



Congestion Management Report

DANIEL WEBSTER HIGHWAY, NASHUA



Segment Length: 2.7 miles

Daily Traffic Volumes: 6,000-30,000

Analysis Period: July 2015

Number of Traffic Signals: 12

Number of travel lanes: 4-6

Roadway Class: IV (Local Road, Minor Arterial)

The portion of the Daniel Webster Highway in South Nashua that runs from the Massachusetts State Line to Interchange 3 of the F.E. Everett Turnpike serves several vital transportation functions. It is the main thoroughfare for the South Nashua Commercial District that attracts consumers in both southern New Hampshire and Massachusetts. Its location on the state border encourages shoppers to enjoy New Hampshire's sales tax-free environment.

The route also parallels the F.E. Everett Turnpike (which overlaps with U.S. Route 3 at this juncture) and the Merrimack River, thereby connecting South Nashua with Tyngsborough, Massachusetts. It is an alternative commuting route for those working within southern New Hampshire and metropolitan Boston area. It is also an important road for freight transportation and local attractions, including the Pheasant Lane Mall, other shopping plazas, and downtown Nashua.

South Nashua is also home to many of Nashua's multi-family developments, some of which exist along the Daniel Webster Highway. In addition to some pedestrian traffic, the corridor also serves many public transit riders.

Due to its role as a commercial corridor, the Daniel Webster Highway in South Nashua is expected to have some degree of congestion during peak travel times. In addition to the high volume of cars at certain peak travel times, contributors to this congestion are segments where travel lanes vary from two to three lanes in either direction, and short distances between traffic lights.

Additionally, the center portion of the Daniel Webster Highway is a key access point to the Sagamore Bridge, which links Nashua with Hudson via one of the Merrimack River crossings in the Region.

Report, travel time runs and data analysis conducted by



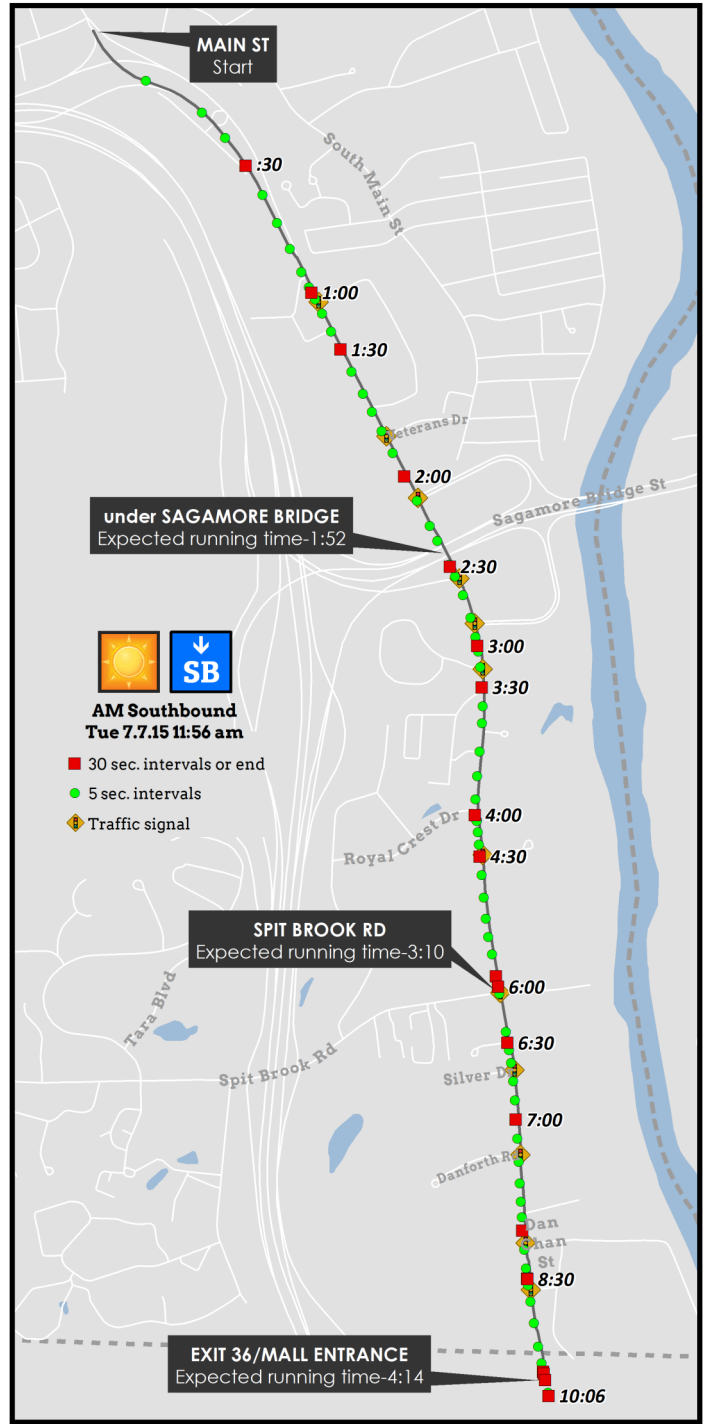
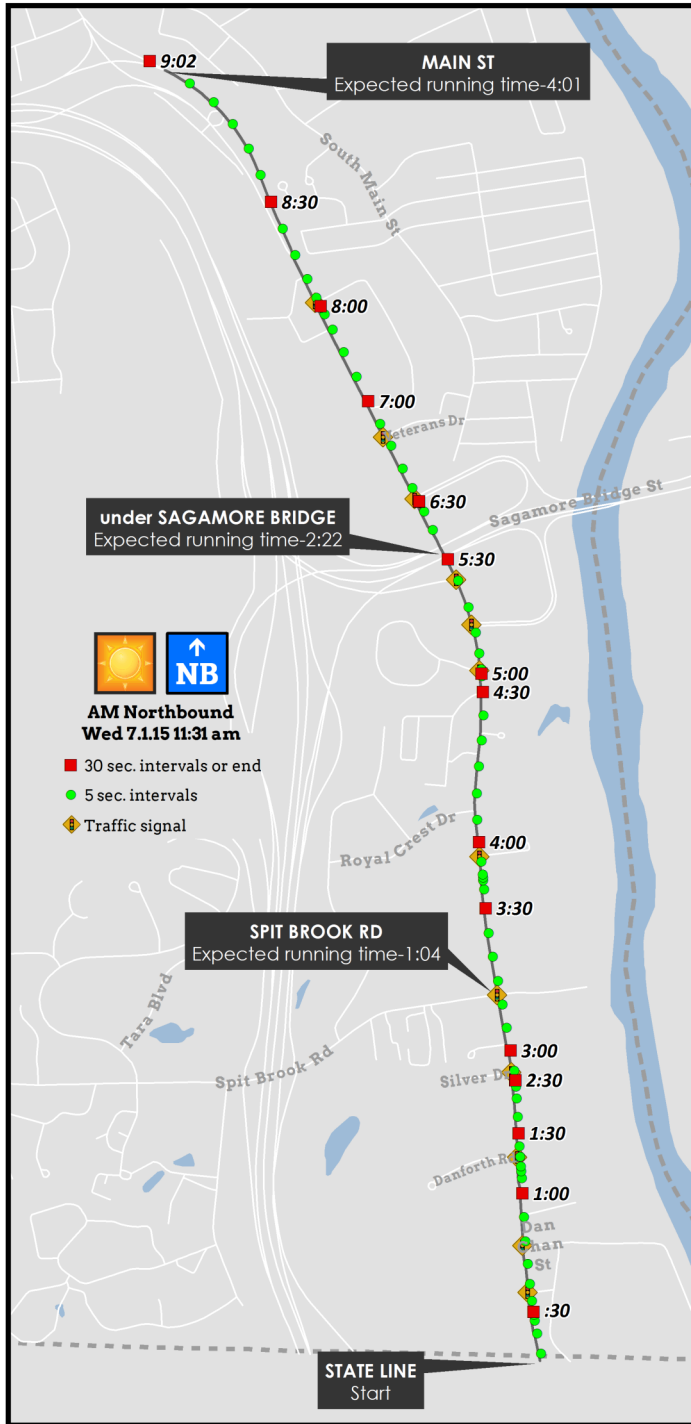
Nashua Regional
Planning Commission
2017

Value Yesterday. Enhance Tomorrow. Plan Today. and Avoid Congestion



AM Peak Period Actual & Expected Travel Times

Corridor Extents: Daniel Webster Highway, F.E. Everett Turnpike, Interchange 3 to Massachusetts State Line



Expected Travel Time during the Morning Commute

4 minutes and 01 seconds, traveling in *northerly* direction based upon posted speeds and free flowing traffic
 4 minutes and 14 seconds, traveling in *southerly* direction based upon posted speeds and free flowing traffic

Actual Travel Time during the Morning Commute:*

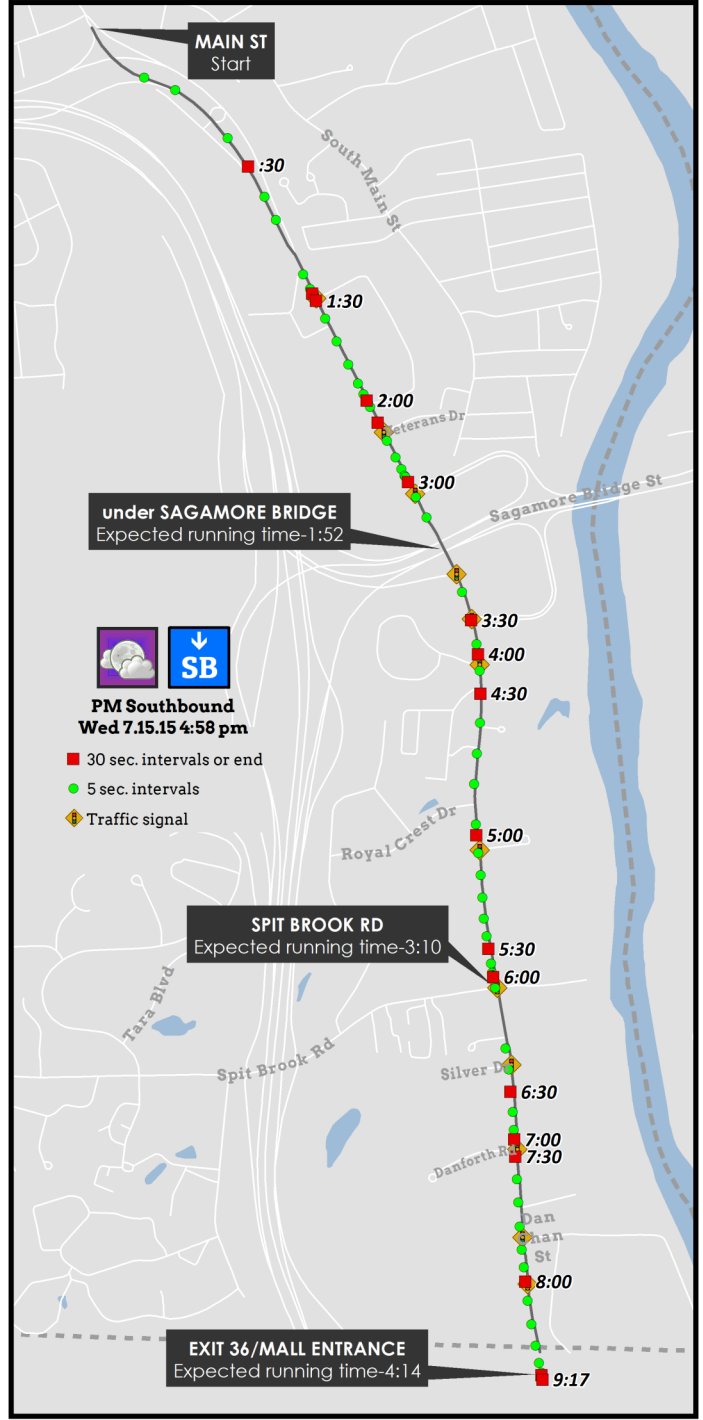
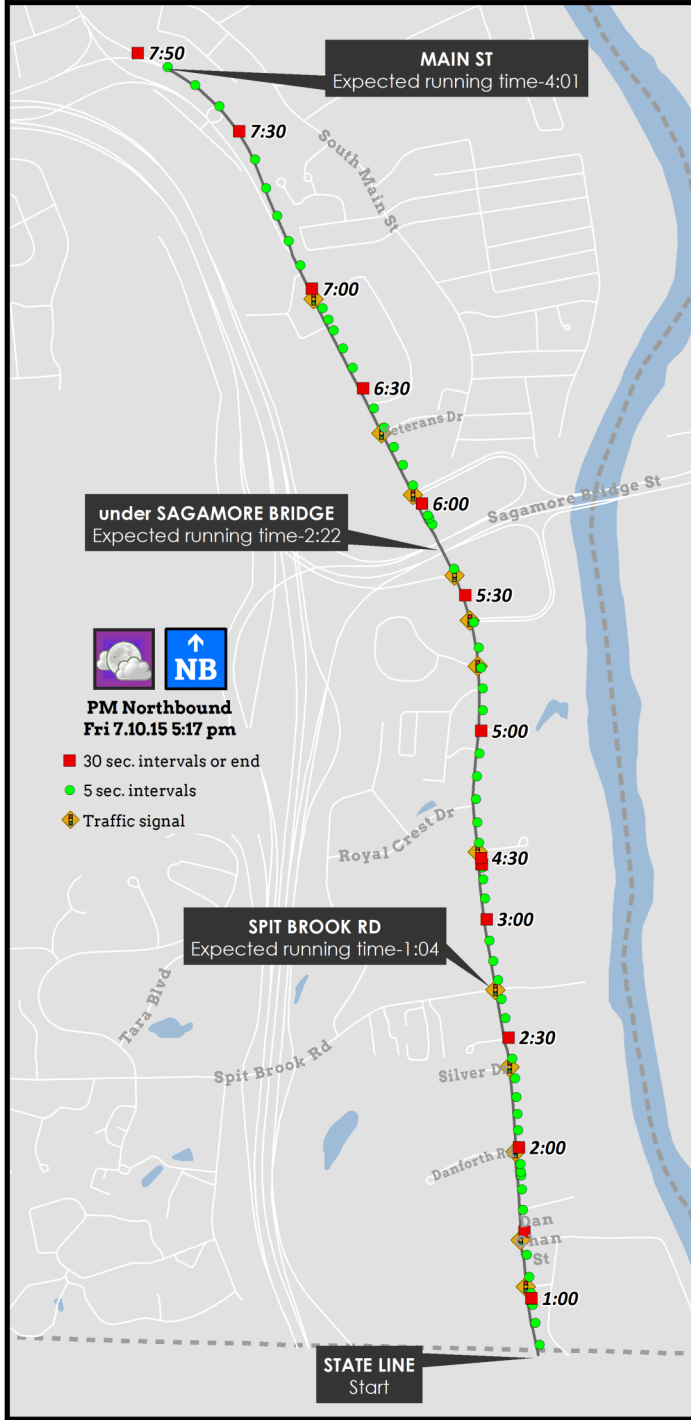
	Northbound	Southbound
Actual Travel Time	9 minutes and 02 seconds	10 minutes and 06 seconds
Difference from Expected	5 minutes and 01 second (125%) longer than expected	5 minutes and 52 seconds (139%) longer than expected

*The actual travel time is based upon a single travel run that was similar in duration and congestion to the average observed travel time.



PM Peak Period Actual & Expected Travel Times

Corridor Extents: Daniel Webster Highway, F.E. Everett Turnpike, Interchange 3 to Massachusetts State Line



Expected Travel Time during the Evening Commute

4 minutes and 01 seconds, traveling in *northerly* direction based upon posted speeds and free flowing traffic
4 minutes and 14 seconds, traveling in *southerly* direction based upon posted speeds and free flowing traffic

Actual Travel Time during the Evening Commute:*

Northbound	Southbound
7 minutes and 50 seconds	9 minutes and 17 seconds
3 minutes and 49 seconds (95%) longer than expected	5 minutes and 03 seconds (119%) longer than expected

*The actual travel time is based upon a single travel run that was similar in duration and congestion to the average observed travel time.



AM Travel Time Ratios (11:00am–1:00pm)

Corridor Extents: Daniel Webster Highway, F.E. Everett Turnpike, Interchange 3 to Massachusetts State Line



Travel Time Ratio

A travel time ratio (TTR) compares the actual (measured) & expected (non-congested) travel times along a corridor. It is assumed that in non-congested conditions, motorists can travel at the posted speed limit. The actual time is the average of several travel time runs. The ratio between the actual time and the expected time would equal 1 for a non-congested segment.

Southbound

Congestion occurs during the morning/early afternoon peak period in the southbound direction along the entire length of the corridor, as indicated by ratios over 1.5.

On average, travel along the corridor in the northbound direction during the morning commute takes approximately 5:23 minutes (126%) longer as compared to free-flow conditions.

Northbound

Congestion occurs during the morning/early afternoon peak period in the northbound direction along the entire length of the corridor. The ratios range from 1.65 to 3.02.

On average, travel along the corridor in the northbound direction during the morning commute takes approximately 4:18 minutes (107%) longer as compared to free-flow conditions.

NORTHBOUND	Length (miles)	Average Observed Travel Time (mm:ss)	Expected Travel Time (mm:ss)	Additional Travel Time (mm:ss)	Travel Time Ratio >1.5 = congestion
MA Border to Spit Brook Rd	0.7	03:14	01:04	02:10	3.0
Spit Brook Rd to Sagamore Bridge	0.9	02:23	01:18	01:04	1.8
Sagamore Bridge to S. Main St	1.1	02:42	01:38	01:04	1.6
	2.7	08:18	04:01	04:18	
SOUTHBOUND	Length (miles)	Average Observed Travel Time (mm:ss)	Expected Travel Time (mm:ss)	Additional Travel Time (mm:ss)	Travel Time Ratio >1.5 = congestion
S. Main St to Sagamore Bridge	1.3	03:25	01:52	01:33	1.8
Sagamore Bridge to Spit Brook Rd	0.9	03:17	01:18	01:58	2.5
Spit Brook Rd to MA Border	0.7	02:56	01:04	01:52	2.7
	2.8	09:38	04:15	05:23	



PM Travel Time Ratios (5:00pm–7:00pm)

Corridor Extents: Daniel Webster Highway, F.E. Everett Turnpike, Interchange 3 to Massachusetts State Line



Travel Time Ratio

A travel time ratio (TTR) compares the actual (measured) & expected (non-congested) travel times along a corridor. It is assumed that in non-congested conditions, motorists can travel at the posted speed limit. The actual time is the average of several travel time runs. The ratio between the actual time and the expected time would equal 1 for a non-congested segment.

Southbound

Congestion occurs during the evening peak period in the southbound direction along the entire length of the corridor, as indicated by ratios from 1.72 to 2.27.

On average, travel along the corridor in the southbound direction during the evening commute takes approximately 5:11 minutes (122%) longer as compared to free-flow conditions.

Northbound

Congestion occurs during the evening peak period in the northbound direction along the entire length of the corridor. As shown left, the TTRs range from 1.69 to 2.95.

On average, travel along the corridor in the northbound direction during the evening commute takes approximately 3:32 minutes (88%) longer as compared to free-flow conditions.

NORTHBOUND	Length (miles)	Average Observed Travel Time (mm:ss)	Expected Travel Time (mm:ss)	Additional Travel Time (mm:ss)	Travel Time Ratio >1.5 = congestion
MA Border to Spit Brook Rd	0.7	02:26	01:04	01:22	2.3
Spit Brook Rd to Sagamore Bridge	0.9	02:18	01:18	00:59	1.8
Sagamore Bridge to S. Main St	1.1	02:49	01:38	01:11	1.7
	2.7	07:32	04:01	03:32	
SOUTHBOUND	Length (miles)	Average Observed Travel Time (mm:ss)	Expected Travel Time (mm:ss)	Additional Travel Time (mm:ss)	Travel Time Ratio >1.5 = congestion
S. Main St to Sagamore Bridge	1.3	03:10	01:52	01:17	1.7
Sagamore Bridge to Spit Brook Rd	0.9	03:06	01:18	01:48	2.4
Spit Brook Rd to MA Border	0.7	03:10	01:04	02:05	2.9
	2.8	09:26	04:15	05:11	



A Shopping Street

The appearance of the Daniel Webster Highway through South Nashua showcases Nashua's role as a commercial hub for southern New Hampshire and northern Middlesex County in Massachusetts. Its location near the F.E. Everett Turnpike and New Hampshire's sales tax-free status make the Highway a prime location for retail activity. The shopping plazas, multi-family homes, and office buildings that are accessed by this corridor contribute to the region's diverse economy.

While the corridor has enjoyed significant development and economic success, it has incurred significant challenges in the form of peak hour and seasonal traffic congestion along Middlesex Road and Spit Brook Road. Due to the high volume of goods, services, and people that travel along this corridor every day, projects that minimize congestion and increase traffic efficiency are essential.

The corridor is geared toward auto-centric transportation with a high number of curb cuts and ample parking supply. This contributes to the ease of motor vehicle travel along the corridor. However, the Daniel Webster Highway is also serviced by transit with many stops within the shopping plazas and along the route. While there are few crosswalks that traverse the Daniel Webster Highway, there is some infrastructure for pedestrian movement along the corridor including sidewalks.

The Daniel Webster Highway in South Nashua generally operates as it should because it is reasonable to expect traffic along the corridor to be "congested" given the mix of uses. The fact that there is some motor vehicle congestion means the corridor is a desirable location. Whereas motorists may find it frustrating that it takes longer to travel the corridor, retail business owners surely welcome the vibrant environment that may attract customers.





Project Highlight

Exit 36 South

The Exit 36 interchange lies just south of the New Hampshire border in Tyngsborough, Massachusetts. The ramp system terminates/originates at the signalized intersection with Middlesex Road and the Pheasant Lane Mall. The current configuration of the interchange provides for all movements except for southbound Route 3 traffic.

One project listed in the 2015-2040 Metropolitan Transportation Plan is the addition of a southbound off-ramp to Exit 36 just across the Massachusetts state line in Tyngsborough to provide southbound access from the F.E. Everett Turnpike to the Pheasant Lane Mall. This project is not listed in the NH Ten Year Plan, so funding for this project has not yet been programmed.

The proposed Exit 36S off ramp is expected to significantly improve operating conditions along the Daniel Webster Highway, by relieving traffic congestion and delay, reducing greenhouse gas emissions, improving travel times, and decreasing lost productivity. The project enhances the effectiveness of public transportation and supports future passenger rail service.

The southbound ramp and related improvements will provide more efficient access to services, area business establishments, and local and regional job centers. The proposed improvements will also generate opportunities for sustainable growth and serve as a catalyst for future economic development and community investment.

For more information of the Exit 36 South Planning Study completed in 2014, please visit <http://www.nashuarpc.org/hot-projects/project-plan-exit-36/>



Probe Travel Time Data

Probe Data analysis was not included in this report, as in other Congestion Management reports. This is due to limited availability of probe data for this segment of the Daniel Webster Highway and for the time period when this study was done.



Projects



There are several infrastructure projects along and near the Daniel Webster Highway that could impact the corridor. Current projects emphasize creating alternative routes of travel and reducing the number of vehicles on the road. The construction of a Park 'n Ride lot on Crown Street may help to reduce congestion by creating opportunities for ridesharing and other alternative modes of transportation. The Capitol Corridor, which would establish passenger rail in southern New Hampshire, would be accessed by the Daniel Webster Highway in South Nashua. This would provide greater travel options within the region.

The Nashua Regional Planning Commission plans to complete an additional congestion analysis of the Daniel Webster Highway after the impacts of nearby improvements are fully in effect.

Nearby projects with potential impacts to Daniel Webster Highway (Nashua)

Project	Funding Years	Estimate [^]	Scope	Benefits (CMP Strategy*)	Status
ITS Deployment on F.E. Everett Turnpike	2015 - 2017	\$4,100,000	Intelligent Transportation System deployment, to include CCTV, DMS boards, VMS's and other technology to address traveler's needs.	Reduced congestion, improved safety and air quality (5e)	2017 - 2020 TIP Project
F.E. Everett Turnpike Exit 5 SB	TBD	\$900,000	Reconfigure SB ramp to connect to the traffic signal on Main Dunstable Road instead of EB West Hollis Street	Improved Safety (1b)	MPO Long Range Project (Not in TYP)
F.E. Everett Turnpike Exit 36	2019 - 2025	\$17,000,000	Addition of southbound off-ramp to Exit 36 just across the Massachusetts state line in Tyngsborough to provide southbound access from the FE Everett Turnpike to the Pheasant Lane Mall	Reduced congestion and intersection delay; increased access to commercial areas/jobs; opportunity to expand transit, support passenger rail, and make bike/pedestrian improvements (1b)	MPO Long Range Project (Not in TYP)
Northern Crossing	2033 - 2040	\$267,283,896	Construct a northern crossing of the Merrimack River to provide a four lane roadway connecting NH 102 in Hudson, NH 3A in Litchfield and US 3 in Nashua; exact location of crossing to be determined	Improved accessibility & mobility, including freight mobility; reduced congestion and auto emissions (6e)	MPO Long Range Project (Not in TYP)
Capitol Corridor	2020+	\$125,000,000 - \$250,000,000	Establish passenger rail in New Hampshire. Lower estimate reflects Nashua option; higher estimate reflects Manchester option.	Reduced trip times, alternative mode option, improved access, economic development, reduced auto emissions (2d)	MPO Long Range Project (Illustrative)
Park 'n Ride	1999 - 2017	\$3,596,087	Construct Crown Street Park 'n Ride and accessory facilities	Support carpool, vanpool, intercity bus and alternate modes of transportation (2c)	Existing 2017 - 2020 TIP project
Main St Reconstruction	2024	\$2,700,000	Reconstruction from Hollis Street to Orchard Avenue	Extend the pedestrian zone of Downtown Nashua, the region's largest mixed-use business district (3a)	MPO Long Range Project (Not in TYP)

[^]Estimate costs include indirects and inflation

*Strategy definitions are detailed in the NRPC MPO Congestion Management Process Toolbox: http://www.nashuarpc.org/files/4613/8981/7207/NRPC_CongMgmtProc_2010.pdf