

5. Regional Bottlenecks

The Federal Highway Administration (FHWA) defines “bottlenecks” as point specific targeted locations or small corridors along a roadway where traffic operations are affected by narrowing of the roadway. Bottlenecks can be both recurring (predictable, static) or nonrecurring (random, dynamic) in nature. Recurring congestion caused by bottlenecks is being emphasized by FHWA in that the focus is on bottlenecks that are operationally influenced by design or function and impacted upon by traffic demand. A recurring bottleneck should disappear when traffic volumes decrease to where the operationally influenced deficiency no longer comes into play. Recurring bottlenecks are improved by physical improvements to the deficiency.

NMCOG, as part of its CMP program, has begun to develop a list of recurring bottlenecks on highways and arterials around the region. The initial list has been compiled by NMCOG staff from travel time monitoring data, the I-495 Corridor Study, planning studies conducted throughout the region, NMCOG Traffic Volume and Safety programs, and general knowledge of the region’s transportation system.



Picture 3 Route 3 Bottleneck North of Route 110 in Chelmsford

The following lists the initial top locations documented as part of the monitoring effort.

- US Route 3 northbound between Route 110 and Drum Hill Exits in Chelmsford
- I-495 NB merge from 5 lanes to 3 north of US Route 3 Interchange in Lowell
- Wood Street northbound north of Middlesex Street intersection in Lowell
- Lowell Connector southbound between Industrial Avenue and I-495/Route 3 Interchange in Lowell
- US Route 3 Southbound at US Route 129 Interchange in Chelmsford
- Minot’s Corner (Rte 110 at Boston Rd) in Westford

The identified signalized intersections are also identified through travel time and intersection delay studies discussed in the CMP report. The I-495 Corridor Study documents recommendations to improve merges, diverges, and weaving areas at all interchanges in the region. Low cost mitigating measures have been encouraged by FHWA in order to perform short term improvements to alleviate a recurring bottleneck. Some low cost improvement measures include:

- Pavement marking changes;

- Signage upgrades;
- Shoulder conversions to travel lanes;
- Reduction in lane widths to allow for an extra travel lane;
- Merging, diverging, and weaving modifications;
- Traffic signal retiming;
- Promotion of transportation alternatives from CMP Strategy Toolbox (Vanpool, telecommuting, etc);
- Providing improvements to Traveler Information Systems ;
- Inclusion of HOV Lanes or HOT Lanes;

Implementation of Low Cost Improvement measures can provide benefits to the overall transportation system without major reconstruction of the roadway. Opportunities to improve these locations with low cost measures should be identified and addressed. The CMP strategy toolbox provides different measures for improvements for bottlenecks as well.