



Increase Mobility

Average Level of Service on Selected Highway Segments

Purpose:

Mobility on selected freeway sections provides a measure that is affected by traffic volume and number of lanes on the facility, accidents/ incidents, weather, and construction activities. This will provide a measure of mobility that can be compared yearly to identify needs and assess the effectiveness of counter measures implemented: the added capacity on construction projects, implementation of Intelligent Transportation Systems (ITS), Smart Work Zones, and incident management procedures.

This measure will focus on the most highly traveled commuter routes:

- I-93 from Concord to Salem
- FE Everett Turnpike from Hooksett to Nashua
- NH 101 from Manchester to Hampton
- I-95 from Portsmouth to Hampton
- Spaulding Turnpike from Portsmouth to Rochester

Data:

Eventually, this measure will be tracked by travel time on the selected routes. Average speed data will be collected from a service provider or by NHDOT owned and operated instrumentation. Free flow speed data will be compared to average speed to determine congestion delay due to traffic volumes, accidents/incidents, weather or construction activities.

In the short term, mobility will be tracked by Level of Service [LOS] for the average peak hour of the peak month. Data for this measure is currently collected

Improvement Status

Until such time that delay data can be collected, the Department will continue to report mobility as Level of Service (LOS) on selected routes. The following are results from 2012:

2012 Actual: Based on 2012 data collection, the average level of service for roads included in this performance measure improved slightly from a C(0.68) to a C(0.60). (Rated on a scale of A, no congestion to F, highly congested). This improvement is attributed mainly to the mild winter and the sharp decrease in incidents that cause non-recurring congestion.

- **Congestion:** The Airport Access Road was opened and congestion was reduced on the I-293/NH101 corridor in the area of Exit 1 and Brown Avenue. There was a question as to whether there would be an increase in congestion on the FE Everett when the Airport Access Road was opened. There was no observed increase in congestion. The 511 Traveler Information site was used to monitor traffic speeds to note any changes in congestion upon opening of the access road. The Rochester Spaulding Turnpike Expansion project was also completed and the historical nightly commuter congestion seen at the Exit 12 interchange has completely dissipated due to the increase in lane capacity from two to three lanes. Monitoring by the newly installed Closed Circuit Television-Intelligent Transportation System (CCTV ITS) cameras confirmed this decrease in congestion.
- **Construction:** There are still many large construction contracts underway on these corridors, I-93 Salem to Manchester, I-93 Hooksett Open Road Tolling, and the Spaulding Turnpike Newington-Dover project. To help manage construction related congestion Smart Work Zones employ Intelligent Transportation System technologies. Delay due to construction did not change from 2011.
- **Weather:** 2012 experienced an unusually mild winter. Weather related incidents declined as compared to 2011.
- **Incidents:** Though incidents still happen, the number of incidents dramatically declined in 2012 mainly due to the mild winter.

by the Department, Regional Planning Commissions (RPC) and Metropolitan Planning Organizations (MPO) to support the traffic volume reporting requirements of the Federal Highway Administration.

The LOS measurement is based on the Average Annual Daily Traffic (AADT), the actual number of lanes (L) and the theoretical maximum flow per lane (F) for a freeway. This information, combined with an estimated peak hour factor (K) and directional distribution factor (D) calculates a volume to capacity ratio using the formula;

$$v/c = \frac{AADT \times K \times D}{L \times F}$$

The calculated v/c ratio is then assigned a LOS between A and F using the following criteria;

LOS	V/C	
A	0.00 – 0.30	> No Congestion
B	0.31 – 0.50	> Moderate Congestion
C	0.51 – 0.70	
D	0.71 – 0.90	> Congestion
E	0.91 – 1.00	
F	> 1.00	

The segments of interest will be measured and an average V/C and LOS will be reported in the Balanced Scorecard.

2013 Projected: Starting in 2013, the Department is looking to measure delay on the I-93 Salem to Manchester corridor. In early 2014, the Department plans to measure delay on the I-95 Hampton to Portsmouth corridor. It is anticipated that the remaining commuter routes will report delay by the end of 2014. (This schedule will meet the Federal 23CFR Final Rule of reporting travel times and incidents on major corridors.)

- **Congestion:** There is no anticipated change to the level of congestion on the major commute routes because the major projects will still be ongoing. However, there will be the ability to measure delay on the I-93 corridor, which will serve to better determine when and where the bottlenecks are occurring and how to better address them. Overall, the delay is expected to decrease as the I-93 widening continues to increase lane capacity. The ability to measure delay on the I-95 corridor is forthcoming with the use of speed data provided by a third party vendor.
- **Construction:** Major projects will continue. The I-93 bridge replacement over I-89 in Concord adds a large interchange project to the list. Again, all of these projects have Smart Work Zone and it is the Department's goal to keep delay due to construction unchanged on the selected routes.
- **Weather and Incidents:** Assuming an average winter, these measures are expected to see an increase when compared to the data from the winter of 2012.

Average Level of Service

