



MEMORANDUM

TO: Transportation Planning Board
FROM: Wenjing Pu, TPB Transportation Engineer
SUBJECT: Traffic Conditions During SafeTrack Safety Surges 1, 2, 3 and 4
DATE: July 19, 2016

This memorandum provides an overview of the traffic conditions during SafeTrack Safety Surges 1, 2, 3 and 4 from a regional perspective and identifies the most-impacted time periods and road segments.

SAFETRACK SAFETY SURGES 1, 2, 3 AND 4

SafeTrack is an accelerated track work plan of the Washington Metropolitan Area Transit Authority (WMATA) to address safety recommendations and rehabilitate the Metrorail system to improve safety and reliability. SafeTrack accelerates three years' worth of work into approximately one year. The plan significantly expands maintenance time on weeknights, weekends, and midday hours, and includes 15 "Safety Surges" – long-duration track outages for major projects in key parts of the system.¹

The schedule and impacted Metro lines, stations, and ridership of Safety Surges 1, 2, 3 and 4 were provided by WMATA and summarized in Table 1.

Table 1. Schedule and Estimated Ridership Impact of Safety Surges 1, 2, 3 and 4

Surge	Dates	Metro Lines	Work Zone	Number of Impacted Peak Trips per Day	Impacted Trips as a Percentage of Average Weekday Trips*
1	6/4 – 6/16	Orange, Silver	Single tracking between East Falls Church and Ballston	255,000	36%
2	6/18 – 7/3	Orange, Silver, Blue	Shutdown between Eastern Market and Minnesota Ave. / Benning Road	293,000	41%
3	7/5 – 7/11	Yellow, Blue	Shutdown between DCA and Braddock Road	204,000	29%
4	7/12- 7/18	Yellow, Blue	Shutdown between DCA and Pentagon City	204,000	29%

* According WMATA, the number of average weekday trips of Metrorail in 2015 was 713,000.

¹ WMATA, SafeTrack: <http://www.wmata.com/rail/safetrack.cfm>

METHODOLOGY

This memorandum uses roadway travel time and speed data reported by INRIX, Inc. for the I-95 Corridor Coalition Vehicle Probe Project to analyze traffic conditions in the TPB Planning Area. This data source monitors about 5,500 directional miles of roads in the region, including 720 miles of freeways and 4,780 miles of arterials.

In general, this analysis compares the average traffic conditions during the weekdays of each safety surge to conditions observed during the same time period last year. For example, Safety Surge 1 started on the first Sunday after the Memorial Day and lasted 13 days, so the same 13 days after the Memorial Day in 2015, May 30 – June 11, 2015 are used as the benchmark to compare to. Safety Surge 3 started 8:00 PM on July 5, so July 6, the first Wednesday after the Independence Day is considered the start date when investigating traffic changes. In this Safety Surge, July 6-11, 2016 is compared to July 8-13, 2015; July 8, 2015 was the first Wednesday after the Independence Day in 2015. In all cases, weekends are excluded for analysis.

SUMMARY FINDINGS

Table 2. Summary of Congestion Increases in Safety Surges 1, 2, 3 and 4

Surge	Time Periods with 3% or More Congestion Increases			Highest Congestion Increase			
	Time Periods	Number of Hours	Average Increase	Morning		Afternoon	
				Hour	Increase	Hour	Increase
1	6:00-10:00 A.M. 2:00-8:00 P.M.	10	8%	7:00-8:00 A.M.	10%	4:00-5:00 P.M.	15%
2	7:00-10:00 A.M. 1:00-5:00 P.M.	7	5%	8:00-9:00 A.M.	5%	3:00-4:00 P.M.	7%
3	6:00-8:00 A.M.	2	4%	7:00-8:00 A.M.	5%	3:00-4:00 P.M.	2.98%
4	7:00-10:00 A.M. 4:00-8:00 P.M.	7	5%	8:00-9:00 A.M.	6%	6:00-7:00 P.M.	7%

1. Weekday peak period traffic congestion generally increased during the first four SafeTrack safety surges compared to the same time period last year (Table 2).
 - a. Safety Surge 1 had the most significant congestion increases among all four safety surges. Peak spreading and intensifying were observed in both AM and PM peaks. Average freeway congestion, indicated by the Travel Time Index (the ratio of actual travel time to free-flow travel time), was 10% and 15% higher in the 7:00-8:00 A.M. hour and the 4:00-5:00 P.M. hour than for the same period last year (Figure 1 and Figure 5).
 - b. During Safety Surge 2, the AM peak period saw a 5% increase in congestion while no notable change was seen during the typical PM peak. There was, however, a 7% increase in congestion during the early afternoon hours between 2:00-4:00 P.M. (Figure 2).
 - c. Safety Surge 3 had the least congestion increase of all four safety surges. There was only a 3-5% increase between 6:00-8:00 A.M.; for 5:00 P.M. and later, congestion was actually lower than for the same period last year (Figure 3).

- d. During Safety Surge 4, the AM peak saw a 6% increase in congestion between 7:00-9:00 A.M., and a 5-7% increase between 5:00-8:00 P.M. (Figure 4).
 - e. The magnitude of change of congestion on the region's non-freeway arterials (not shown in the figures) was significantly less than the magnitude of change experienced on freeways.
 - f. A seasonal decrease of traffic congestion was observed from Safety Surge 1 through Safety Surge 4, as was observed during the same time period last year as summer began and schools closed for summer break. This may have helped to partially offset traffic increases that may have been introduced by Safety Surges 2 through 4.
2. Road segments with the most significant congestion increases were often found in the vicinity of SafeTrack work zones, especially during the AM peak hour.
- a. In the AM peak hour (8:00-9:00 A.M.):
 - i. During Safety Surge 1, the greatest increases in congestion occurred in the triangle formed by I-66 EB inside the Beltway, the George Washington Memorial Parkway, I-495 and VA-267 (Figure 6).
 - ii. During Safety Surge 2, the largest congestion increases were observed along inbound routes towards DC along I-295 NB, the Baltimore-Washington Parkway and DC-295 SB, US-50 WB, and East Capitol St. N.E. WB (Figure 8).
 - iii. During Safety Surge 3, congestion increase along I-395 NB and US-1 NB in northern Virginia were noticeable (Figure 10).
 - iv. During Safety Surge 4, I-395 NB, US-1 NB, and George Washington Memorial Parkway NB saw over 100% increases in travel times (Figure 12).
 - b. In the PM peak hour (5:00-6:00 P.M.), congestion increases seemed to be away from SafeTrack work zones during Safety Surges 1-3. During Safety Surge 4, increases around the work zone such as US-1 SB, George Washington Memorial Parkway SB, I-395 SB and the nearby Beltway were notable. During all four Safety Surges, congestion increases tended to concentrate in DC in the PM peak hour (Figure 7, Figure 9, Figure 11 and Figure 13).

CAVEATS

Observed changes in levels of traffic congestion could reflect a variety of factors beyond SafeTrack impacts, such as year-to-year variations, random demand changes, incidents and adverse weather conditions; the analysis did not exclude possible impacts of such factors. Nonetheless, the analysis did find relatively large magnitude regional overall congestion increases on freeways in Surge 1 and localized congestion increases in the vicinity of SafeTrack work zones in the AM peak in all surges, an indication of likely SafeTrack impacts in those cases.

The choice of using the same time period in 2015 as the benchmark to gauge traffic condition changes in SafeTrack (or any other potential benchmark comparison period) is imperfect. Year-to-year and day-to-day traffic conditions differ due to a variety of random or unique factors. However, comparing to one year ago better reflects seasonal variations of traffic and is a good benchmark for these analyses.

Figure 1. Freeway Congestion in Surge 1

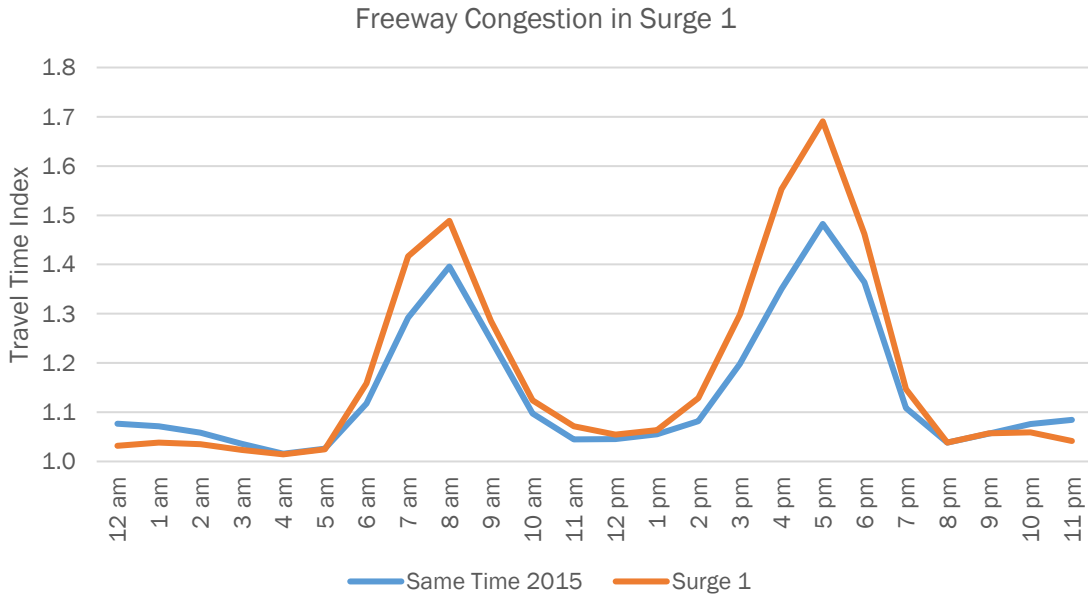


Figure 2. Freeway Congestion in Surge 2

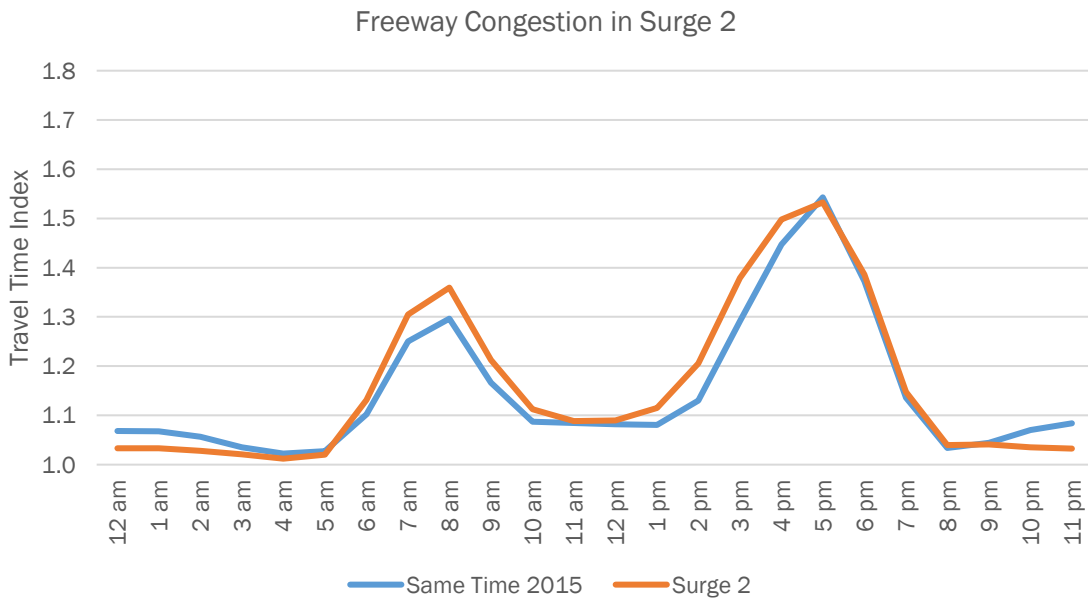


Figure 3. Freeway Congestion in Surge 3

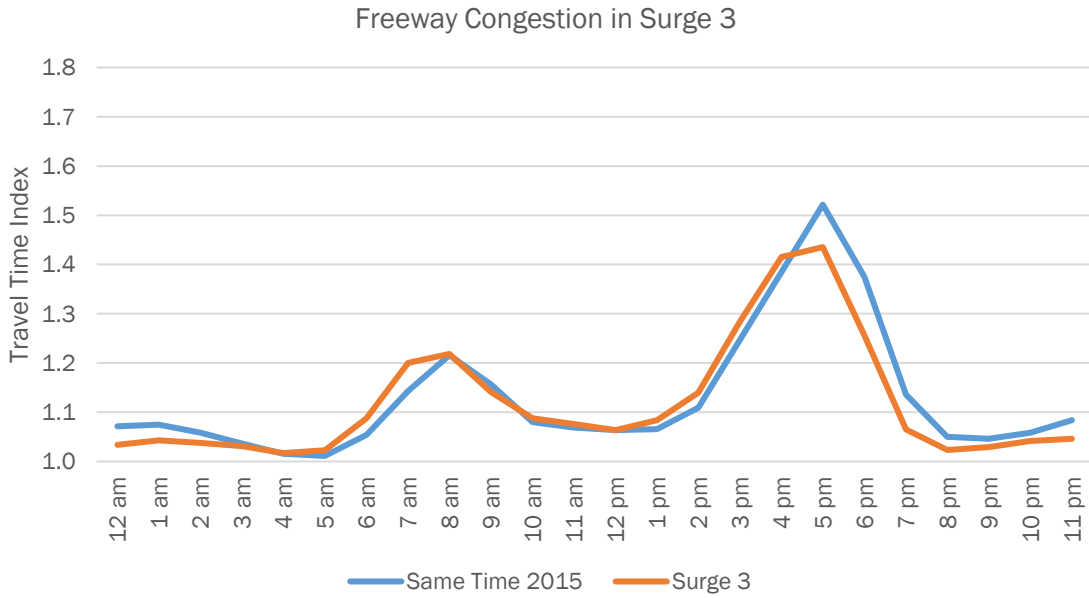


Figure 4. Freeway Congestion in Surge 4

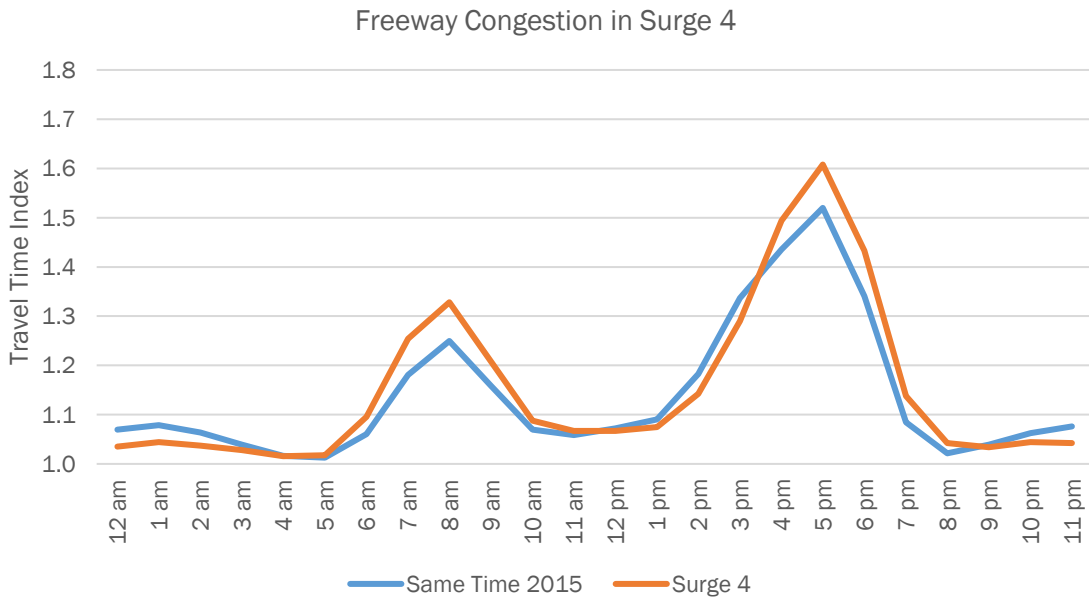


Figure 5. Freeway Congestion Changes Compared to Same Time 2015

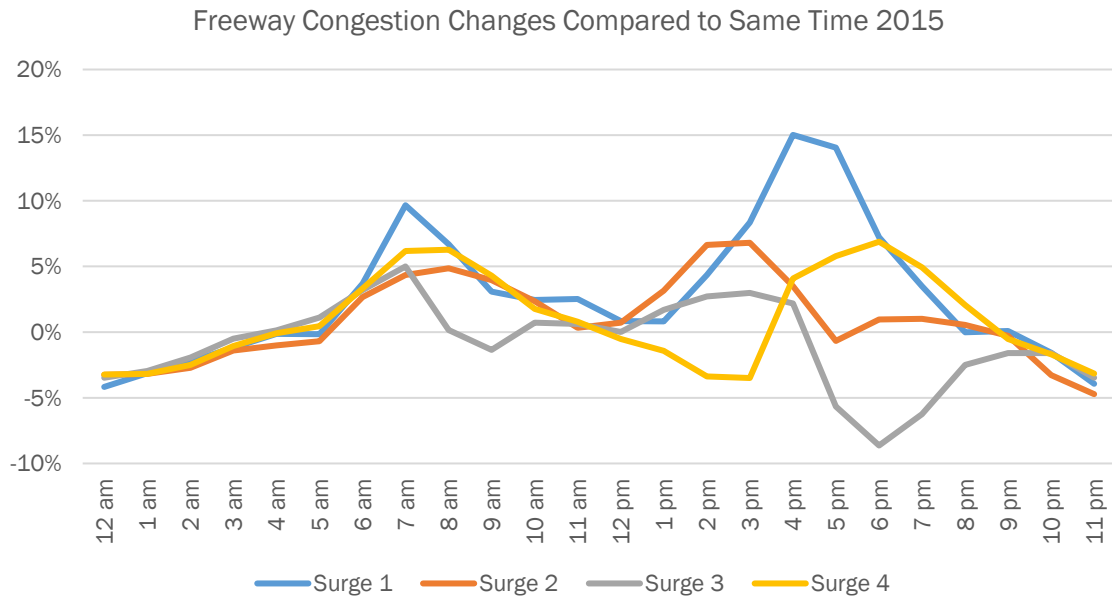


Figure 6. Travel Time Increases in AM Peak Hour (8:00-9:00 A.M.) in Surge 1 Compared to the Same Time in 2015

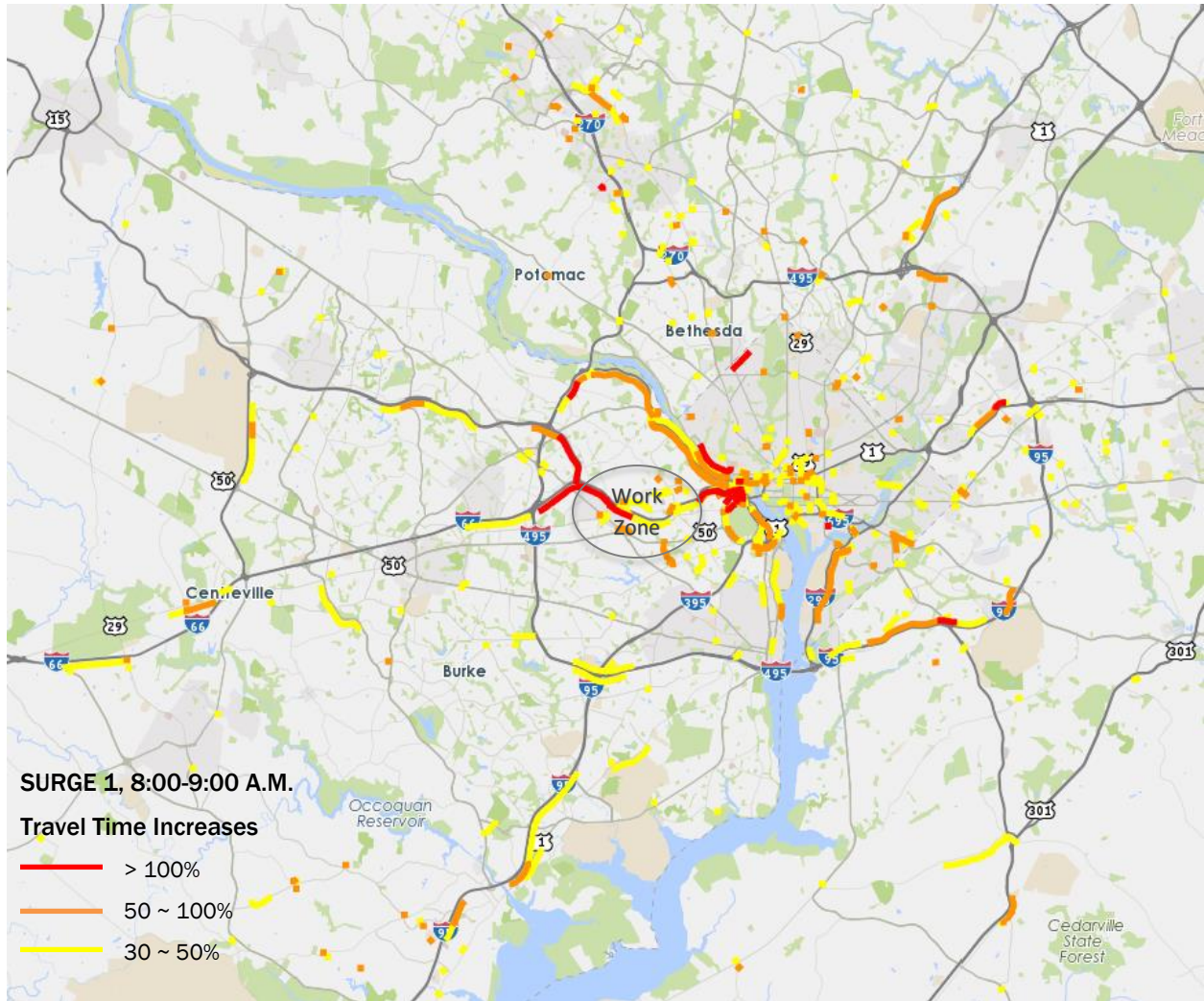


Figure 7. Travel Time Increases in PM Peak Hour (5:00-6:00 P.M.) in Surge 1 Compared to the Same Time in 2015

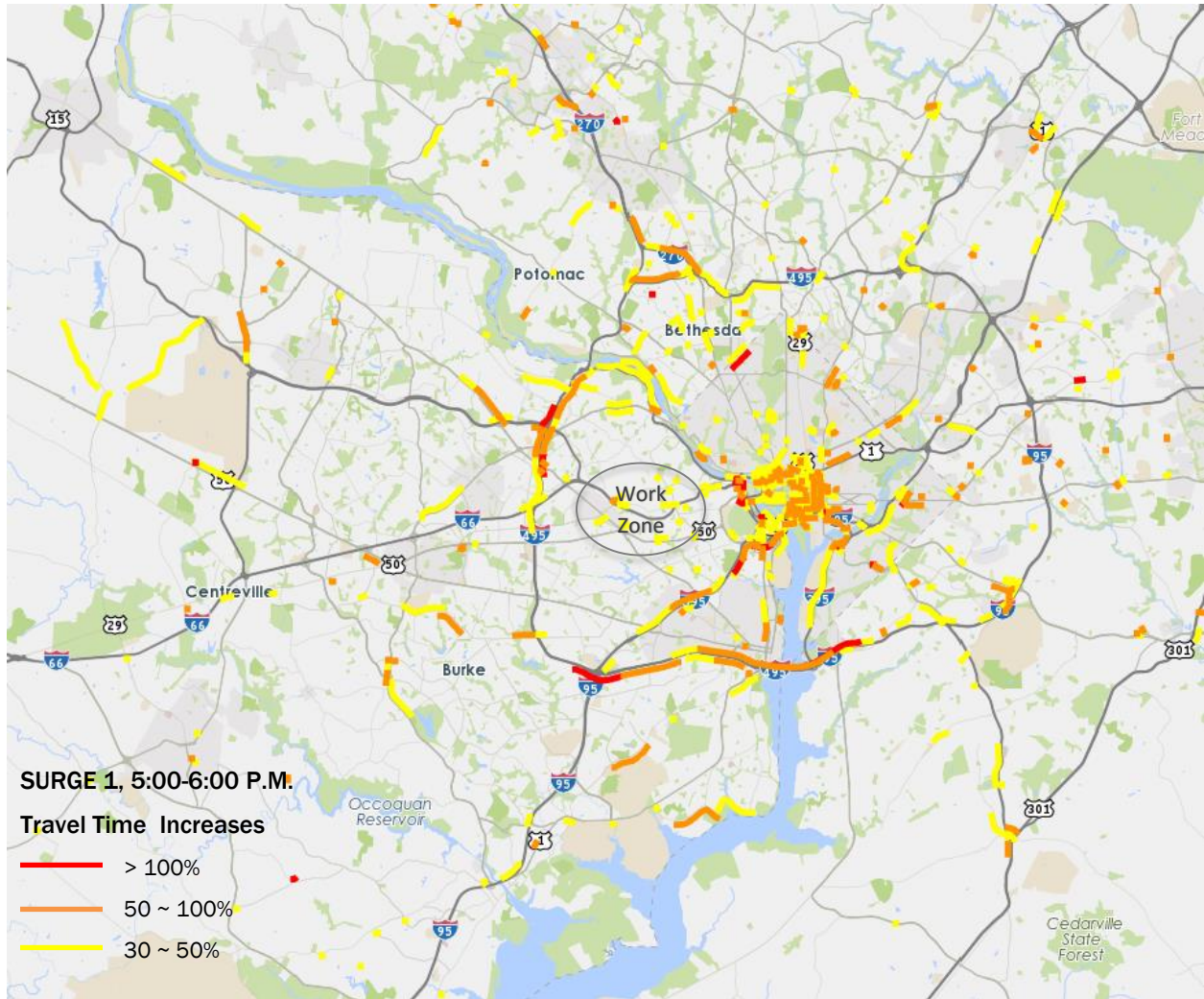


Figure 8. Travel Time Increases in AM Peak Hour (8:00-9:00 A.M.) in Surge 2 Compared to the Same Time in 2015

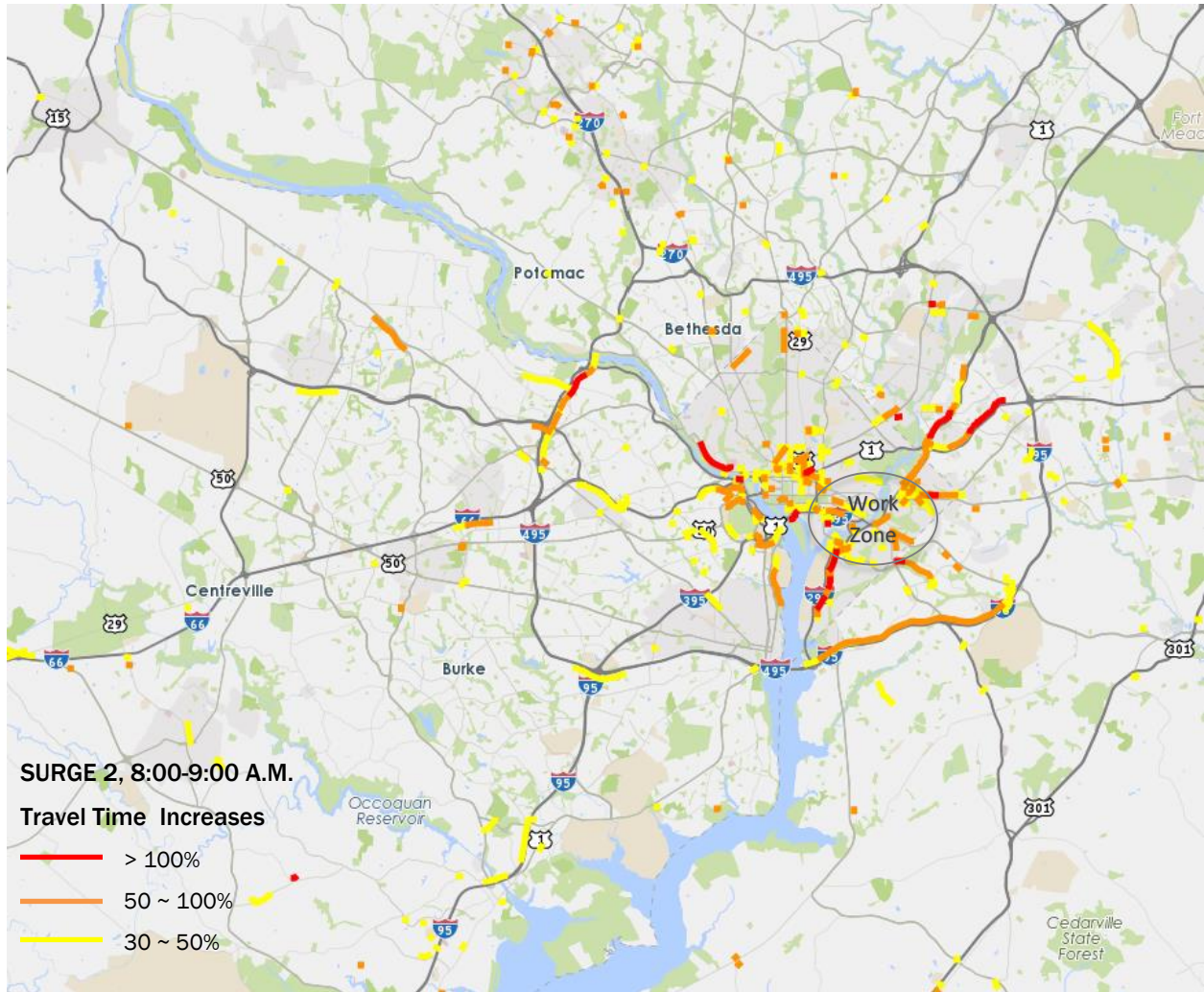


Figure 9. Travel Time Increases in PM Peak Hour (5:00-6:00 P.M.) in Surge 2 Compared to the Same Time in 2015

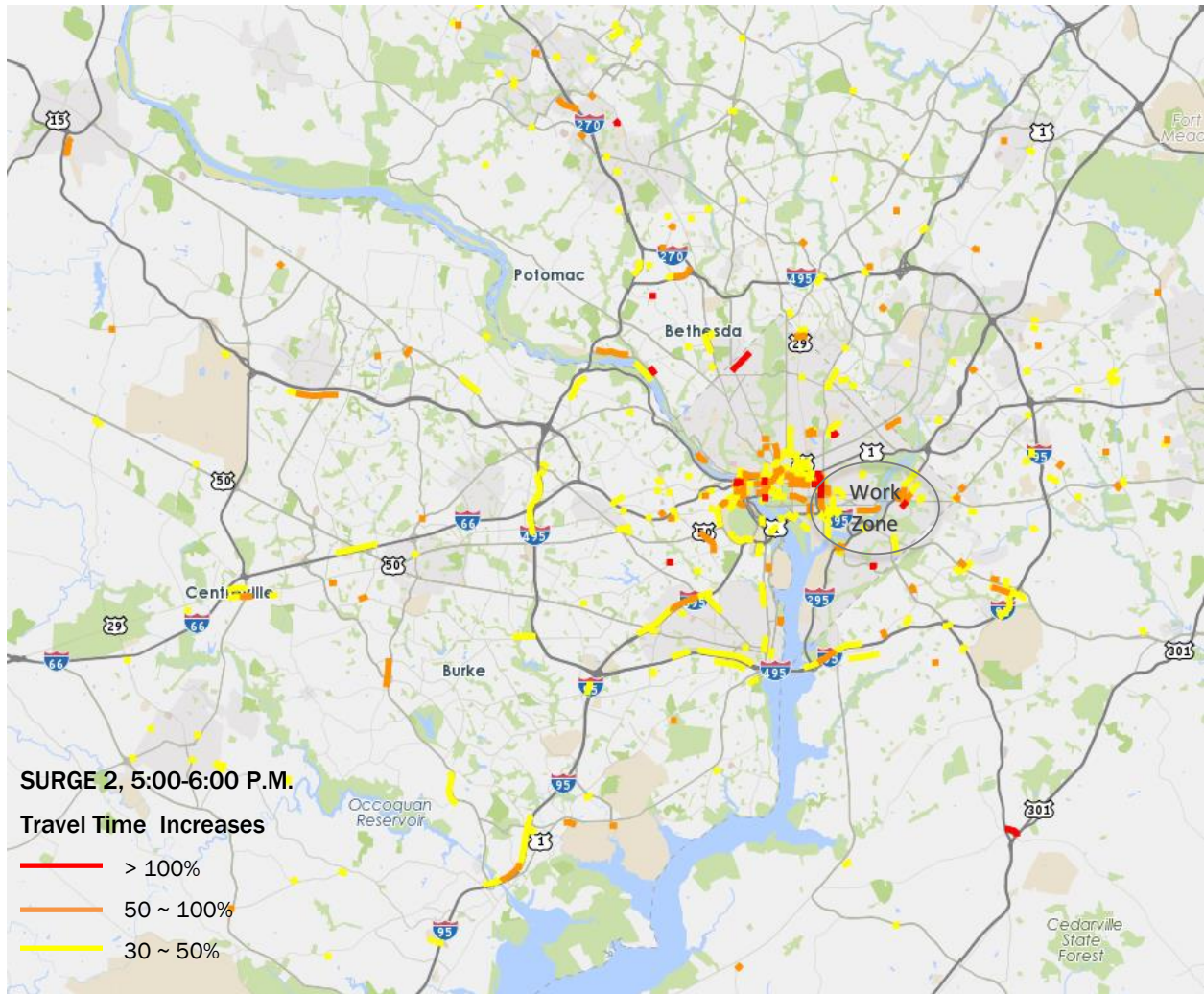


Figure 10. Travel Time Increases in AM Peak Hour (8:00-9:00 A.M.) in Surge 3 Compared to the Same Time in 2015

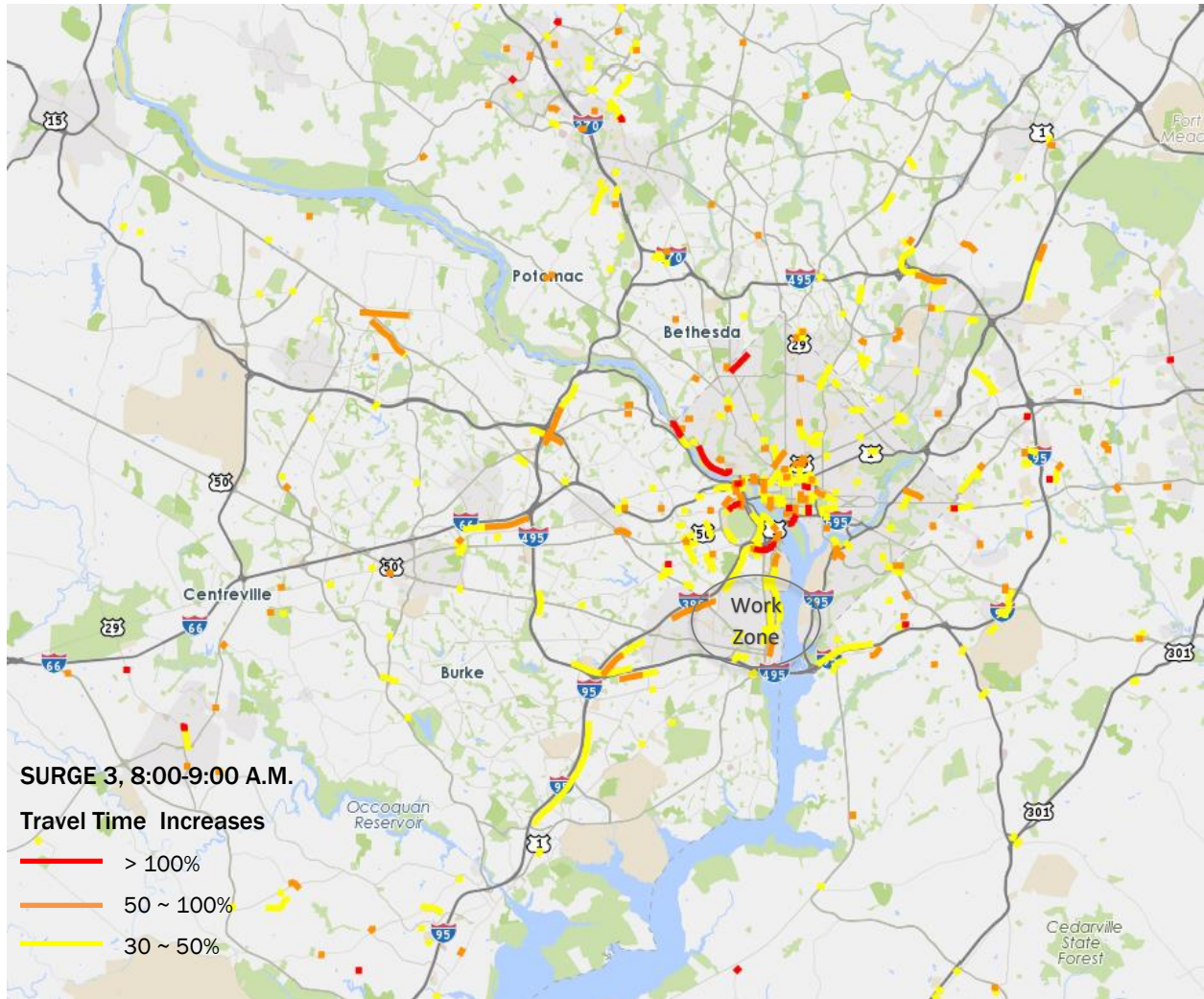


Figure 11. Travel Time Increases in PM Peak Hour (5:00-6:00 P.M.) in Surge 3 Compared to the Same Time in 2015

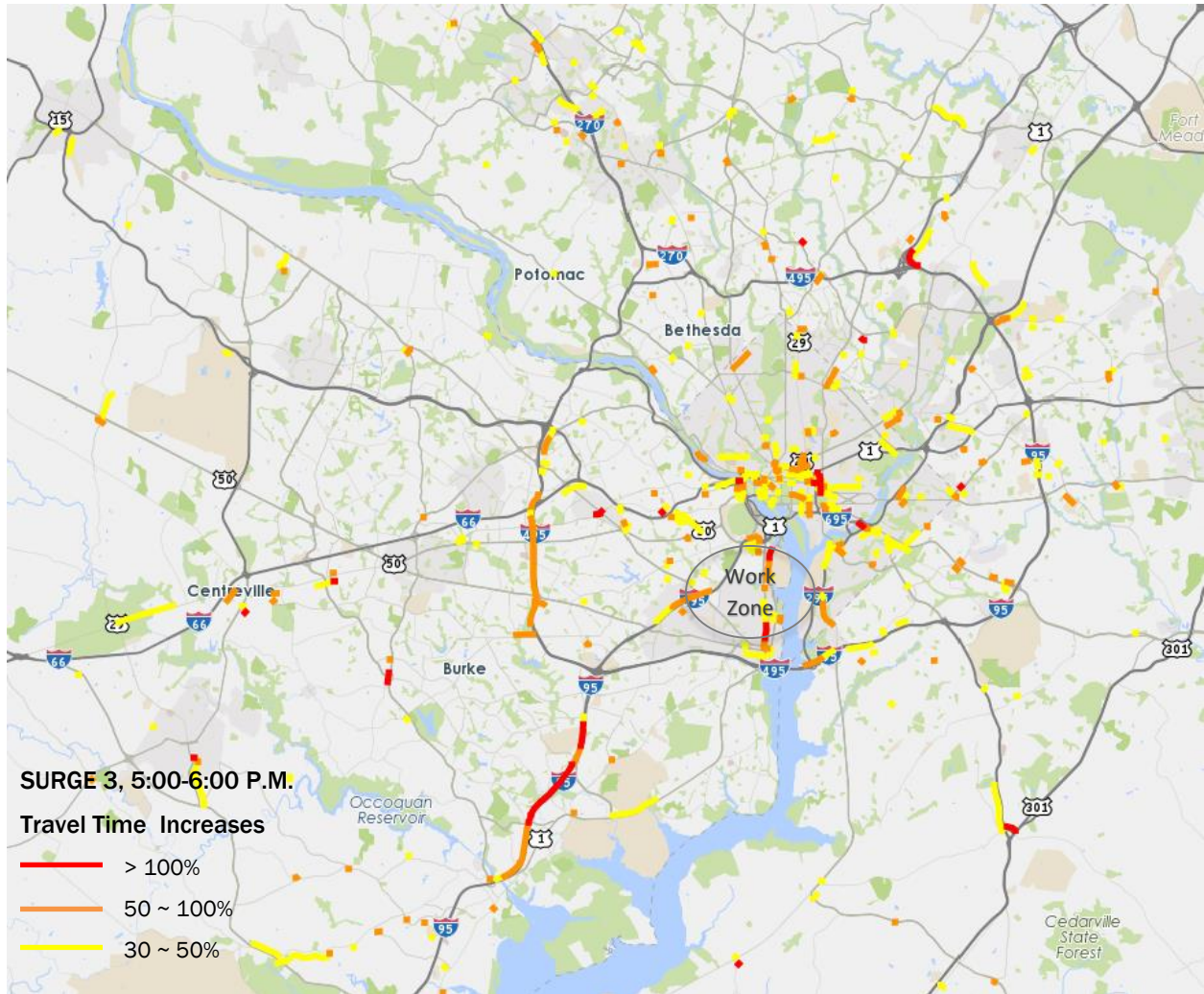


Figure 12. Travel Time Increases in AM Peak Hour (8:00-9:00 A.M.) in Surge 4 Compared to the Same Time in 2015

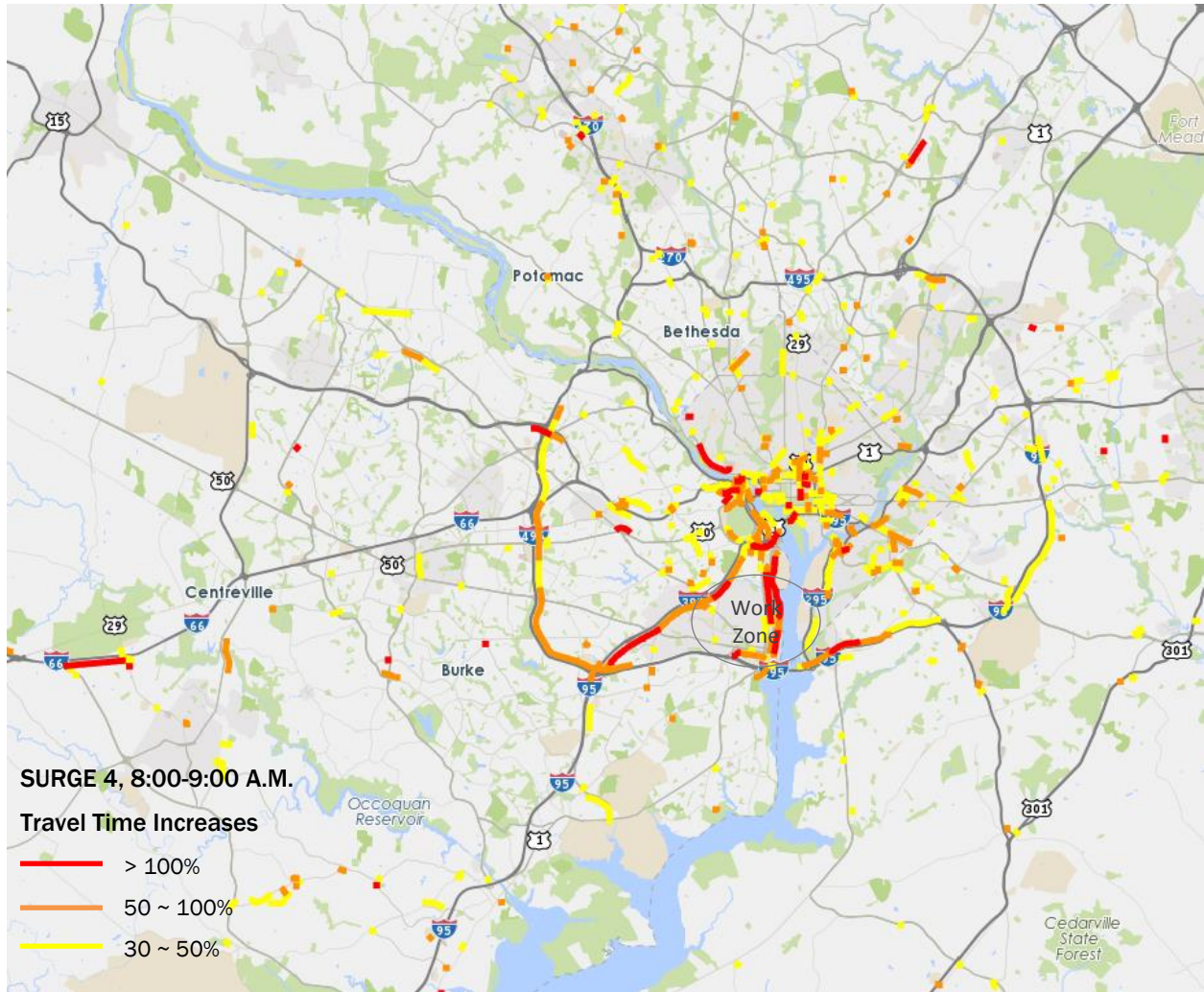


Figure 13. Travel Time Increases in PM Peak Hour (5:00-6:00 P.M.) in Surge 4 Compared to the Same Time in 2015

