

Revision to the  
**New Hampshire  
State Implementation Plan**

**Supplement to New Hampshire 2012 Fine Particulate Matter  
NAAQS Infrastructure SIPs to Address the Good Neighbor  
Requirements of Clean Air Act Section 110(a)(2)(D)(i)(I)**

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## INTRODUCTION

This certification is submitted in response to the revised National Ambient Air Quality Standards (NAAQS) for fine particulate matter (PM<sub>2.5</sub>) as published by the EPA as a final rule on January 15, 2013 [78 FR 3086]. This revision reduces the annual fine particle standard from 15 micrograms per cubic meter (µg/m<sup>3</sup>) to 12 µg/m<sup>3</sup> and retains the 24-hour fine particle standard of 35 µg/m<sup>3</sup>. For states such as New Hampshire that are already meeting these air quality standards, EPA expects states to make certification of SIP adequacy within three years after the date of promulgation of the standards.

The New Hampshire Department of Environmental Services (NHDES) submitted “Certification of New Hampshire’s State Implementation Plan Adequacy Regarding Clean Air Act Sections 110(a)(1) and (2) for Fine Particulate Matter (PM<sub>2.5</sub>)” (also referred to as an infrastructure SIP) to the EPA as a SIP amendment in December 2015.

In response to the recent memo<sup>1</sup> and attachments provided by EPA relative to the interstate transport or “Good Neighbor” provision for the 2012 fine particulate standard, NHDES has prepared this technical demonstration to further support the State’s negative declaration relative to its contribution to NAAQS nonattainment or maintenance in a downwind state.

## BACKGROUND

The above reference EPA memo provides future year annual PM<sub>2.5</sub> design values for monitors in the United States based on quality assured and certified ambient monitoring data and air quality modeling. The memo further states that “the EPA expects that, with the support from the modeling described in Attachment I of the memo and a weight of evidence assessment of the state’s contribution to any identified problem receptor(s), most states will be able to develop good neighbor SIPs that demonstrate that they do not contribute significantly to nonattainment or interfere with maintenance of the 2012 PM<sub>2.5</sub> NAAQS.”<sup>2</sup>

## AIR QUALITY MONITORING

Data collected from eight monitoring stations located throughout the state indicate that New Hampshire is in attainment with the 2012 PM<sub>2.5</sub> NAAQS, as shown below in Table 1.

PM <sub>2.5</sub> (µg/m <sup>3</sup> )		Maximum 24-Hour Average			Annual Mean			Design Value <sup>4</sup>
City	Site ID	2012	2013	2014	2012	2013	2014	
Laconia	33-001-2004	19.3	14.6	13.2	6.6	5.2	4.5	5.4
Keene	33-005-0007	36.8	38.5	34	8.8	8.3	9.4	8.8
Lebanon	33-009-0010	19.5	23.3	20.3	6.2	6.1	6.3	6.2

<sup>1</sup> Memo from Stephen D. Page, Director, EPA Office of Air Quality of Planning and Standards (AQPS), to Regional Air Division Directors, “Information on the Interstate Transport ‘Good Neighbor’ Provision for the 2012 Fine Particulate Matter National Ambient Air Quality Standard under the Clean Air Act (CAA) Section 110(a)(2)(D)(i)(I), March 17, 2016

<sup>2</sup> Ibid.

<sup>3</sup> [AirData | US Environmental Protection Agency](#)

<sup>4</sup> The design value of the PM<sub>2.5</sub> primary NAAQS is the annual arithmetic mean, averaged over three years.

PM <sub>2.5</sub> (µg/m <sup>3</sup> )		Maximum 24-Hour Average			Annual Mean			Design Value <sup>4</sup>
City	Site ID	2012	2013	2014	2012	2013	2014	
Nashua	33-011-1015	24	15.8	13.8	8.2	7.5	6	7.2
Peterborough	33-011-5001	17.9	17.3	16.2	4.2	6.2	5.9	5.4
Pembroke	33-013-1006	27.1	27	18.4	8.6	7.2	6.7	7.5
Portsmouth	33-015-0014	25	29.4	21	7	7.6	6.2	6.9
Londonderry	33-015-0018	23.3	25.8	24.5	6.3	9	10.1	8.5

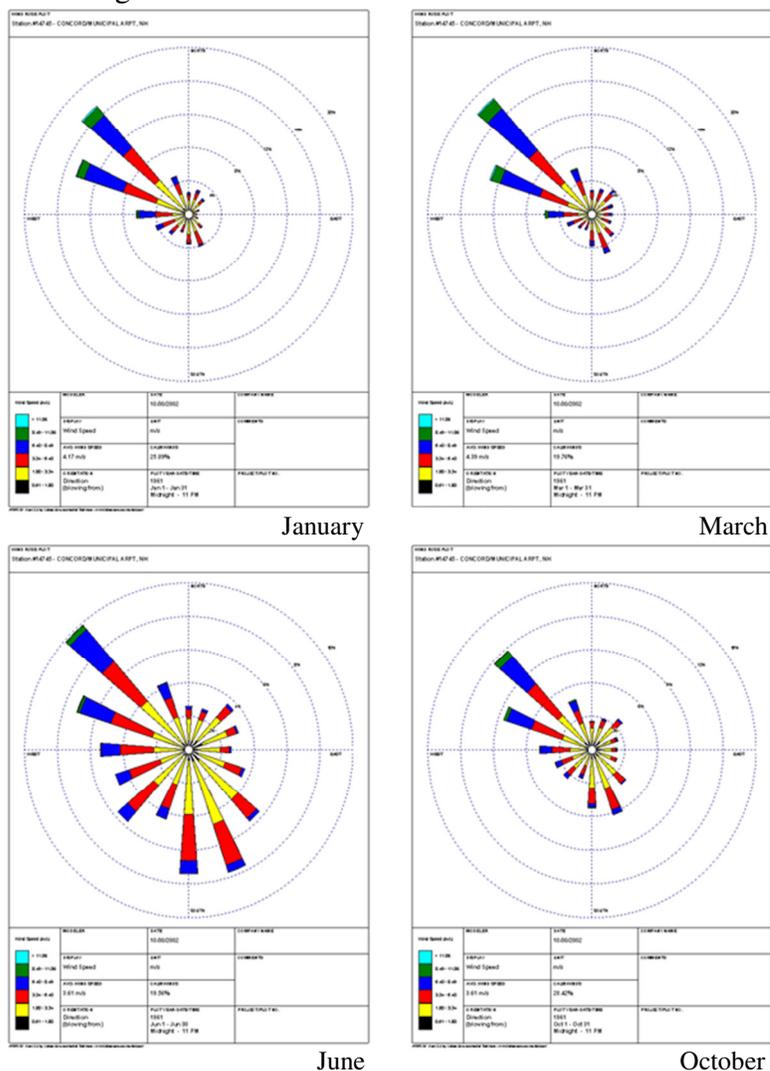
Preliminary data<sup>5</sup> indicates the state has continued to meet the standards in 2015, with 24-hour 98<sup>th</sup> percentile values ranging from 12-23 µm/m<sup>3</sup>, and annual averages between 5.1 and 8.7 µg/m<sup>3</sup>. New Hampshire does not have any areas violating the PM<sub>2.5</sub> or PM<sub>10</sub> NAAQS.

### METEOROLOGY

Characteristics of New Hampshire's climate are: changeableness in the weather, large ranges in temperature, both daily and annual, great differences between the same seasons in different years, equable distribution of precipitation and considerable diversity from place to place. The regional New England climatic influences are modified in New Hampshire by the varying distances from the relatively mild ocean waters, elevations and types of terrain.

Wind direction in New Hampshire is predominated by the prevailing westerlies, the belt of generally eastward air movement that produces prevalent northwest wind direction in all months of the year, as shown on Figure 1<sup>6</sup>. This wind pattern would favor the general southeast transport of fine particulate matter in the direction of New Hampshire's seacoast or the southwest of Maine and

Figure 1. Wind Roses for Four Seasons in NH



<sup>5</sup> Annual statistics for 2015 are not final until May 1, 2016.

<sup>6</sup> <http://www.wcc.nrcs.usda.gov/ftpref/downloads/climate/windrose/>

northeast of Massachusetts. Neither of these states have PM<sub>2.5</sub> nonattainment or maintenance areas.

### AIR QUALITY MONITORING IN DOWN- AND UPWIND STATES

States that could potentially be impacted by PM<sub>2.5</sub> emissions emanating from New Hampshire include the border states of Maine, Massachusetts and Vermont. Data obtained from the EPA<sup>7</sup> indicate that these states are currently meeting the PM<sub>2.5</sub> NAAQS (Table 2). As shown, all three states have met the NAAQS for the past three years. None of these states contain any PM<sub>2.5</sub> maintenance areas.

	98 <sup>th</sup> Percentile for 24-hr average $\mu\text{g}/\text{m}^3$			Weighted Annual Mean $\mu\text{g}/\text{m}^3$		
	2012	2013	2014	2012	2013	2014
<b>MASSACHUSETTS</b>						
<b>Average</b>	<b>19.6</b>	<b>17.1</b>	<b>14.8</b>	<b>8.2</b>	<b>7.4</b>	<b>6.1</b>
Boston	21.4	18.0	14.9	9.0	8.1	6.5
Brockton	19.5	16.7	12.3	7.8	6.6	5.4
Chelmsford	20.0					
Chicopee	17.0	16.5	16.5	7.6	6.8	5.4
Fall River	17.0	15.0	15.5	7.1	6.9	6.7
Greenfield			13.0			
Haverhill	18.0	15.0	13.5	7.3	6.3	5.7
Lawrence	18.0	16.0	12.0	7.8	6.7	5.2
Lynn	19.0	15.0	14.0	7.2	6.2	6.1
Milton			14.0			6.1
Pittsfield	20.0	16.0	17.0	8.5	7.4	6.0
Springfield	20.0	19.0	19.0	8.8	7.8	6.4
Worcester	20.0	17.7	15.7	8.2	8.0	6.3
<b>MAINE</b>						
<b>Average</b>	<b>25.0</b>	<b>21.0</b>	<b>17.1</b>			<b>7.5</b>
Augusta	25.0	20.0	20.0			
Bangor		19.0	15.0			
Lewiston		30.0	20.0			7.5
Madawaska			21.0			
Hancock County		13.0	11.0			
Portland		23.0	19.0			
Presque Isle			14.0			
Rumford			17.0			
<b>VERMONT</b>						
<b>Average</b>	<b>17.0</b>	<b>16.4</b>	<b>18.0</b>	<b>6.8</b>	<b>6.7</b>	<b>6.1</b>
Bennington	16.0	15.0	13.0		6.0	6.3
Burlington	17.0	15.0	15.8	6.9	6.1	6.4
Rutland	24.0	21.0	26.7	9.0	7.9	8.9
Underhill	11.0	13.0	12.0	4.6		4.2

<sup>7</sup> [https://www3.epa.gov/airdata/ad\\_rep\\_mon.html](https://www3.epa.gov/airdata/ad_rep_mon.html)

<sup>8</sup> Averaged for cities with multiple monitors.

## EPA AIR QUALITY MODELING

The EPA examined recent modeling analyses that used the CAMx photochemical model with base case emissions and meteorology for 2011 to identify potential PM<sub>2.5</sub> nonattainment and maintenance receptors for the future projection years of 2017 and 2025.

Using that analysis, the EPA identified 19 potential nonattainment and/or maintenance receptors in 2017. Seventeen of those receptors are in California, and one projected receptor each in Idaho and Pennsylvania.

The modeling was also used to project design values for all PM<sub>2.5</sub> monitors with valid data in the continental U.S. Projected design values from New Hampshire and surrounding states are given in Table 3 and indicate that these areas are predicted to maintain the NAAQS through the year 2025.

Table 3. Projected PM <sub>2.5</sub> Design Values at Monitoring Locations in New Hampshire and Contiguous States		
	Maximum Design Value 2017 ( $\mu\text{g}/\text{m}^3$ )	Maximum Design Value 2025 ( $\mu\text{g}/\text{m}^3$ )
<b>NEW HAMPSHIRE</b>		
Laconia	5.29	5.11
Keene	8.49	7.99
Lebanon	6.12	5.74
Peterborough	6.98	6.72
Suncook	7.73	7.39
Portsmouth	6.71	6.47
<b>MASSACHUSETTS</b>		
Boston	7.75	7.51
Boston	7.53	7.3
Boston	7.03	6.82
Boston	8.56	8.29
Brockton	6.71	6.51
Chelmsford	6.58	6.4
Chicopee	6.68	6.45
Fall River	6.42	6.21
Haverhill	6.46	6.27
Lawrence	7.02	6.8
Lynn	6.08	5.92
Pittsfield	7.75	7.42
Springfield	8.23	7.93
Worcester	7.24	7
Worcester	7.74	7.48
<b>MAINE</b>		
Augusta	6.56	6.22
Bangor	6.69	6.39
Lewiston	6.86	6.49
Hancock County	4.21	4.11
Portland	7.38	7.04

Table 3. Projected PM <sub>2.5</sub> Design Values at Monitoring Locations in New Hampshire and Contiguous States		
	Maximum Design Value 2017 (µg/m <sup>3</sup> )	Maximum Design Value 2025 (µg/m <sup>3</sup> )
Presque Isle	6.3	6.14
Rumford	7.65	7.34
<b>VERMONT</b>		
Bennington	6.22	5.96
Burlington	6.65	6.38
Rutland	9.04	8.46
Underhill	4.68	4.52

### NEW HAMPSHIRE PM<sub>2.5</sub> CONTROL PROGRAMS

As described in the infrastructure SIP submitted in December 2015, New Hampshire has infrastructure in place to limit emissions of PM<sub>2.5</sub> that will continue to maintain air concentrations in the State below the 2012 PM<sub>2.5</sub> NAAQS. These include, but are not limited to, the following SIP-approved rules and programs:

- Chapter Env-A 300, Ambient Air Quality Standards, on June 24, 2014 [[79 FR 35695](#)]
- Chapter Saf-C 3200, Official Motor Vehicle Inspection Requirements and Chapter Saf-C 5800: Roadside Diesel Opacity Inspection [[79 FR 5292](#)].
- Chapter Env-A 600, Part Env-A 619: Prevention of Significant Deterioration [[80 FR 57722](#)] and Part Env-A 618 Nonattainment New Source Review [[80 FR 57722](#)].
- Chapter Env-A 2300, Mitigation of Regional Haze rule [[77 FR 50602](#)]
- Chapter Env-A 800, Testing and Monitoring Procedures, and Chapter Env-A 900, Owner or Operator Recordkeeping and Reporting Obligations [[77 FR 66388](#)].
- Delegation for Title V permitting program granted by EPA September 24, 2001 [[66 FR 48806](#)].

### SUMMARY

Based on a) the methodology specified in EPA’s March 17, 2016 memorandum; b) the relevant modeling data and air quality projections provided in attachments thereto; and c) the absence of PM<sub>2.5</sub> nonattainment or maintenance areas in neighboring states, NHDES certifies that air emissions from sources in New Hampshire do not contribute significantly to nonattainment or maintenance of the 2012 PM<sub>2.5</sub> NAAQS in other states. New Hampshire therefore meets the “Good Neighbor” provision CAA of section (110)(a)(D)(i)(I).