NH Rte. 13 / Emerson Road /Armory Road Intersection Improvements

Milford, New Hampshire

2009-2010 NHDOT Congestion Mitigation & Air Quality Program

Project Description: Construction of eastbound left and right turn lanes, a westbound left turn lane, and a southbound right turn lane; modification of existing signals to include left turn signal heads and associated control boxes and masts to support the added signals. Signal timing will be optimized for new configuration.

Project Purpose: To improve traffic flow and lessen congestion and delay, resulting in air quality improvements and safer vehicular and pedestrian movement.

Management: Municipally managed.

Total Project Cost: $450,000

Cost Distribution: $360,000 80% (CMAQ)
$ 90,000 20% (Town of Milford)

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Existing Conditions

1. Location is intersection of major north-south arterial and two major collector roads

2. Adjacent to Route 101 Bypass and interchange of Routes 101 and 13 – a major route for local and regional traffic.

3. Heavy commuter-related traffic – peak hour congestion

4. Current Level of Service (LOS) varies between B and E, depending upon approach

5. NRPC modeling and local traffic studies project LOS F by 2025

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Existing Conditions (continued)

6. No designated lanes and signalization for east bound and west bound lanes

7. High accident location (29 vehicular accidents in 2009)

8. Roadway deterioration due to vehicular use of gravel shoulders for right-turns

9. Roadways are heavily utilized by bicyclists and pedestrians

10. Immediate area is a principal gateway to Town and is planned for increased commercial-mixed use development

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Proposed Intersection Improvements

1. Addition of designated left-turn only lanes on Emerson Road and Armory Road

2. New signals for left-turn only from Emerson Road and Armory Road to Route 13

3. Addition of right-turn lanes on Route 13 southbound, Emerson Road and Armory Road

4. Striping on all legs for separation of vehicles from bicyclists and pedestrians

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CMAQ CRITERIA – Air Quality Benefits

Significant congestion and delay has been documented at the signalized intersection of NH Route 13/Emerson Road/Armory Road.

The air quality analysis shows the proposed construction of turn lanes with signal modifications and optimization will result in the improvement of air quality due to reductions in congestion and delay.

Year	VOC (kg/day)	NOx (kg/day)
2011	0.857	0.380
2017	0.599	0.207
2026	0.544	0.128
2035	0.614	0.122

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CMAQ CRITERIA – Air Quality Benefits

Effective Project Life: 20 Years
Opening Analysis Year: 2012

Total VOC and NOx Reduced: 17.48 kg
Project Estimate: $ 450,000

Cost/Benefit: $ 25,744/kg

Year	VOC (kg/Day)	NOx (kg/Day)
2012	0.857	0.380
2013	0.857	0.380
2014	0.857	0.380
2015	0.857	0.380
2016	0.857	0.380
2017	0.599	0.207
2018	0.599	0.207
2019	0.599	0.207
2020	0.599	0.207
2021	0.599	0.207
2022	0.599	0.207
2023	0.599	0.207
2024	0.599	0.207
2025	0.599	0.207
2026	0.544	0.128
2027	0.544	0.128
2028	0.544	0.128
2029	0.544	0.128
2030	0.544	0.128
2031	0.544	0.128

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CMAQ CRITERIA – Air Quality Benefits

Cost/Benefit calculated based on reductions over all effective YEARS

Effective Project Life: 20 Years
Opening Analysis Year: 2012

Total VOC and NOx Reduced: 6,378.86 kg
Project Estimate: $ 450,000

Cost/Benefit: $ 70.54/kg

Year	VOC (kg/Year)	NOx (kg/Year)
2012	312.90	138.78
2013	312.90	138.78
2014	312.90	138.78
2015	312.90	138.78
2016	312.90	138.78
2017	218.54	75.57
2018	218.54	75.57
2019	218.54	75.57
2020	218.54	75.57
2021	218.54	75.57
2022	218.54	75.57
2023	218.54	75.57
2024	218.54	75.57
2025	218.54	75.57
2026	198.72	46.85
2027	198.72	46.85
2028	198.72	46.85
2029	198.72	46.85
2030	198.72	46.85
2031	198.72	46.85

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Project Benefits

1. ***Significant reduction in AM and PM peak hour congestion***

2. ***Improvements in air quality***

3. ***Improved safety at high accident location***

4. ***Ancillary positive impacts for economic development***

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Local Support

1. *Milford Master Plan*
2. *Milford Planning Board – high priority*
3. *Milford 2011-2016 Capital Improvements Plan*
4. *Traffic Safety Committee – high priority*
5. *Board of Selectmen – support for 2011 Warrant Article if CMAQ funding is obtained*