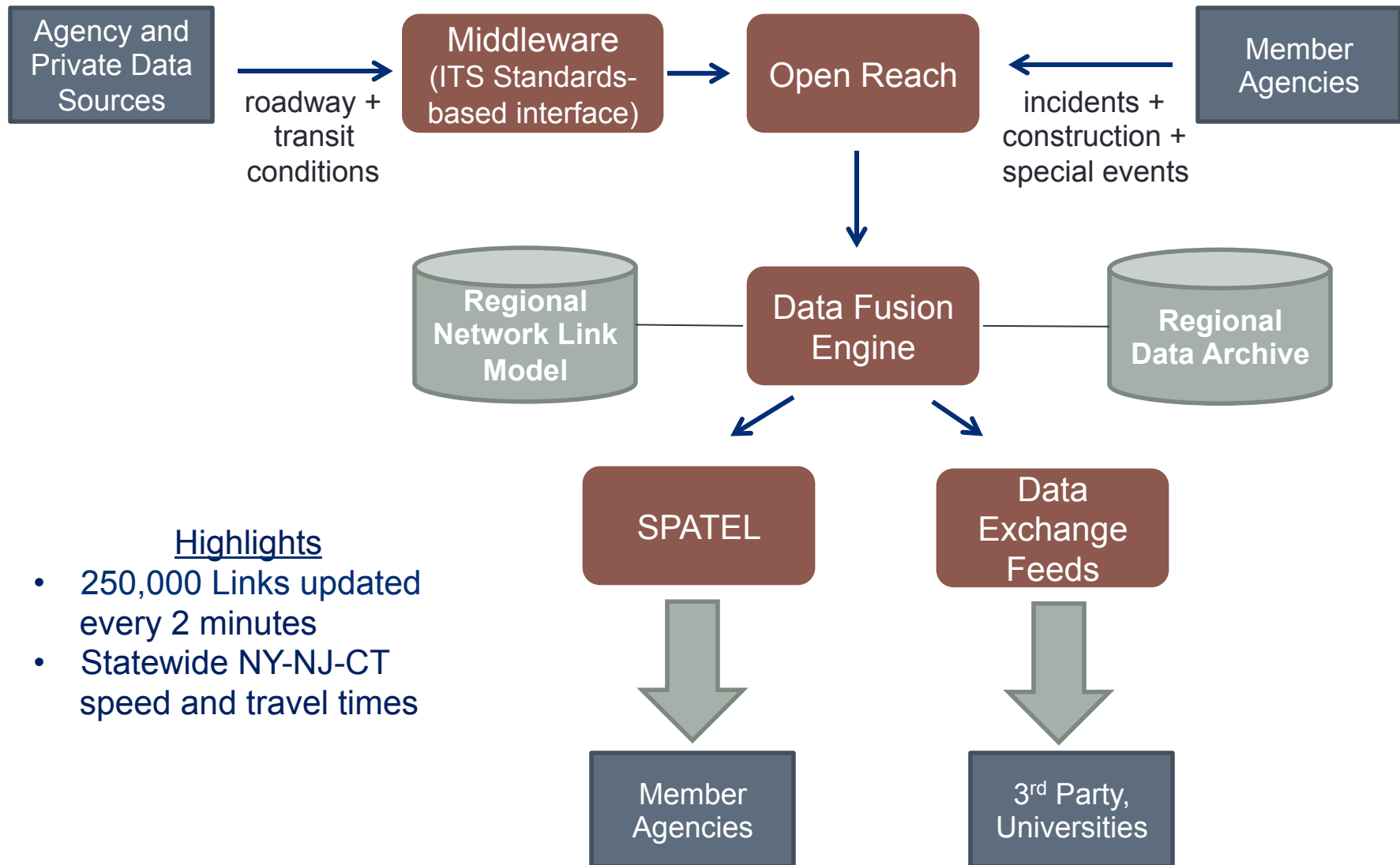


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**UTRC Transportation Technology Symposium:
Innovative Mobility Solutions
November 20, 2015**

TRANSCOM Systems Overview



What is DFE/SPATEL?

- **DFE – Data Fusion Engine**
 - Collects real-time and historical information from agency and private data sources:
 - **Events:** Incidents, Construction, Special Events (Highway and Transit)
 - **Roadway:** travel times, speed, and volume
 - **Transit:** trip times, vehicle location, and stop arrival/departure times
 - References a regional network model (links, nodes) (250,000 links)
 - Generates a normalized aggregated regional view of roadway and transit conditions every 2 minutes.
- **SPATEL – Selected Priorities Applied to Evaluated Links**
 - Web-based data analysis tool built around the DFE to support ongoing operational needs of member agencies
 - Historical data archive
 - Performance Measures for Planning and Federal Reporting

User Benefits

- **Policy and Decision Makers.** Numerical data analysis of transportation performance measures to justify funding for transportation improvements.
- **Agency Executives.** Performance measures, map, and dashboard views of real time and historical regional transportation network conditions.
- **Operations Staff.** Map and dashboard views of real-time regional transportation network conditions
- **Operations Planning.** Performance measures and playback of events to review how well they were handled
- **Traveler Information.** Real time information that supports SAFETEA-LU Section 1201 requirements
- **Planning Staff.** View historical data, speed, and travel time data, for use in the planning process
- **Developers.** Data feeds available for member agency and university research staff and developers

SPATEL Tools: Operations & Analysis

Operations Tools

- Operational Map
- Regional Conditions Viewer
- CCTV / Video Wall Viewer
- Operations Dashboard
- Corridor View
- Project Viewer
- Zone Viewer
- Event Playback
- Regional Transit

Analytical Tools

- Historical Travel Time Analysis Tool
- Travel Time Comparison
- Data Source Comparison
- Historical Event Search
- Performance Measures

Operational Map: Roadways



MAP LEGEND

Speed Layers

- ☐ Percentage Based
- ☐ Speed Based
- ☐ Navteq Layer
- ☐ Inrix Layer
- ☐ BlueToad Layer
- ☐ Location
- ☐ XMIT Layer
- ☐ Location
- ☒ Live Traffic Layer
- ☐ Enable Offset

State

- ☒ NJ ☒ NY ☒ CT
- ☒ DE ☒ PA

Function Class

- ☐ Automatic ☐ Manual
- ☐ Pucks Layer
- ☐ Location

Highway Events

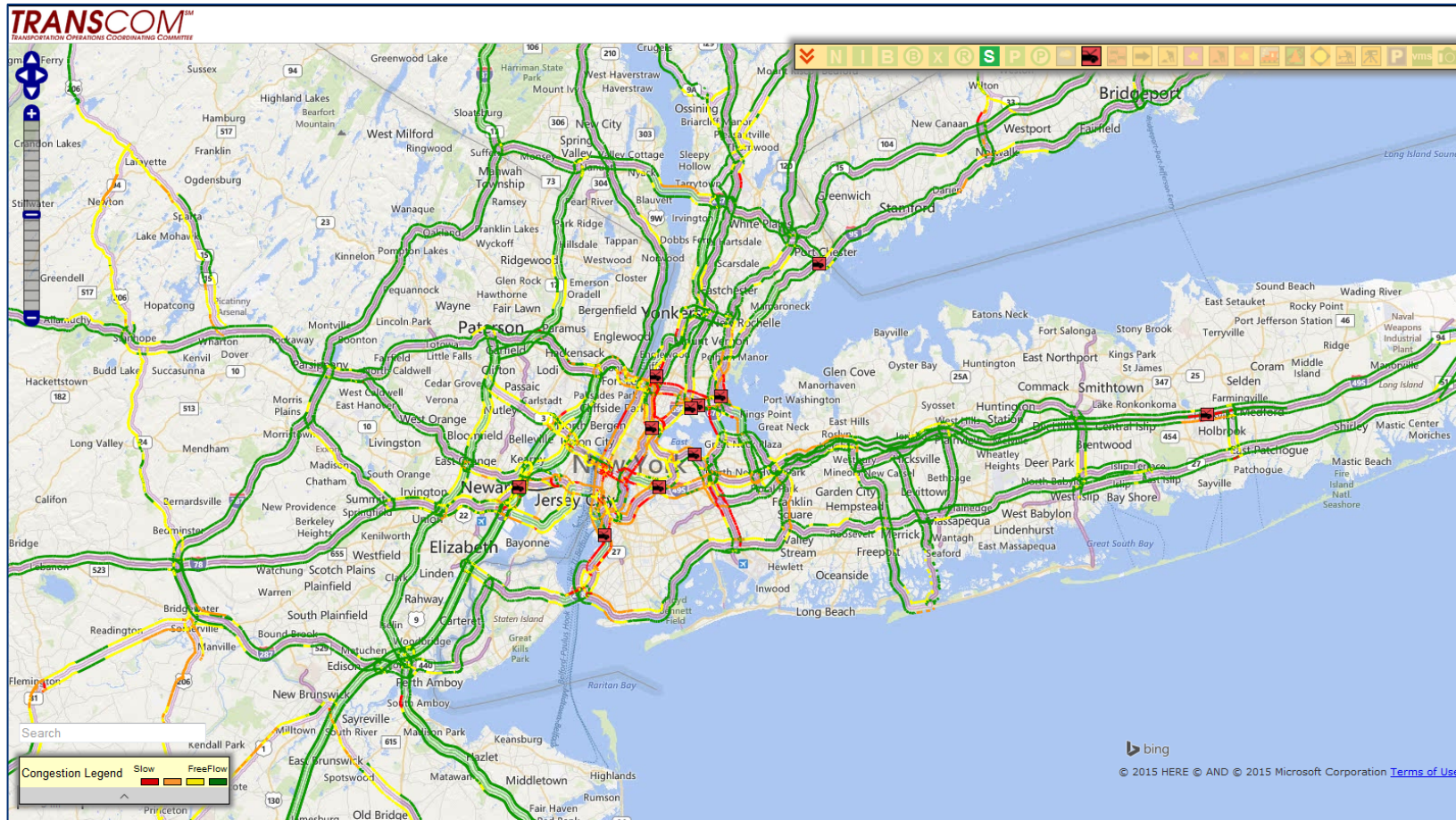
- ☒ Weather
- ☒ Incident
- ☒ Congestion
- ☒ Detour
- ☐ Construction
- ☐ Special Event
- ☐ Scheduled Construction
- ☐ Scheduled Special Event

Transit Events

- ☒ Transit Incident
- ☐ Transit Construction
- ☐ Transit Special Event
- ☐ Transit Scheduled
- ☐ Construction
- ☐ Transit Scheduled Special Event

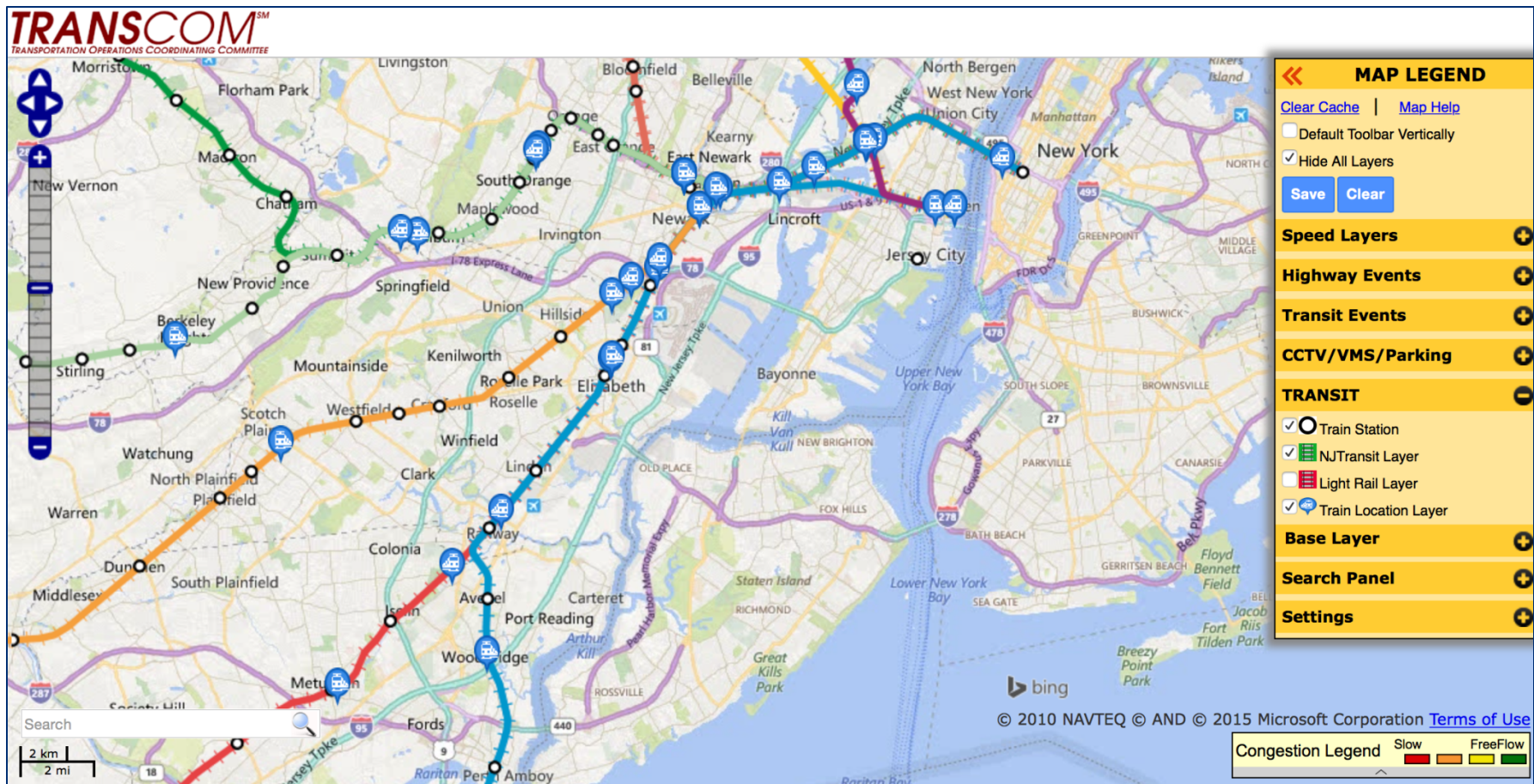
CCTV/VMS/Parking

- ☐ Airport Parking
- ☐ VMS Layer
- ☐ Camera



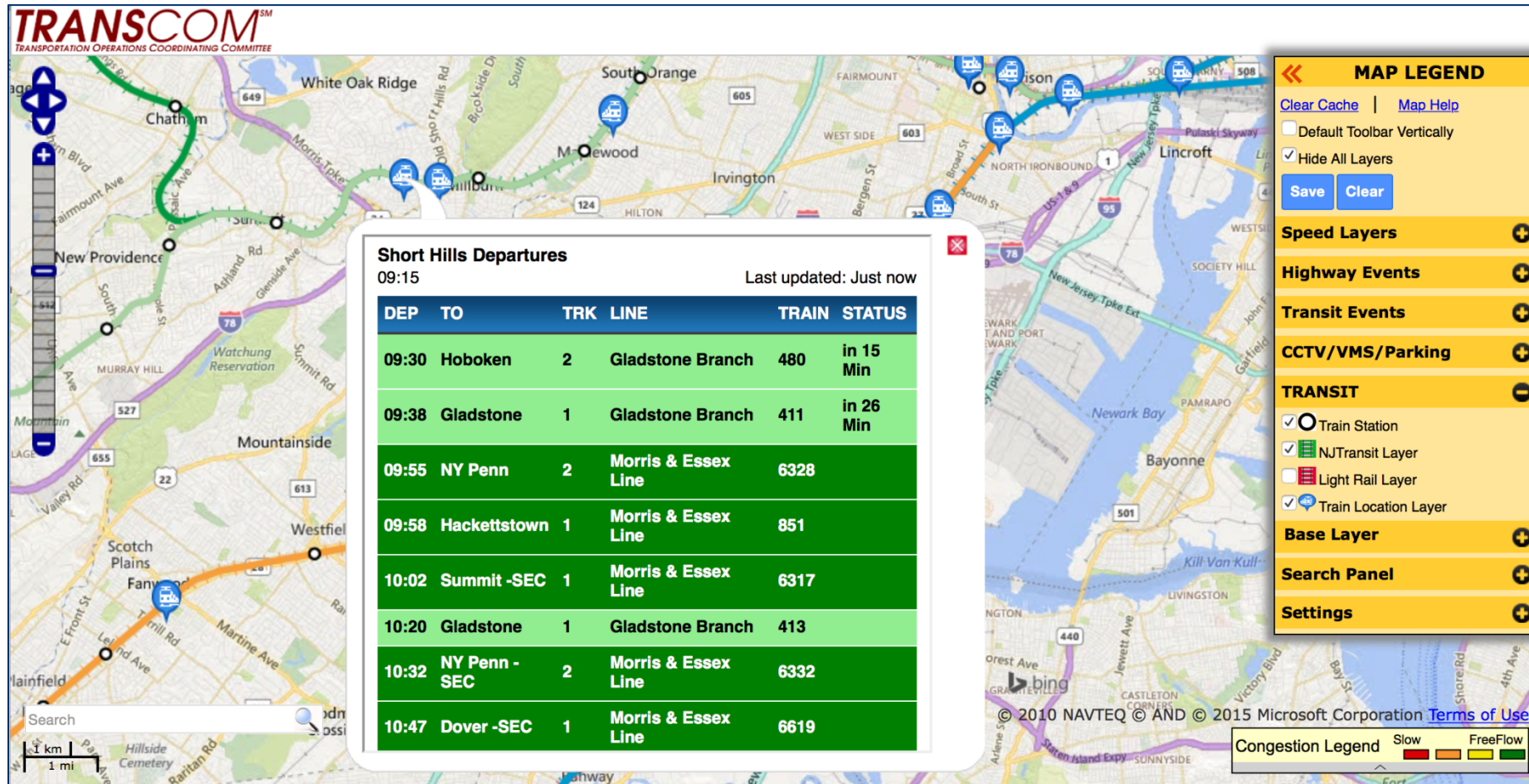
Real time Roadway Conditions

Operational Map: Transit Vehicle Location



Real time Transit Conditions: Rail and Train Locations

Operational Map: Transit Station Arrival/Departure Status



Real time Transit Conditions: Train Schedule Status

Operational Dashboard



To view changes click search

Speed Legend ■ Red (0-20 mph) ■ Orange (20-35 mph) ■ Yellow (35-50 mph) ■ Green (> 50 mph)

To view changes click search

Trip Type		Trip		Order By									
XMIT LINK		Select Trip		Incident Delay (mm:ss)		DESC		Search		Set Columns			
User Action	Trip Description	Last Update	Realtime (%)	Trip Length (miles)	Calculated TT (mm:ss)	Historical TT (mm:ss)	Incident Delay (mm:ss)	Minimum TT (mm:ss)	Calculated Speed (mph)	Historical Speed (mph)			
	BQE N Atlantic Avenue-Leonard Street	06/05/2015 14:16:00	100	4.22	33:00	11:16	21:44	5:37	8	22			
	Port Newark Corbin St N - Port St W	06/05/2015 14:16:00	100	1.29	23:33	4:02	19:31	2:12	3	19			
	VWE N Monorail Overpass - mp 4.6 (Exit 6 - Jamaica Ave)	06/05/2015 14:16:00	100	2.91	28:08	12:23	15:45	3:30	6	14			
	HRD S 151st St - FDR S 116th St	06/05/2015 14:16:00	100	2.43	21:21	5:52	15:29	3:21	7	25			
	BBT Manhattan Portal Inbound - 11th Ave N Ganesvoort St	06/05/2015 14:16:00	100	2.4	23:59	9:42	14:17	4:14	6	15			
	11th Ave N Ganesvoort St - 12th Ave N 40th St	06/05/2015 14:16:00	100	1.57	25:25	12:06	13:19	2:41	4	8			
	FDR N 25th - 63rd St	06/05/2015 14:16:00	100	1.93	18:40	6:00	12:40	2:54	6	19			
	HRD S 151st St - RFK E Manhattan Side	06/05/2015 14:16:00	100	2.2	17:15	5:16	11:59	3:21	8	25			
	SIE W Clove Road-Bradley Avenue	06/05/2015 14:16:00	100	1.84	16:08	4:22	11:46	2:27	7	25			
	Belt Pkwy W JFK Expressway - VWE N Jamaica Ave	06/05/2015 14:16:00	100	3.4	22:32	11:23	11:09	5:12	9	19			

Display: 10

Page: 1

Last 1 Hour		Trip Type		Order By									
All		XMIT LINK		Incident Delay (mm:ss)		DESC		Search		Set Columns			
User Action	Trip Description	Last Update	Trip Length (miles)	Calculated TT (mm:ss)	Incident Delay (mm:ss)	Minimum TT (mm:ss)	Calculated Speed (mph)	Historical Speed (mph)					
	Port Newark Corbin St N - Port St W	06/05/2015 13:24:00	1.29	41:24	37:21	2:12	2	19					
	SIE W South Avenue - I-278 W Brunswick Avenue	06/05/2015 13:28:00	2.84	36:36	32:31	3:47	5	42					
	Port Newark McLester St N - Corbin St N	06/05/2015 13:50:00	1.93	37:21	31:33	4:47	3	20					
	BQE N Atlantic Avenue-Leonard Street	06/05/2015 13:58:00	4.22	37:02	25:58	5:37	7	23					
	Port Newark Corbin St N - Port Distribution St E	06/05/2015 13:40:00	1	28:14	24:46	1:51	2	17					
	SIE W South Ave - Forest Ave	06/05/2015 13:44:00	0.68	20:20	19:29	0:49	2	48					
	LIE W Shelter Rock Rd - Little Neck Pkwy	06/05/2015 14:12:00	3.6	23:08	18:46	3:56	9	49					
	VWE N Monorail Overpass - mp 4.6 (Exit 6 - Jamaica Ave)	06/05/2015 13:38:00	2.91	28:08	17:44	3:30	6	17					
	BQE N Leonard St - LIE E 84th St	06/05/2015 13:38:00	4.51	29:04	15:47	1:29	9	20					
	BBT Manhattan Portal Inbound - 11th Ave N Ganesvoort St	06/05/2015 14:04:00	2.4	25:18	15:35	4:14	6	15					

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The following subsidiary tools can be accessed from within the Operations Dashboard:



Cameras. The user can view images from all of the CCTV cameras that are located along the selected trip.



Events. The user can view any events occurring along the length of the selected trip.



Map. The user can view the selected trip on a map.

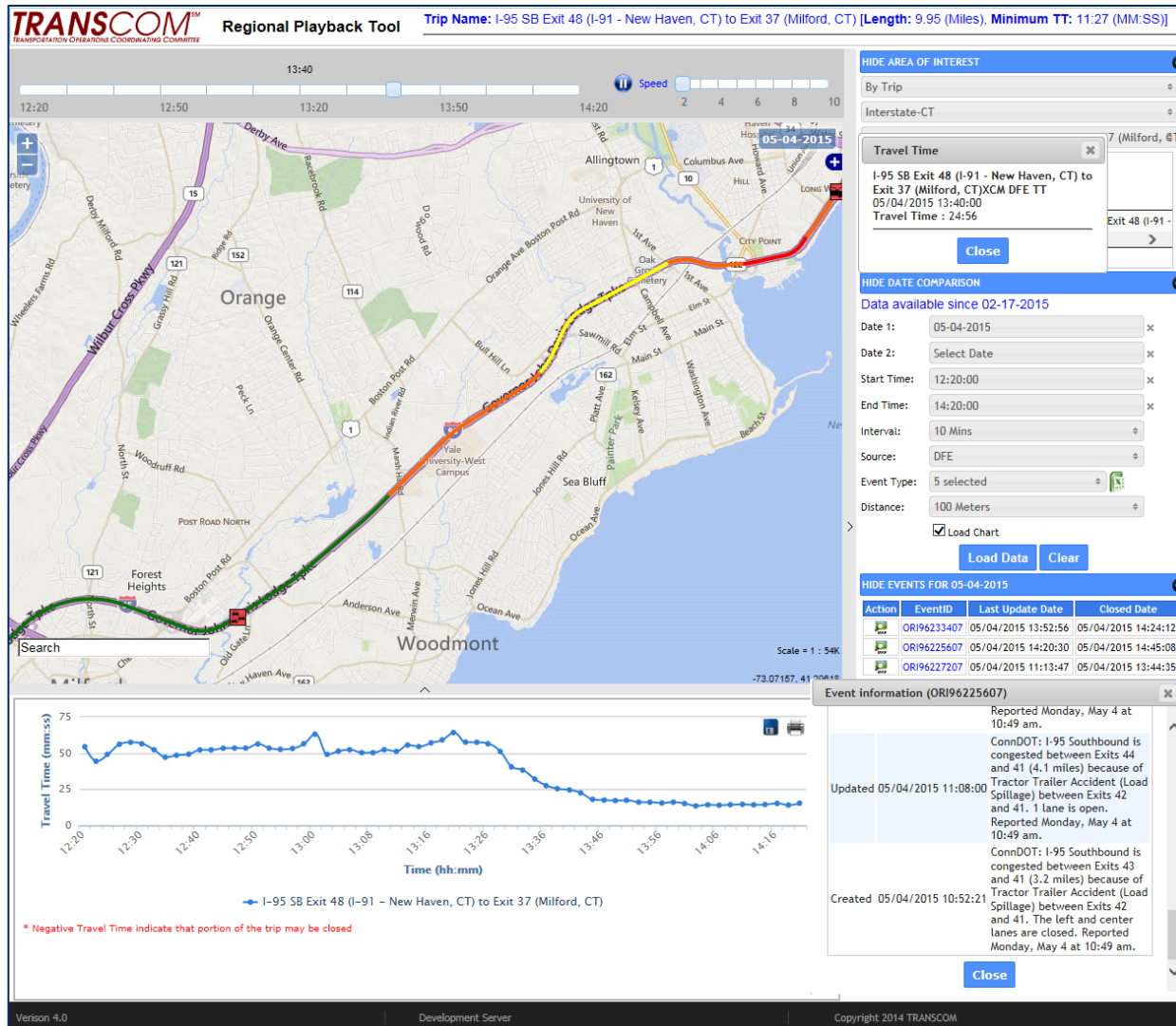


Travel Time Graph. The user can graphically view the travel time along the trip.



Last Hour Playback. The user can view the last hour along the trip in the Event Playback tool.

Regional Event Playback



Playback of Event Information and Travel Time Impact
Supports same period on different dates

Historical Travel Time Analysis



Planning Dashboard **Data Comparison** Quick Data Search Historical Event Search

Search Panel: Trip Type Trip Type: Interstate-NJ Trip*: 1 Trips Selected (Max. 15 trips allowed)

Average Time: 15 Calculation Method: Average Time: From 6:00 AM To 9:00 AM

Base Time

Year: 2014 Data Source: Month

Month*: JAN FEB MAR APR MAY JUN
JUL AUG SEP OCT NOV DEC

Days*: MON TUE WED THU FRI WEEKDAYS
SAT SUN WEEKEND

Comparison Time

Year: 2015 Data Source: Month

Month*: JAN FEB MAR APR MAY JUN
JUL AUG SEP OCT NOV DEC

Days*: MON TUE WED THU FRI WEEKDAYS
SAT SUN WEEKEND

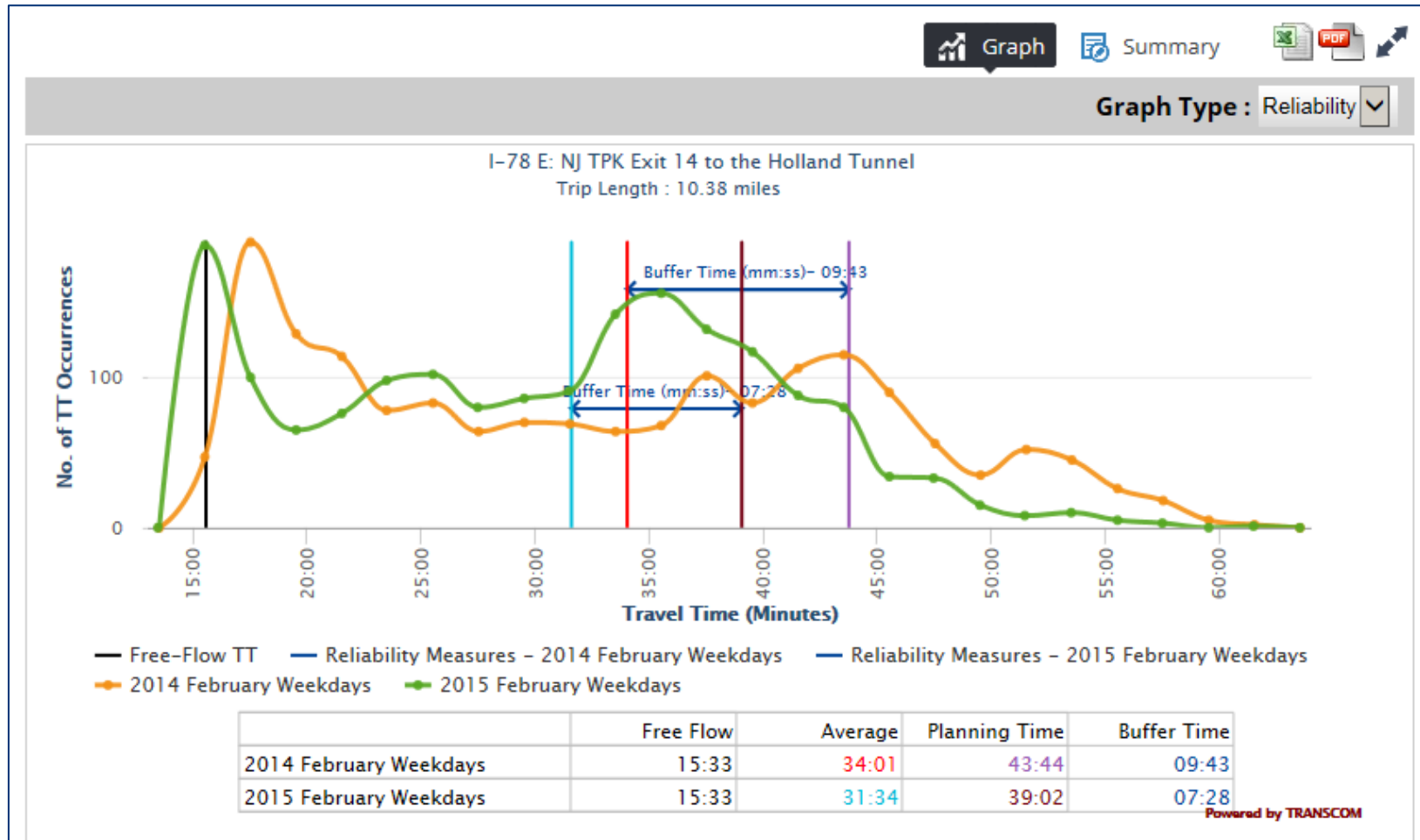
I-78 E: NJ TPK Exit 14 to the Holland Tunnel

Trip Description ^	Trip Length (miles)	Free Flow TT (mm:ss)	2014 February Weekdays						TT Index	Sample Size	Historical TT (mm:ss)	Planning TT (mm:ss)
			Historical TT (mm:ss)	Planning Time (mm:ss)	Planning Time Index	Buffer Time (mm:ss)	Buffer Time Index (%)					
I-78 E: NJ TPK Exit 14 to the Holland Tunnel	10.38	15:33	34:01	43:44	2.81	09:43	28.54	2.19	1,710	31:34	39:00	

Trip Location

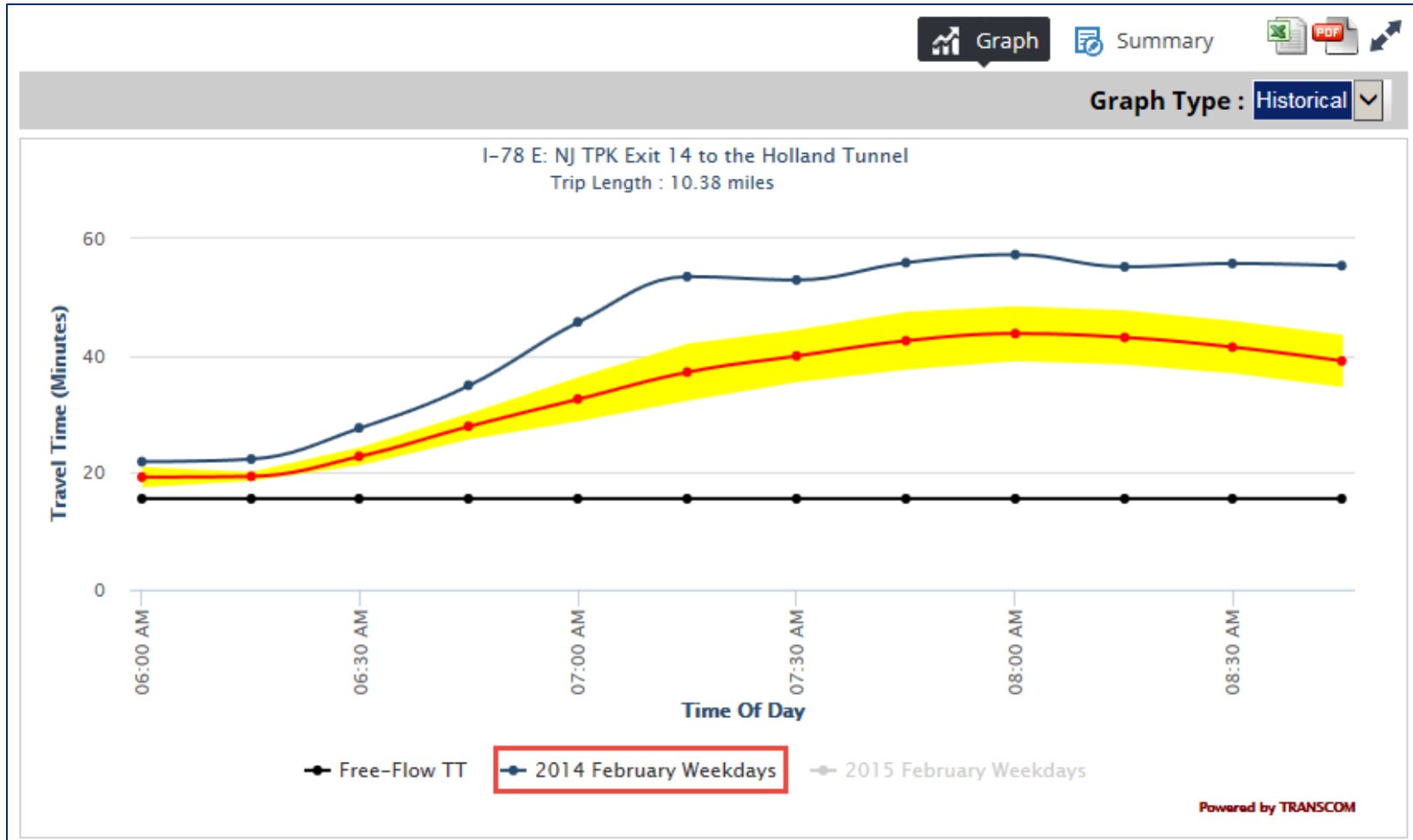
Historical Travel Time Analysis Data Entry

Historical Travel Time Analysis



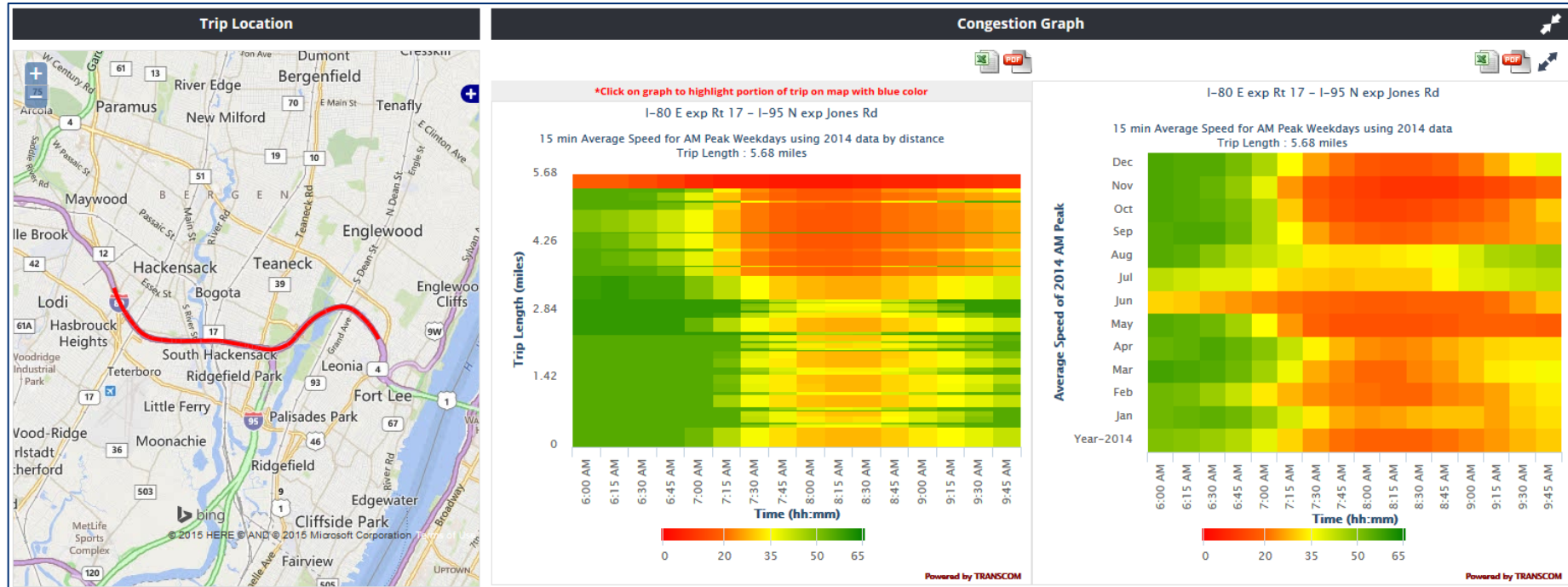
Comparison of Travel Times and Travel Time Reliability

Historical Travel Time Analysis



View of Historical (2014) Travel Time Detail

Historical Travel Time Analysis



Trip Map and Comparison of Congestion Heat Map

Historical Travel Time Analysis



Planning Dashboard
Data Comparison
Quick Data Search
Historical Event Search

Search Panel: Trip Type
Trip Type: Interstate-NJ
Trip*: 1 Trips Selected (Max. 15 trips allowed)

Average Time: 15
Calculation Method: Average
Time: From 6:00 AM To 9:00 AM

Base Time

Year: 2014
Data Source: Month

Month*: JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Days*: MON TUE WED THU FRI WEEKDAYS SAT SUN WEEKEND

Comparison Time

Year: 2015
Data Source: Month

Month*: JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Days*: MON TUE WED THU FRI WEEKDAYS SAT SUN WEEKEND

SUBMIT

I-78 E: NJ TPK Exit 14 to the Holland Tunnel

Trip Description ^	Trip Length (miles)	Free Flow TT (mm:ss)	2014 February Weekdays							2015 February Weekdays						
			Historical TT (mm:ss)	Planning Time (mm:ss)	Planning Time Index	Buffer Time (mm:ss)	Buffer Time Index (%)	TT Index	Sample Size	Historical TT (mm:ss)	Planning Time (mm:ss)	Planning Time Index	Buffer Time (mm:ss)	Buffer Time Index (%)	TT Index	Sample Size
I-78 E: NJ TPK Exit 14 to the Holland Tunnel	10.38	15:33	34:01	43:44	2.81	09:43	28.54	2.19	1,710	31:34	39:02	2.51	07:28	23.66	2.03	1,710

Historical Travel Time Analysis Data Entry

Performance Measures: Delay and Cost Analysis

TRANSCOM

DELAY AND COST ANALYSIS

Welcome admin

Advanced Search

Search By: Route

Route*: I-78

Direction: 1 Selected

CMS: ALL

Mile Marker: From 51.76 To 67.83

+

Time: AM Peak PM Peak Other

From 6:00 AM To 9:00 AM

Base Time

Year: 2015

Data Source: Month

Month*: JAN FEB MAR APR MAY JUN

JUL AUG SEP OCT

Days*: MON TUE WED THU FRI WEEKDAYS

SAT SUN WEEKEND

Note: Fields marked with asterisk (*) are mandatory

SUBMIT

Comparison Time

Data Entry

TRANSCOM

DELAY AND COST ANALYSIS

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Welcome admin

🔌

Advanced Search

I-78 EB MP 51.760 To MP 67.830

📄

RAW

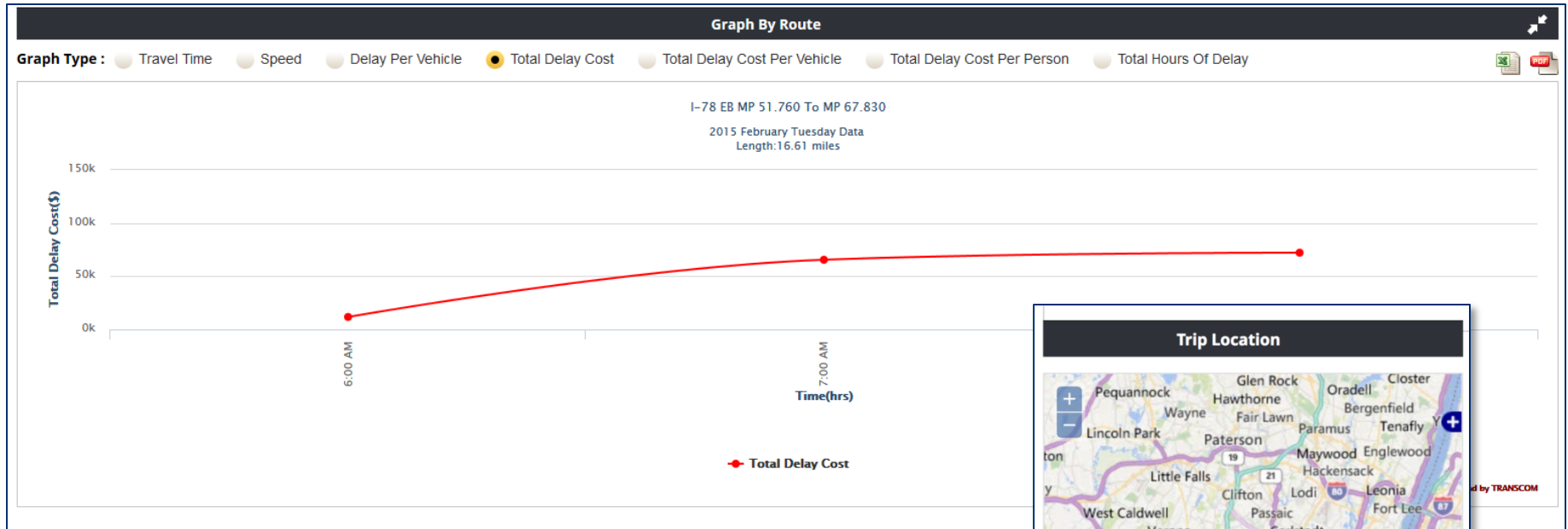
📄

PDF

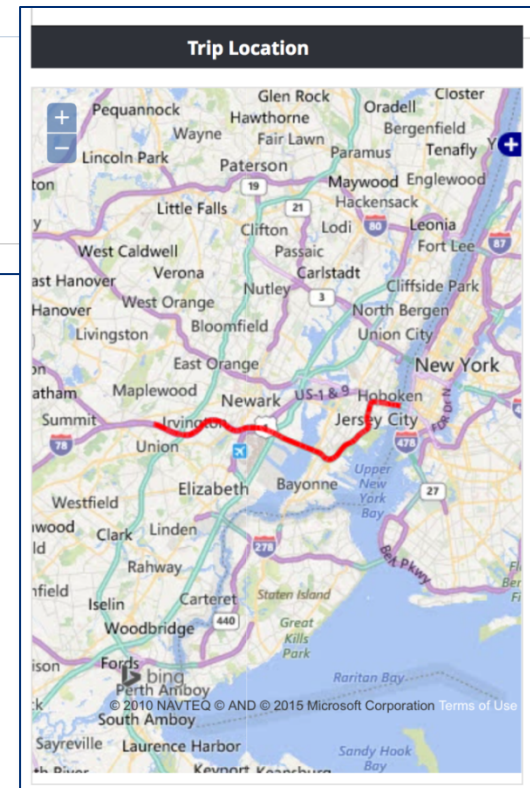
	Duration	Length (miles)	RI ⁸⁰	Hours Of Delay (hrs)						Delay Per Person (hrs)	Delay Cost			Per Vehicle Delay Cost			Per Person Delay Cost		
				Passng. Vehicle	Passng. Person	Freight Vehicle	Freight Person	Total Vehicle	Total Person		Passng.	Freight	Total Cost	Passng.	Freight	Total Cost	Passng.	Freight	Total Cost
				I-78 EB MP 51.760 To MP 67.830															
📅	2015 February Tuesday Data	16.61	2.86	4814.12	5776.95	604.65	604.65	5418.77	6381.60	1.41	\$96994.91	\$52489.35	\$149484.26	\$28.48	\$122.70	\$39.05	\$23.73	\$122.70	\$33.17

Results

Performance Measures: Delay Cost Graph



Delay Cost



Thank You

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