



Department of
Environmental
Conservation

NEW YORK STATE IMPLEMENTATION PLAN FOR REGIONAL HAZE

FIVE-YEAR PROGRESS REPORT FOR 2010-2015

June 2015

DIVISION OF AIR RESOURCES
Bureau of Air Quality Planning

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Table of Contents

List of Abbreviations.....	6
Executive Summary	9
MANE-VU's Class I Areas.....	12
Acadia National Park	12
Roosevelt Campobello International Park	12
Brigantine Wilderness	12
Great Gulf Wilderness.....	12
Lye Brook Wilderness	12
Moosehorn Wilderness	13
Presidential Range/Dry River Wilderness	13
Completeness Checklist.....	14
SIP Submittal	16
Ambient Air Quality Monitoring, Compilation, Analysis and Reporting (§110(a)(2)(B))	16
Enforcement and Stationary Source Permitting (§110(a)(2)(C))	16
Assurance of Adequate Resources (§110(a)(2)(E))	17
Emergency Powers and Contingency Plans (§110(a)(2)(G)).....	18
Authority for SIP Revisions for Revised NAAQS (§110(a)(2)(H)).....	18
Authority for SIP Revisions for New Nonattainment Areas (§110(a)(2)(I))	19
Consultation, Public Notification and PSD/Visibility (§110(a)(2)(J))	19
Air Quality Modeling / Data (§110(a)(2)(K)).....	20
Consultation / Participation by Affected Local Entities (§110(a)(2)(M)).....	20
Section 1: Federal Regional Haze Program Requirements.....	22
1.1. Background.....	22
Figure 1.1 Near-by Class I Areas	22
Figure 1.2 Map of U.S. Regional Planning Organizations.....	23
1.2. Summary of the Requirements for Periodic Progress Reports	24
1.2.1. General and Procedural Requirements	24
1.2.2. Required Elements of the Progress Report SIP.....	24
1.2.3. Required State Actions.....	25
1.3. MANE-VU Regional Course of Action	26
1.3.1. Requested Action within MANE-VU.....	26

Section 2: Changes in Visibility for each Mandatory Federal Class I Area in and near MANE-VU.....	28
2.1. Reasonable Progress Goals	28
2.2. Requirements to Track Changes in Visibility	28
2.3. Review of Recent IMPROVE Data	29
Table 2.1. Reasonable Progress Goals in Approved Regional Haze Plans	30
Charts of MANE-VU Class I Area Visibility 2000 – 2013, compared to RPGs for 2018.....	31
Figure 2.1.a. Acadia National Park.....	31
Figure 2.1.b. Brigantine Wilderness	31
Figure 2.1.c. Great Gulf Wilderness	32
Figure 2.1.d. Lye Brook Wilderness	32
Figure 2.1.e. Moosehorn Wilderness.....	33
2.4. Tracking Visibility Progress – National Evaluation.....	33
Table 2.2. Visibility Improvements by Particle Constituents through 2013 on Haziest 20% Days in MANE-VU Class I Areas	34
Table 2.3. Visibility Improvements by Particle Constituents through 2013 on Clearest 20% Days in MANE-VU Class I Areas	34
Figure 2.2 Visibility Improvements through 2013 by Particle Constituents on Haziest 20% Days at Acadia National Park.....	35
Figure 2.3 Visibility Improvements through 2013 by Particle Constituents on Clearest 20% Days at Acadia National Park.....	36
Figure 2.4 Visibility Improvements through 2013 by Particle Constituents on Haziest 20% Days at Brigantine Wilderness	37
Figure 2.5 Visibility Improvements through 2013 by Particle Constituents on Clearest 20% Days at Brigantine Wilderness	38
Figure 2.6 Visibility Improvements through 2013 by Particle Constituents on Haziest 20% Days at Great Gulf Wilderness.....	39
Figure 2.7 Visibility Improvements through 2013 by Particle Constituents on Clearest 20% Days at Great Gulf Wilderness.....	40
Figure 2.8 Visibility Improvements through 2013 by Particle Constituents on Haziest 20% Days at Lye Brook Wilderness	41
Figure 2.9 Visibility Improvements through 2013 by Particle Constituents on Clearest 20% Days at Lye Brook Wilderness	42
Figure 2.10 Visibility Improvements through 2013 by Particle Constituents on Haziest 20% Days at Moosehorn Wilderness	43

Figure 2.11 Visibility Improvements through 2013 by Particle Constituents on Clearest 20% Days at Moosehorn Wilderness	44
Section 3: Status of BART Measures in the Regional Haze SIP	45
3.1. Requirement to Track BART Implementation	45
3.2. Status of BART Measures.....	45
Table 3.1 Status of BART Controls at New York State Facilities	46
Section 4: Status of EGU Controls including Controls at 167 Key Sources	49
4.1. Requirement to Track Implementation of EGU Control Measures	49
4.2. MANE-VU Focus on Sulfates and EGUs.....	49
4.3. Status of Implementation of EPA’s Clean Air Interstate Rule and other EGU Controls	50
4.3.1. CAIR and CSAPR	50
4.3.2. EGU Control Measures in New York State other than CAIR.....	52
Table 4.1. Status of EGU Control Measures in New York State	52
4.3.3. Specific EGU Estimates and Reductions.....	52
Table 4.2. SO ₂ Controls on EGUs in New York State.....	53
4.4. Status of Controls at 167 EGU Sources	53
Figure 4.1. 167 EGU Stacks Identified as Affecting MANE-VU Class I Area(s) in 2002	54
Table 4.3 (a). SO ₂ Emissions from 167 Key EGU Stacks, 2002 and 2013	55
Table 4.3 (b) Units in New York Included in the List of 167 Stacks Identified by MANE-VU.....	56
Table 4.3 (c) Units in New York Included in the List of 167 Stacks Identified by MANE-VU.....	57
Section 5: Status of Additional Measures in the Regional Haze SIP	58
5.1. Requirement to Track Implementation of Other Control Measures	58
5.2. Status of Low Sulfur Oil Strategy.....	58
Table 5.1. Current New York State Sulfur in Fuel Limits.....	58
5.3. Status of Additional State-Specific Control Measures.....	59
5.3.1. Agricultural and Forestry Smoke Management.....	59
Table 5.2. Wildland Fires and Acres Burned in New York State, 2005 - 2013	60
Table 5.3. Prescribed Fires and Acres Burned in New York State, 2005 - 2013.....	60
5.3.2. Measures to Mitigate Impacts of Construction Activities	63
5.3.3. Prevention of Significant Deterioration	63

5.3.4. Enforceability of Emission Limitations and Control Measures	64
5.3.5. Status of Controls on Non-EGU Point Sources.....	64
Table 5.4. Status of Control Measures Applied to Source Categories in New York State	65
Table 5.5. Status of Control Measures for Non-EGU Point Sources in New York State.....	66
5.3.6. Controls on Area Sources Expected by 2018	66
Table 5.6. Status of Control Measures – Area Sources	67
5.3.7. Controls on Mobile Sources Expected by 2018	67
Table 5.7. Status of Control Measures – Mobile Sources	67
5.3.8. Controls on Nonroad Sources Expected by 2018	70
Section 6: Summary of Emission Reductions in New York State Resulting from Implementation of Control Measures	73
6.1. Requirement to Summarize Emissions Reductions	73
6.2. Summary of Key Emissions Changes in Last 9 Years.....	73
Table 6.1. SO ₂ Sector Emissions and Reductions in New York State.....	73
Table 6.2. NO _x Sector Emissions and Reductions in New York State	73
Table 6.3. PM _{2.5} Sector Emissions and Reductions in New York State	74
Section 7: Analysis of Emission Changes in the Last Five Years from Visibility Impairing Pollutants	75
7.1. Requirement to Analyze and Track Changes in Emissions	75
7.2. MANE-VU Emissions Trends	75
7.2.1. 2002 Modeling Inventory with Projections to 2018.....	76
7.2.2. 2007 Modeling Inventory with Projections to 2017 and 2020	76
7.2.3. 2011 Clean Air Markets Division (CAMD) Reported Emissions	77
Table 7.1. Emissions Data Sources by Sector.....	77
Table 7.2. Air Pollutant Emission Trends between 2002 and 2020 for the MANE-VU Region	80
Table 7.3 - MANE-VU Region Sector Totals for EPA's 2011 V1 Platform (TPY)	81
Table 7.4 - New York State 2002 Emissions Inventory Summary (TPY).....	81
Table 7.5 - New York State 2011 Emissions Inventory Summary (TPY).....	82
Table 7.6 - New York State 2018 Emissions Inventory Summary (TPY)	82
Section 8: Assessment regarding whether Current Regional Haze SIP Elements and Strategies are Sufficient to Meet Reasonable Progress Goals.....	83
8.1. Requirement to Assess Sufficiency of Plan	83

8.2. Assessment	83
Section 9: Monitoring Strategy Review	84
9.1. Requirement to Review Monitoring Strategy	84
9.2. Review	84
Section 10: Determination of Adequacy of Current Regional Haze SIP	85
10.1. Requirement to Determine Adequacy of Current SIP	85
10.2. Determination.....	85
Section 11: Consultation with Federal Land Managers	86
11.1. Requirement to Consult with Federal Land Managers.....	86
11.2. Consultation Process	86
Appendix A: Regional Haze Rule Metric	87
Appendix B: Statement on Controls in MANE-VU	89
Appendix C: Statement on Controls Outside of MANE-VU	91
Appendix D: Statement on National Controls	94
.....	95
Appendix E: Summary of and Response to Comments from Federal Land Managers .	97
Appendix F: List of 167 EGU Stacks	102

List of Abbreviations

Act	Clean Air Act Amendments of 1990
AQI	Air Quality Index
AQS	Air Quality System
Avg	Average
BART	Best Available Retrofit Technology
BLM	Bureau of Land Management
BOTW	Beyond On The Way
CAA	Clean Air Act
CAIR	Clean Air Interstate Rule
CAMD	Clean Air Markets Division
CCOFA	Close Coupled Over Fire Air
CFR	Code of Federal Regulations
CMAQ	Community Multi-scale Air Quality Model
CNG	Compressed Natural Gas
CO	Carbon Monoxide
CSAPR	Cross State Air Pollution Rule
DAR	Division of Air Resources
DEC	Department of Environmental Conservation
DERA	Diesel Emissions Reduction Act of 2006
dv	deciview
ECD	Emission control device
ECL	Environmental Conservation Law
EGU	Electrical Generating Unit
EPA	United States Environmental Protection Agency
ERTAC	Eastern Regional Technical Advisory Committee
ESP	Electrostatic Precipitator
FGR	Flue Gas Recirculation
FIP	Federal Implementation Plan
FLM	Federal Land Manager
FR	Federal Register
FS	Forest Service
FWS	Fish and Wildlife Service
g/bhp-hr	grams per brake-horsepower-hour
GHG	Greenhouse Gas
HC	hydrocarbons
HDV	Heavy duty vehicle
HI	Heat Input
IM	Inspection/Maintenance
IMPROVE	Interagency Monitoring of Protected Visual Environments
LAC	Light absorbing carbon
lb	pound
LEV	Low Emission Vehicle

LNB	Low NO _x Burner
LN-REACH	Low NO _x Reduced Emissions and Advanced Combustion Hardware
LPG	Liquefied Petroleum Gas
M	Million
MACT	Maximum Achievable Control Technology
MANE-VU	Mid-Atlantic/Northeast Visibility Union
MAR	Marine And Rail
MARAMA	Mid-Atlantic Regional Air Management Association
max	maximum
mm	millions
mmBtu/hr	million British thermal units per hour
MOVES	Motor Vehicle Emissions Simulator
MRPO	Midwest Regional Planning Organization
MW	megawatt
MY	Model Year
NAAQS	National Ambient Air Quality Standards
NCR	Non-Catalytic Reduction
NESCAUM	Northeast States for Coordinated Air Use Management
NESHAP	National Emission Standards for Hazardous Air Pollutant
NMHC	non-methane hydrocarbons
NMIM	National Mobile Inventory Model
NMOG	Non methane organic gas
NNSR	Nonattainment new source review
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxide
NONROAD	Nonroad emissions model
NPS	National Park Service
NSPS	New Source Performance Standards
NYCRR	New York Codes, Rules and Regulations
NYS	New York State
NYVIP	New York Vehicle Inspection Program
O ₂	Oxygen
OBD	On-Board Diagnostics
OFA	Over Fired Air
OCM	Organic carbon mass
OTB/OTW	On The Books/On The Way
OTC	Ozone Transport Commission
PC	Portland Cement
PM	Particulate Matter
PM _{2.5}	Fine PM; Particulate Matter with aerodynamic diameter of 2.5 micrometers or less
PM ₁₀	Coarse PM; Particulate Matter with aerodynamic diameter of 10 micrometers or less
POL	Public Officer's Law

ppb	parts per billion
ppm	parts per million
ppmdv	parts per million dry volume
PSD	Prevention of Significant Deterioration
RACT	Reasonably Achievable Control Technology
RAVI	Reasonably Attributable Visibility Impairment
RICE	Reciprocating Internal Combustion Engine
RPG	Reasonable Progress Goal
RPO	Regional Planning Organization
SAPA	State Administrative Procedures Act
SIP	State Implementation Plan
SNCR	Selective Non-Catalytic Reduction
SO ₂	Sulfur dioxide
SOFA	Separated Over Fire Air
SULEV	Super-ultra-low-emission vehicle
tpy	tons per year
TSD	Technical Support Document
ULEV	Ultra-low Emission Vehicle
ULSD	Ultra-low Sulfur Diesel
VISTAS	Visibility Improvement State and Tribal Association of the Southeast
VOC	Volatile Organic Compound
WRAP	Western Regional Air Partnership
ZEV	Zero-emission vehicle

Executive Summary

The Clean Air Act (CAA) mandates actions to protect visibility, especially in Class I Federal areas. In 1999, the U.S. Environmental Protection Agency (EPA) finalized the Regional Haze Rule (64 FR 35714, 40 CFR 51.300 et seq.). The rule calls for state, tribal, and federal agencies to work together to improve visibility in 156 national parks and wilderness areas designated as Class I Federal areas.

States are required to develop and implement plans (State Implementation Plans, or SIPs) in order to reduce the pollution that causes visibility impairment. These plans establish reasonable progress goals (RPGs) for visibility improvement and include strategies to reduce air pollutant emissions from sources contributing to visibility impairment.

Regional haze is caused by numerous sources over a broad area, and it obscures vistas integral to the value of our parks and wilderness areas. The predominant cause of haze pollution in the Mid-Atlantic/Northeast region is sulfate particles caused by emissions from burning coal and oil.

As a member of the Mid-Atlantic/Northeast Visibility Union (MANE-VU), New York State has committed to implement MANE-VU's long term strategy to improve visibility. The MANE-VU strategy for 2018 includes:

- Timely implementation of Best Available Retrofit Technology (BART);
 - The majority of BART facilities in New York State are in compliance with BART. Danskammer is expected to be in compliance by 2015 since their permit was issued on February 24, 2015, and Lafarge is expected to be in compliance by 2016 after its new kiln is installed. Other sulfur dioxide (SO₂) and nitrogen oxide (NO_x) reductions will be seen in the interim from this facility. Roseton was issued a Federal Implementation Plan (FIP) by EPA on August 28, 2012.

- Reducing the sulfur content of fuel oil;
 - The July 1, 2012 amendments to the New York State Environmental Conservation Law (ECL) required that all number two heating oil sold for use in residential, commercial or industrial heating within New York State must have a sulfur content of 15 ppm or less.
 - In addition, the use date for number two distillate oil and number four and number six residual oil is July 1, 2016. The sulfur in fuel limits for number four and number six residual oil are 0.3% in New York City, 0.37% in Nassau, Rockland and Westchester counties, and 0.5% in the rest of New York State.

- Reducing sulfur dioxide emissions from electric power plants
 - On May 12, 2005, EPA promulgated the Clean Air Interstate Rule (CAIR), which required reductions in emissions of NO_x and SO₂ from large fossil fuel fired electrical generating units (EGUs). Expected emission reductions were included as part of the MANE-VU 2018 modeling effort.
 - 6 NYCRR Part 243, CAIR NO_x Ozone Season Trading Program establishes an ozone season (May 1 - September 30) cap to limit NO_x emissions from fossil fuel-fired electricity generating units with a nameplate capacity equal to or greater than 15 Megawatts (MW), Portland cement kilns, and fossil fuel-fired non-electricity generating units equal to or greater than 250 million British thermal units per hour (mmBtu/hr)
 - On January 1, 2015, the federal Cross-State Air Pollution Rule (CSAPR) went into effect and replaced CAIR, therefore, 6 NYCRR Part 243 will be repealed.
 - 6 NYCRR Part 244, CAIR NO_x Annual Trading Program establishes an annual cap to limit NO_x emissions from fossil fuel-fired electricity generating units with a nameplate capacity equal to or greater than 25 MW.
 - On January 1, 2015, CSAPR went into effect and replaced CAIR, therefore, 6 NYCRR Part 244 will be repealed.
 - 6 NYCRR Part 245, CAIR SO₂ Trading Program establishes an annual cap to limit SO₂ emissions from fossil fuel-fired electricity generating units with a nameplate capacity equal to or greater than 25 MW.
 - On January 1, 2015, CSAPR went into effect and replaced CAIR, therefore, 6 NYCRR Part 245 will be repealed.
 - All EGU stacks which are operating in New York State included in the list of 167 key EGU stacks identified by MANE-VU have NO_x and SO₂ controls installed on the equipment.

- Seeking to reduce emissions outside MANE-VU that impair visibility in our region;
 - The New York State Department of Environmental Conservation (DEC) has participated in the consultation process of the Regional Haze State Implementation Plan (SIP) (40 CFR 51.308(i)) with the Federal Land Managers (FLMs), States and Tribes of MANE-VU, and other regional planning organizations where emissions from New York are reasonably anticipated to contribute to visibility impairment to Class I areas.
 - DEC continues to evaluate other control measures including energy efficiency, alternative clean fuels, and other measures to reduce SO₂ and NO_x emissions from all coal-burning facilities by 2018 and new source performance standards for wood combustion. These measures and other measures identified were evaluated during the consultation process to determine if they are reasonable and cost-effective.

This document is intended to address the requirements of 40 CFR 51.308(g) requiring periodic reports evaluating progress in implementing the measures included in DEC's Regional Haze SIP. The control strategies in the SIP are continuing to be implemented, and emissions of SO₂ have declined.

Based on the progress made in reducing emissions within the State and implementing other requirements of New York State's Regional Haze SIP, DEC declares that its Regional Haze SIP continues to be sufficient in meeting the requirements outlined in EPA's Regional Haze Rule.

MANE-VU's Class I Areas

The following provides summary descriptions of MANE-VU's Class I Areas.

Acadia National Park

People have been drawn to the rugged coast of Maine throughout history. Awed by its beauty and diversity, early 20th-century visionaries donated the land that became Acadia National Park, the first national park east of the Mississippi River. The park is home to the tallest mountain on the U.S. Atlantic coast. Today visitors come to Acadia to hike granite peaks, bike historic carriage roads, or relax and enjoy the scenery.

Roosevelt Campobello International Park

A memorial to Franklin Delano Roosevelt and symbol of Canadian-American friendship, Roosevelt Campobello International Park is a combination indoor/outdoor site renowned internationally. Its historic beauty contributes to the tourism in both the Province of New Brunswick and the State of Maine. Wooded paths and fields offer vistas of nearby islands, bays, and shores.

Brigantine Wilderness

This trail less area, a tidal wetland and shallow bay habitat along New Jersey's Atlantic coastline, is one of the most active flyways for migratory water birds in North America. Birdwatchers, binoculars in hand, have zoomed in on close to 300 species, including Atlantic Brant and American Black Duck.

Great Gulf Wilderness

Cradled within the rugged crescent of New Hampshire's Presidential Range lies the Great Gulf Wilderness. This steep-walled bowl begins at Mount Washington, and is flanked by Mounts Jefferson, Adams, and Madison. Great Gulf is the largest cirque in the White Mountains of New Hampshire with the small and beautiful Spaulding Lake lying at its floor. From the cirque's low end, the West Branch of the Peabody River flows eastward.

Lye Brook Wilderness

The Lye Brook Wilderness is in the southern Green Mountains of Vermont. Lye Brook flows through the western half of this wilderness, which ranges from 900 feet to 2900 feet above sea level. Most of the wilderness is above 2500 feet, on a high plateau with several ponds and bogs. Waterfalls and rocky streams are found here as well as reflecting pools. The western section is extremely steep, facing west-northwest towards U.S. Route 7 and Manchester. Four and a half miles of the Appalachian/Long Trail cross the northwest tip of the wilderness.

Moosehorn Wilderness

This wilderness is located within northern Maine's Moosehorn National Wildlife Refuge, a refuge and breeding ground for migratory birds, endangered species, and other wildlife. Scientists at Moosehorn have provided valuable information to stem the decline in the American Woodcock, also called a Timberdoodle. Bald eagles frequent the refuge, and black bears and white-tailed deer are common. Ducks, geese, and loons congregate on more than 50 lakes.

Presidential Range/Dry River Wilderness

The large glacial cirque known as Oakes Gulf lies at the headwaters of the Dry River in New Hampshire. This river - and just to the east the Rocky Branch - carve sharply down through the heart of this Wilderness and offer contrast to the surrounding long, high ridgelines of the Southern Presidential Range and Montalban Ridge. The Dry River is something of a misnomer, as anyone who has tried to cross it after a period of even moderate rain can attest. The streams in this Wilderness are flashy and swift and run cold and clear from snow that melts well into the summer.

Completeness Checklist

The checklist on the following pages has been provided by EPA to help states submit complete Progress Reports. New York is using this checklist to direct the reader to the areas of the SIP that address the items required by EPA. Please refer to the Table of Contents for page numbers.

5-yr Progress Report Submittal Checklist Submitted under 40 CFR 51.308 (g)-(h)		
Regulation Citation	Regulation Summary (<i>not verbatim</i>)	Location in 5-year progress report template
Report Requirements		
51.308(g)(1)	Status of Control Strategies in the Regional Haze SIP: Does the report include a list of measures the state relied upon?	Section 3 – BART Section 4 – EGU controls Section 5-Additional measures
51.308(g)(2)	Emissions Reductions from Regional Haze SIP Strategies: Does the report include estimated reduction estimates for these measures?	Section 6
51.308(g)(3)	Visibility Progress: Does the report include the summaries of monitored visibility data as required by the Regional Haze Rule?	Section 2
51.308(g)(4)	Emissions Progress: Does the report provide emissions trends across the entire inventory for a 5-year period as required by the Regional Haze Rule?	Section 7
51.308(g)(5)	Assessment of Changes Impeding Progress: Does the report include an explicit statement of whether there are anthropogenic emissions changes impeding progress?	Section 8
51.308(g)(6)	Assessment of Current Strategies: Does the report include an assessment of whether the state's haze plan is on track to meet RPGs?	Section 9

5-yr Progress Report Submittal Checklist Submitted under 40 CFR 51.308 (g)-(h)		
Regulation Citation	Regulation Summary <i>(not verbatim)</i>	Location in 5-year progress report template
51.308(g)(7)	Review of Monitoring Strategy: Does the report review the monitoring plan including any non-IMPROVE monitors the state is using?	Section 10
51.308(h)	Determination of Adequacy: Does the report (or the transmittal materials) provide the explicit determination required by the Regional Haze Rule?	Section 11

SIP Submittal

This Progress Report (Report) constitutes a SIP revision pursuant to the requirements of 40 CFR 51.308(g), (h) and (i). DEC has the necessary authority, as described below, to adopt this SIP revision and any other required rules and regulations.

Ambient Air Quality Monitoring, Compilation, Analysis and Reporting (§110(a)(2)(B))

CAA Section 110(a)(2)(B) requires SIPs to include provisions to provide for the establishment and operation of ambient air quality monitors, collecting and analyzing ambient air quality data, and making these data available to EPA upon request. This information is included in the various SIPs that have been submitted to EPA.

DEC measures air pollutants at more than 80 sites across the state, using continuous and/or manual instrumentation. These sites are part of the federally-mandated National Air Monitoring Stations Network (NAMS) and the State and Local Air Monitoring Stations (SLAMS) Network. Real time direct reading measurements include gaseous criteria pollutants (ozone, SO₂, NO_x, carbon monoxide), PM_{2.5}, and meteorological data. Filter based PM_{2.5}, lead, and acid deposition samples are collected manually and shipped to the laboratory for analysis. The information obtained is compared to the National Ambient Air Quality Standards (NAAQS) and is used to determine the attainment status of areas where these pollutants are monitored.

The near real-time data for gaseous pollutants and PM_{2.5} are used for Air Quality Index (AQI) projection, and can be accessed by interested parties on the DEC web site. DEC also provides real-time data to EPA for [AIRNow](#) live national ozone mapping. All ambient measurements undergo data validation and are subsequently submitted to EPA's Air Quality System (AQS) for public access.

DEC commits to continue to operate an air quality monitoring network that complies with EPA requirements and to submit data to EPA's AQS.

Enforcement and Stationary Source Permitting (§110(a)(2)(C))

CAA Section 110(a)(2)(C) requires States to include a program providing for enforcement of all SIP measures and the regulation of construction of new or modified stationary sources to meet Prevention of Significant Deterioration (PSD) and nonattainment new source review (NNSR) requirements. 6 NYCRR Part 231, New Source Review for New and Modified Facilities, was approved by EPA on December 17, 2010 (75 FR 70410) for inclusion in the SIP. This regulation meets the federal requirements for the application of PSD and New Source Review requirements in New York and is presently in effect in New York. The application of these requirements ensures that major sources of PM_{2.5} in the state meet the requirements of the federal PSD and NNSR permitting programs as they apply to PM_{2.5}. With PSD and NNSR

requirements for PM_{2.5} now in effect in New York, DEC meets the requirement ensuring that major sources in this state will not cause or contribute to air pollution in excess of the NAAQS in New York or other states.

New York ensures that all applicable federal PSD requirements which are included in PSD permits are incorporated into Title V operating permits, and that all federally-enforceable requirements are applied and enforced. New York therefore affirms that the current NNSR and PSD permitting programs remain in effect and continue to apply to the state's major stationary sources, and that the requirements from these programs are federally enforceable.

ECL Section 19-0305 and Article 71 Sections 71-2103 and 71-2105 authorizes the Commissioner of Environmental Conservation to enforce the codes, rules and regulations of the DEC established in accordance with Article 19. The SIP is a compilation of rules and regulations that have been duly promulgated by DEC in accordance with its statutory authority and consistent with the State Administrative Procedures Act (SAPA). Therefore, DEC has the authority to enforce all SIP measures.

Assurance of Adequate Resources (§110(a)(2)(E))

CAA Section 110(a)(2)(E) requires States to provide (i) necessary assurances that the State will have adequate personnel, funding and authority under State law to carry out its SIP, (ii) requirements that the State comply with the requirements respecting State boards under CAA Section 128, and (iii) necessary assurances that, where the State has relied on a local or regional government, agency, or instrumentality for the implementation of any plan provision, the State has responsibility for ensuring adequate implementation of such plan provision.

The Division of Air Resources (DAR), with a staff of 220 receives both operating and capital funding. Operating funds are allocated to the Division annually and are used for daily administrative expenses. These expenses include salaries, fringe benefits, indirect and non-personnel services such as travel, supply and equipment costs. Indirect costs are, in turn, allocated to other Departments or divisions that support DAR activities. DAR is allocated operating funds from five sources: General Fund, Utility Environmental Regulatory Account, Co-operative Agreements (i.e., EPA Section 103 and 105 grants) and the Clean Air Fund, which is comprised of the Title V and Mobile Source accounts.

Capital funds are allocated to DAR at the discretion of the State legislature and are used for the financing or acquisition of capital facilities such as the construction of an air monitoring site. DAR is allocated capital funds from three sources: General Fund, Mobile Source Account and Rehabilitation and Improvement.

Section 110(a)(2)(E)(ii) requires that the State comply with the requirements respecting state boards under CAA Section 128. New York's Public Officer's Law (POL) satisfies these requirements. Specifically, POL Section 74(2) states "No officer or employee of a

state agency, member of the legislature or legislative employee should have any interest, financial or otherwise, direct or indirect, or engage in any business or transaction or professional activity or incur any obligation of any nature, which is in substantial conflict with the proper discharge of his duties in the public interest.” POL 74(3)(e) states “No officer or employee of a state agency, member of the legislature or legislative employee should engage in any transaction as representative or agent of the state with any business entity in which he has a direct or indirect financial interest that might reasonably tend to conflict with the proper discharge of his official duties.”

Finally, DEC confirms that where the State has relied on a local or regional government, agency, or instrumentality for the implementation of any plan provision, the State has responsibility for ensuring adequate implementation of such plan provision.

Emergency Powers and Contingency Plans (§110(a)(2)(G))

CAA Section 110(a)(2)(G) requires States to provide for authority to address activities causing imminent and substantial endangerment to public health, including contingency plans to implement the emergency episodes in their SIPs. Articles 3 and 19 of the ECL provide this authority to the DEC and are included in the SIP.

Among other provisions, ECL Section 3-0301 entitled “General functions, powers and duties of the department and the commissioner” authorizes DEC to prevent and control air pollution emergencies, as defined in subdivision 1 of ECL Section 3. In exercising such prevention and control, DEC and the Commissioner of Environmental Conservation may limit the consumption of fuels and use of vehicles, curtail or require the cessation of industrial processes and limit or require the cessation of incineration and open burning, and take any other action he may deem necessary to prevent and/or control air pollution emergencies. The DEC adopted 6 NYCRR Part 207, Control Measures for an Air Pollution Episode, and EPA approved this regulation as part of the New York SIP (46 FR 55690).

Authority for SIP Revisions for Revised NAAQS (§110(a)(2)(H))

CAA Section 110(a)(2)(H) requires States to have the authority to revise their SIPs in response to changes in the NAAQS, availability of improved methods for attaining the NAAQS, or in response to an EPA finding that the SIP is substantially inadequate.

Revisions to the SIP are authorized by Article 19 and Sections 3-0301, 19-0103, 19-0301, 19-0303 and 19-0305 of the ECL. Article 19 of the ECL was adopted to protect New York’s air resources from pollution and to effectuate the policy of the State to maintain a reasonable degree of purity of the air resources, consistent with the public health and welfare and the industrial development of the State. To this end, the Legislature gave DEC specific powers and duties, including the power to promulgate regulations for preventing, controlling, or prohibiting air pollution. DEC also has the specific authority to regulate motor vehicle exhaust and approve air contaminant control systems as well as regulate fuels. Section 71-2103 provides general enforcement authority for the air regulations. Section 71-2105 provides criminal enforcement

authority.

Authority for SIP Revisions for New Nonattainment Areas (§110(a)(2)(I))

CAA Section 110(a)(2)(I) requires States to have the authority to revise their SIPs in response to changes in nonattainment areas.

Revisions to the SIP are authorized by the same citations as described in the above paragraph regarding SIP revisions for revised NAAQS.

Consultation, Public Notification and PSD/Visibility (§110(a)(2)(J))

CAA Section 110(a)(2)(J) requires States to meet the applicable requirements of CAA Section 121 relating to consultation, CAA Section 127 relating to public information and Part C relating to PSD and visibility protection.

CAA Section 121 requires States to provide a satisfactory process of consultation with general purpose local governments, designated organizations of elected officials of local governments and any FLMs having authority over Federal land to which the State plan applies. Though there are no Federal lands within New York State to which the SIP applies, DEC has participated in the consultation process of the Regional Haze SIP (40 CFR 51.308) with the FLMs, States and Tribes of MANE-VU, and other regional planning organizations where emissions from New York are reasonably anticipated to contribute to visibility impairment to Class I areas.

CAA Section 127 requires State plans to contain measures which will be effective to notify the public during any calendar year, on a regular basis, of instances or areas in which any national primary ambient air quality standard is exceeded or was exceeded during any portion of the preceding calendar year to advise the public of the health hazards associated with such pollution, and to enhance public awareness of the measures which can be taken to prevent such standards from being exceeded and the ways in which the public can participate on regulatory and other efforts to improve air quality.

DEC's website, at <http://www.dec.ny.gov/chemical/34985.html>, contains an AQI for reporting daily air quality to the public. It describes how clean or polluted the air is, and what associated health effects might be a concern. It was created as a way to correlate levels of different pollutants to one scale; the higher the AQI value, the greater the health concern. When levels of ozone and/or fine particles are expected to exceed an AQI value of 100, an Air Quality Health Advisory is issued alerting sensitive groups to take the necessary precautions. DEC, in cooperation with the New York State Department of Health, posts warnings on the above-referenced website if dangerous conditions are expected to occur. These warnings are also aired through the media, and are available on DEC's toll-free Air Quality Hotline at 1-800-535-1345. The Air Quality Forecast displays the predicted AQI value for eight regions in New York State. It also displays the observed values for the previous day. Air quality measurements from New York's statewide continuous monitoring network are updated hourly where

available. Parameters monitored include ozone, fine particulate, carbon monoxide, sulfur dioxide, nitrogen oxides, methane/non-methane hydrocarbons, and meteorological data. Additional ozone information to enhance public awareness is located at <http://www.dec.ny.gov/chemical/8400.html>.

Air Quality Modeling / Data (§110(a)(2)(K))

CAA Section 110(a)(2)(K) requires States to provide for the performance of such air quality modeling as the EPA Administrator (Administrator) may prescribe for the purpose of predicting the effect on ambient air quality of any emissions of any air pollutant for which the Administrator has established a NAAQS. It also requires States to submit, upon request, data related to such air quality modeling to the Administrator.

DEC certifies that the air quality modeling and analysis used in SIPs complies with EPA's "Guidance on the use of models and other analyses for demonstrating attainment of air quality goals for ozone, PM_{2.5} and regional haze." (EPA-454/B-07-002, April 2007) and commits to continue to use air quality models in accordance with EPA's approved modeling guidance and to submit data to the Administrator if requested.

Consultation / Participation by Affected Local Entities (§110(a)(2)(M))

CAA Section 110(a)(2)(M) requires States to provide for consultation and participation by local political subdivisions affected by the plan.

Consultation and participation by local political subdivisions are provided through the SIP Task Force established on December 22, 2005, which consists of officials from thirty-seven local governments and designated organizations of elected officials. DEC utilizes the SIP Task Force as necessary for consultation on plans.

In addition, DEC informs involved agencies from the New York State Department of Transportation, Federal Transit Administration, Federal Highway Administration, EPA and Municipal Planning Organizations of all planning activities through the Interagency Consultation Provisions of 6 NYCRR Part 240, "Transportation Conformity."

DEC commits to continue to provide for consultation and participation by local political subdivisions.

The requirements addressed in the following sections include the status of implementing committed control measures, summaries and analyses of emission and monitoring changes, and a determination that the SIP is adequate to achieve continued progress towards the 2064 natural visibility conditions goal for mandatory Class I areas impacted by sources in New York State.

New York State's Regional Haze SIP contains the emission reductions needed to achieve New York's share of emission reductions agreed upon through the regional planning process. Furthermore, New York's Regional Haze SIP ensures that emissions from the State will not interfere with the RPGs for neighboring states' Class I areas. EPA approved New York State's Regional Haze SIP because it meets the

applicable visibility related requirements of the CAA section 110(a)(2) including, but not limited to 110(a)(2)(D)(i)(II) and 110(a)(2)(J), relating to visibility protection for the 1997 8-Hour Ozone NAAQS and the 1997 and 2006 PM_{2.5} NAAQS. In a Federal Register Notice dated August 28, 2012 (Vol.77, No. 167) EPA issued a final rule effective September 27, 2012 partially approving New York State's Regional Haze SIP and promulgated a FIP to address two sources where EPA disapproved New York's BART determinations.

Pursuant to 40 CFR 51.308(g), this submittal complies with 40 CFR 51.102 and 40 CFR 51.103, having offered the public the opportunity to request a hearing and/or to comment on the proposed SIP revision. Public notice and opportunity for comment was provided. All comments were summarized and incorporated into this SIP revision, along with a copy of the public notice. Furthermore, as demonstrated in this SIP revision, DEC has met the requirements of 40 CFR 51.308(g), (h) and (i).

In accordance with 40 CFR 51.308(i), DEC provided FLMs an opportunity for consultation, in person and at least 60 days before holding any public hearing on this SIP revision. DEC will continue to coordinate with the FLMs on future revisions to the State's Regional Haze SIP. Section 11 of this document provides details of the consultation with FLMs.

In summary, this SIP revision fulfills all requirements for progress reports pursuant to 40 CFR 51.102, 40 CFR 51.103 and 40 CFR 51.308 (g), (h) and (i), and thus meets EPA's criteria for full approval.

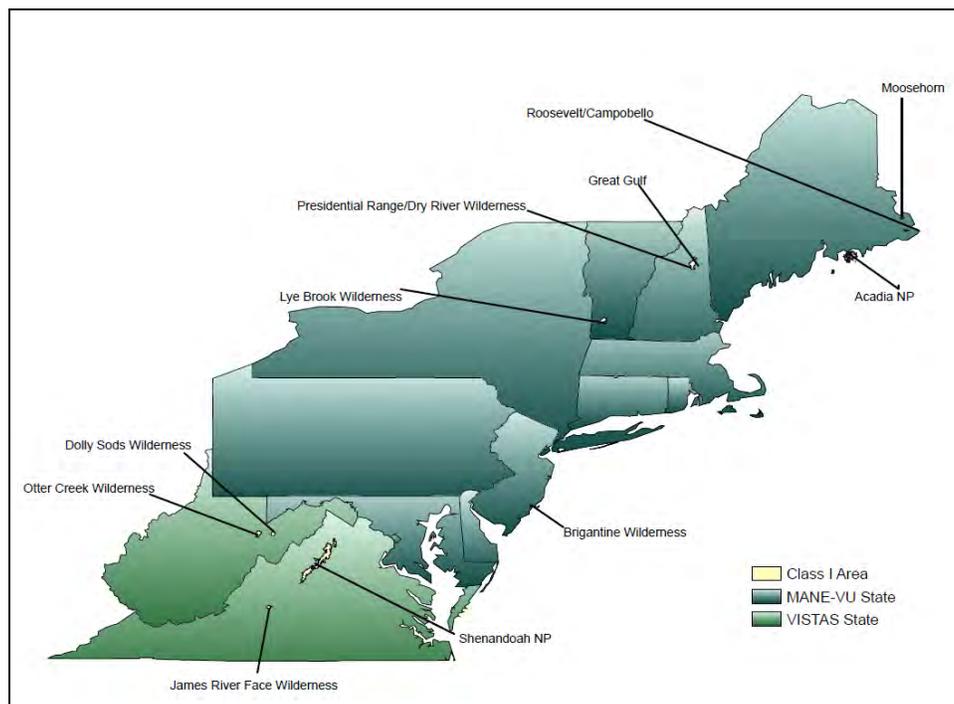
Section 1: Federal Regional Haze Program Requirements

1.1. Background

The CAA sets requirements to protect the air quality-related values of national parks and wilderness areas. Specifically, Section 169A of the CAA requires the “prevention of any future, and the remedying of any existing impairment of visibility in Class I areas which impairment results from manmade air pollution.”

Areas protected by this portion of the CAA include national parks exceeding 6,000 acres, wilderness areas and national memorial parks exceeding 5,000 acres, and all international parks in existence on August 7, 1977. There are 156 Class I areas in the United States, of which eleven are in or near the Mid-Atlantic and Northeast Region (Figure 1.1).

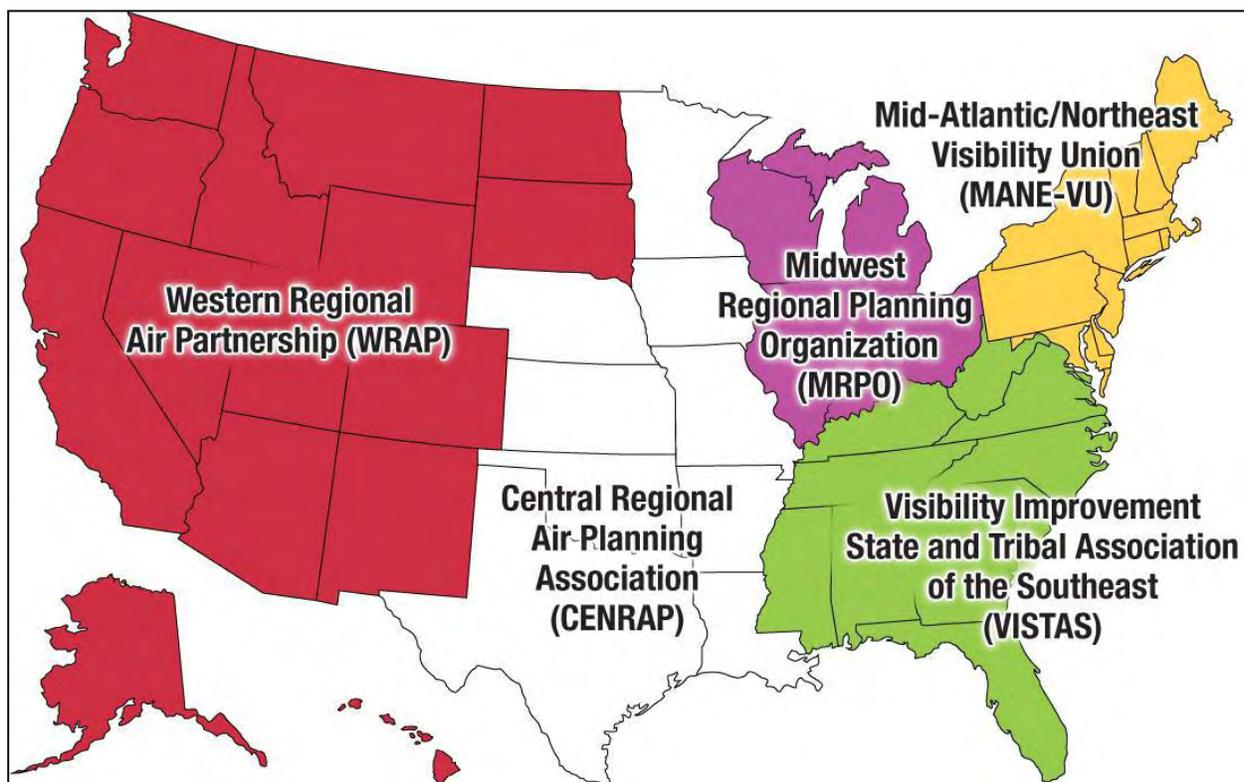
Figure 1.1 Near-by Class I Areas



The CAA directed EPA to promulgate regulations to assure reasonable progress toward meeting the national goal of improved visibility in Class I areas. On July 1, 1999, EPA finalized the Regional Haze Rule (64 FR 35714, July 1, 1999) (40 CFR 51.300-308). The rule calls for state, tribal, and federal agencies to work together to improve visibility.

In cooperation with the States, EPA designated five Regional Planning Organizations (RPOs) to assist with the coordination and cooperation states and tribes needed to address the visibility issue. New York State is a member of MANE-VU.

Figure 1.2 Map of U.S. Regional Planning Organizations



States and tribes in the Northeast and Mid-Atlantic region, along with Federal Land Management Agencies and EPA, worked together through MANE-VU to develop strategies for reducing the haze that obscures natural vistas in areas designated in the CAA as Class I areas. In 2006, MANE-VU determined that the predominant cause of haze pollution in Northeast parks and wilderness areas is sulfate particles due to sulfur dioxide emissions from burning coal and oil to provide heat and power to homes, businesses, and industries. Additional pollutants contributing to regional haze are emitted by power plants, boilers, furnaces, motor vehicles, and other fuel-burning equipment as well as forest fires and wood combustion. See “*Contributions to Regional Haze in the Northeast and Mid-Atlantic States*, NESCAUM, 2006” found at the following link: <http://www.nescaum.org/documents/contributions-to-regional-haze-in-the-northeast-and-mid-atlantic--united-states/>

EPA’s Regional Haze Rule requires States to develop SIPs to reduce the pollution that causes visibility impairment. These plans establish RPGs and emission reduction strategies for various air pollution sources including area sources, mobile sources (both on-road and non-road sources), and point sources.

1.2. Summary of the Requirements for Periodic Progress Reports

This SIP revision fulfills the requirements of 40 CFR 51.308(g), (h), (i) and 40 CFR 51.102 and 103. The following paragraphs summarize those requirements. The primary purpose of this SIP revision is to provide an update on the status of implementing measures in the state's Regional Haze SIP.

1.2.1. General and Procedural Requirements

The federal Regional Haze Rule requires each 5-year periodic progress report to be in the form of a SIP revision that complies with the procedural requirements of the CAA as well as the requirements of the Regional Haze Rule. The periodic report must address the following regulatory requirements:

- (1) 40 CFR 51.102 - public hearings;
- (2) 40 CFR 51.103 - EPA submittal requirements;
- (3) 40 CFR 51.308(g) - evaluate progress towards the RPGs established in the initial SIP for each mandatory Class I Federal area located within the State and each mandatory Class I Federal area located outside the State which may be affected by emissions from within the State;
- (4) 40 CFR 51.308(h) - determine the adequacy of existing implementation plan; and
- (5) 40 CFR 51.308(i) - provide continued coordination with other states with Class I areas impacted by New York State, as well as consult with FLMs and EPA in order to maintain and improve the visibility in the Class I area. (40 CFR 51.308(i) requires States to give FLMs 60 days to review and draft comments on the proposed SIP, *prior* to the public hearing on any SIP revision related to Regional Haze.)

1.2.2. Required Elements of the Progress Report SIP

According to 40 CFR 51.308(g), 5-Year Progress Reports must contain at a minimum the following elements:

- (1) A description of the status of implementation of all measures included in the implementation plan for achieving RPGs for mandatory Class I Federal areas both within and outside the State.
- (2) A summary of the emissions reductions achieved throughout the State through implementation of the measures described in 40 CFR 308(g)(1).
- (3) For each mandatory Class I Federal area within the State, the State must assess the following visibility conditions and changes, with values for most impaired and least impaired days expressed in terms of 5-year averages of these annual values:
 - The current visibility conditions for the most impaired and least impaired days;
 - The difference between current visibility conditions for the most impaired and least impaired days and baseline visibility conditions; and

- The change in visibility impairment for the most impaired and least impaired days over the past 5 years;

This requirement does not apply to New York State because there are no Class I areas in New York State.¹

- (4) An analysis tracking the change over the past 5 years in emissions of pollutants contributing to visibility impairment from all sources and activities within the State. Emissions changes should be identified by type of source or activity. The analysis must be based on the most recent updated emissions inventory, with estimates projected forward as necessary and appropriate, to account for emissions changes during the applicable 5-year period.
- (5) An assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred over the past 5 years that have limited or impeded progress in reducing pollutant emissions and improving visibility.
- (6) An assessment of whether the current implementation plan elements and strategies are sufficient to enable the State, or other States with mandatory Federal Class I areas affected by emissions from the State, to meet all established RPGs.
- (7) For Class I areas only, a review of the State's visibility monitoring strategy and any modifications to the strategy as necessary. This requirement does not apply because there are no Class I areas in New York State.

Each of these required elements is addressed in subsequent sections of this report.

1.2.3. Required State Actions

Based on the required calculations and assessments in the progress report, the State must take one of four actions as specified in 40 CFR 51.308(h). If the State finds that an additional substantive SIP revision is not required, then it may submit a "negative declaration" to EPA after opportunity for public review and comment. The EPA anticipates that if the State is implementing a reasonable set of strategies according to the schedule as developed in the previous comprehensive SIP revision, and that visibility trends show that RPGs should be achieved over the 10-year long-term strategy period, then the State should be able to certify, through a negative declaration, that no additional control measures are needed at the time of this mid-course review.

¹"Interagency Monitoring of Protected Visual Environments" (IMPROVE) monitors are necessary for certain analysis and assessments of visibility. There are no Class I areas within New York's borders, and New York no longer operates an IMPROVE monitor. Accordingly, EPA stated in their August 28, 2012 approval of New York's Regional Haze SIP, 77 FR 51915, effective September 27, 2012, that DEC was not required to address the elements below as part of its Regional Haze SIP. Thus it is appropriate that DEC also not address them within its 5-Year Progress Report:

- a) Calculation of baseline and natural visibility conditions,
- b) Establishment of reasonable progress goals,
- c) Monitoring requirements, and
- d) Reasonably Attributable Visibility Impairment (RAVI) requirements.

If the State finds that over the past 5 years there has been a substantial increase in emissions by intrastate sources, or there has been a deficiency in plan implementation, the Regional Haze Rule requires the State to revise the SIP via a mid-course correction within 1 year, rather than waiting for the next 10-year comprehensive review.

If the State finds that there is a substantial increase in emissions or a deficiency in plan implementation resulting primarily from interstate emissions, 40 CFR 51.308(h)(2) calls for the State to re-initiate the regional planning process with other States so that the deficiency can be addressed in the next comprehensive SIP revision due in 5 years.

If the State finds that international emissions sources are responsible for a substantial increase in emissions affecting visibility conditions in any Class I area or causing a deficiency in plan implementation, the State must submit a technical demonstration to EPA in support of its finding. If EPA agrees with the State's finding, EPA will take appropriate action to address the international emissions through available mechanisms.

1.3. MANE-VU Regional Course of Action

The RPGs adopted by the MANE-VU Class I States represent implementation of the regional course of action set forth by MANE-VU on June 20, 2007 in the following documents:

- “Statement of the Mid-Atlantic/Northeast Visibility Union (MANE-VU) Concerning a Course of Action within MANE-VU toward Assuring Reasonable Progress,”
- “Statement of the Mid-Atlantic/Northeast Visibility Union (MANE-VU) Concerning a Request for a Course of Action by States Outside MANE-VU Toward Assuring Reasonable Progress,” and
- “Statement of the Mid-Atlantic/Northeast Visibility Union (MANE-VU) Concerning a Request for a Course of Action by the U.S. Environmental Protection Agency (EPA) toward Assuring Reasonable Progress.”

These “Statements” are commonly known as the “MANE-VU Ask” and are summarized below. (See also Appendices B-D.)

MANE-VU modeling demonstrated that certain control strategies described in section 1.3.1, in addition to on-the-books/on-the-way (OTB/OTW) measures would enable all MANE-VU Class I areas to meet their reasonable progress targets in 2018.

1.3.1. Requested Action within MANE-VU

On June 20, 2007, the Mid-Atlantic and Northeast States agreed to pursue a coordinated course of action designed to assure reasonable progress toward preventing any future, and remedying any existing impairment of visibility in mandatory Class I Federal Areas within MANE-VU and to leverage the multi-pollutant benefits that such

measures may provide for the protection of public health and the environment. This course of action includes pursuing the adoption and implementation of the following “emission management” strategies by MANE-VU states, as appropriate and necessary:

- Timely implementation of BART requirements; and
- A low sulfur fuel oil strategy in the inner zone States (New Jersey, New York, Delaware, and Pennsylvania, or portions thereof) to reduce the sulfur content: of distillate oil to 0.05% sulfur by weight (500 ppm) by no later than 2012, of #4 residual oil to 0.25% sulfur by weight by no later than 2012, of #6 residual oil to 0.3 – 0.5% sulfur by weight by no later than 2012, and to further reduce the sulfur content of distillate oil to 15 ppm by 2016; and
- A low sulfur fuel oil strategy in the outer zone States (the remainder of the MANE-VU region) to reduce the sulfur content of distillate oil to 0.05% sulfur by weight (500 ppm) by no later than 2014, of #4 residual oil to 0.25 – 0.5% sulfur by weight by no later than 2018, and of #6 residual oil to no greater than 0.5% sulfur by weight by no later than 2018, and to further reduce the sulfur content of distillate oil to 15 ppm by 2018, depending on supply availability; and
- A 90% or greater reduction in SO₂ emissions from each of the EGU stacks identified by MANE-VU (Appendix F) – comprising a total of 167 stacks as reasonably anticipated to cause or contribute to impairment of visibility in each mandatory Class I Federal area in the MANE-VU region. If it is infeasible to achieve that level of reduction from a unit, alternative measures will be pursued in such State; and
- Continued evaluation of other control measures including energy efficiency, alternative clean fuels, and other measures to reduce SO₂ and NO_x emissions from all coal-burning facilities by 2018 and new source performance standards for wood combustion. These measures and other measures identified will be evaluated during the consultation process to determine if they are reasonable and cost-effective.

This long-term strategy to reduce and prevent regional haze will allow each state up to 10 years to pursue adoption and implementation of reasonable and cost-effective NO_x and SO₂ control measures.

The control measures included in New York’s SIP in response to the MANE-VU agreement are described in sections 3 through 5 of this Report.

Section 2: Changes in Visibility for each Mandatory Federal Class I Area in and near MANE-VU

2.1. Reasonable Progress Goals

The goal of the Regional Haze Rule is to restore natural visibility conditions to each of the 156 Class I areas identified in the 1977 Clean Air Act Amendments. 40 CFR 51.301(q) defines natural conditions: "Natural conditions includes naturally occurring phenomena that reduce visibility as measured in terms of light extinction, visual range, contrast, or coloration." Regional Haze SIPs must contain measures that make "reasonable progress" toward this goal by reducing anthropogenic emissions that cause haze.

Each MANE-VU State with one or more Class I areas adopted a Regional Haze SIP identifying baseline visibility for the 5-year period from 2000 through 2004 and establishing goals that provide for reasonable progress in improving visibility at Class I areas in the state by 2018. Baseline visibility and RPGs were established for the 20% haziest days and the 20% clearest days.

MANE-VU states with Class I areas adopted three metrics of visibility, described below, to measure visibility improvement at Class I areas by 2018. These goals were approved by the U.S. EPA as reasonable progress toward achieving natural visibility conditions by the year 2064.

2.2. Requirements to Track Changes in Visibility

At 40 CFR 51.308(g)(3), the Regional Haze Rule requires states with Class I areas to assess the current visibility conditions for the five years of most recent visibility data, compare that to baseline visibility conditions for the 2000-2004 period, and assess the change in visibility impairment over the past five years. To mitigate the impacts of year-to-year variability in determining progress towards the RPGs, the Regional Haze Rule mandates the use of 5-year-averaged values of both the annual mean 20% best and 20% worst days determined for each site.

New York State does not have any Class I areas within its borders, therefore, an assessment of current visibility conditions is not required or included here. New York emissions do, however, impact visibility in Class I areas in other states.

For each Class I area, there are three metrics of visibility that are part of the determination of reasonable progress:

- Baseline conditions,
- Natural conditions (in 2064), and
- Current conditions.

Progress in improving visibility at Class I areas within MANE-VU is measured via the IMPROVE monitoring network. A coalition composed of the National Park Service (NPS), the Fish and Wildlife Service (FWS), the Bureau of Land Management (BLM), the Forest Service (FS) and the EPA established the Interagency Monitoring of Protected Visual Environments (IMPROVE) program in response to the 1977 amendments to the Clean Air Act. This monitoring network has collected speciated fine aerosol and related visibility data in or near Federal Class I areas in the United States since 1988.

2.3. Review of Recent IMPROVE Data

In 2013, the Northeast States for Coordinated Air Use Management (NESCAUM) prepared the report *Tracking Visibility Progress: 2004-2011*. The report analyzes visibility data from the 2000-2004 baseline through the most recent 5-year period with available data (2007-2011). The results of this analysis showed the following:

- There are definite downward trends in overall haze levels at the Class I areas in the MANE-VU region.
- Based on rolling-five year averages demonstrating progress since the 2000-2004 baseline period, the MANE-VU Class I areas appear to be on track to meet their 2018 RPGs for both best and worst visibility days.
- The trends are mainly driven by large reductions in sulfate light extinction, and to a lesser extent, nitrate light extinction.
- Levels of organic carbon mass (OCM) and light absorbing carbon (LAC) appear to be approaching natural background levels at most of the MANE-VU Class I areas.
- In some cases, the levels set by 2018 RPGs have already been met, and progress beyond those goals appears achievable.
- Though the Brigantine Wilderness Area is on track to meet its 2018 RPGs, challenges remain. Sulfate light extinction levels are higher at this site than at others across the region. Additional sulfate reductions would be a significant driver in reducing overall haze levels at Brigantine.

Table 2.1 and Figures 2.1(a-e) provide the most recent quality assured data for the Class I areas in MANE-VU in comparison to the baseline visibility measured for 2000-2004. Visibility at all MANE-VU Class I areas has improved, and all areas are expected to meet 2018 RPGs. As required, visibility is reported as a five-year average in deciviews. (See Appendix A for a discussion of how deciviews are calculated.)

In Figures 2.1(a-e), the “Uniform Rate of Progress” line indicates the rate of progress needed to achieve natural visibility by 2064 (the target set by the CAA). If the RPG for a Class I area for 2018 is below the Uniform Rate of Progress line, it indicates a faster rate of progress by 2018 than necessary to achieve the Uniform Rate of Progress. None of the MANE-VU states established RPGs for 2018 that provided for a slower rate

of improvement than the uniform rate.

Table 2.1. Reasonable Progress Goals in Approved Regional Haze Plans

	Class I Area	Baseline Visibility (2000 – 2004)	Current Visibility (2009-2013)	Reasonable Progress Goal Visibility (2018)	Natural Visibility Conditions
20% Hazeiest Days	Acadia National Park (ME)	22.9	17.9	19.4	12.4
	Brigantine Wilderness (NJ)	29.0	23.7	25.1	12.2
	Great Gulf Wilderness & Presidential Range-Dry River Wilderness (NH)	22.8	16.7	19.1	12.0
	Lye Brook Wilderness (VT)	24.4	18.8	20.9	11.7
	Moosehorn Wilderness and Roosevelt Campobello International Park (ME)	21.7	16.8	19.0	12.0
20% Clearest Days	Acadia National Park (ME)	8.8	7.02	8.3	4.7
	Brigantine Wilderness (NJ)	14.3	12.2	14.3	5.5
	Great Gulf Wilderness & Presidential Range-Dry River Wilderness (NH)	7.7	5.9	7.2	3.7
	Lye Brook Wilderness (VT)	6.4	4.9	5.5	2.8
	Moosehorn Wilderness and Roosevelt Campobello International Park (ME)	9.2	6.7	8.6	5.0

Source: *Tracking Visibility Progress: 2004-2011*, NESCAUM, April 30, 2013 (Revised May 24, 2013)
 Units: Visibility in deciviews.

Charts of MANE-VU Class I Area Visibility 2000 – 2013, compared to RPGs for 2018

Figure 2.1.a. Acadia National Park

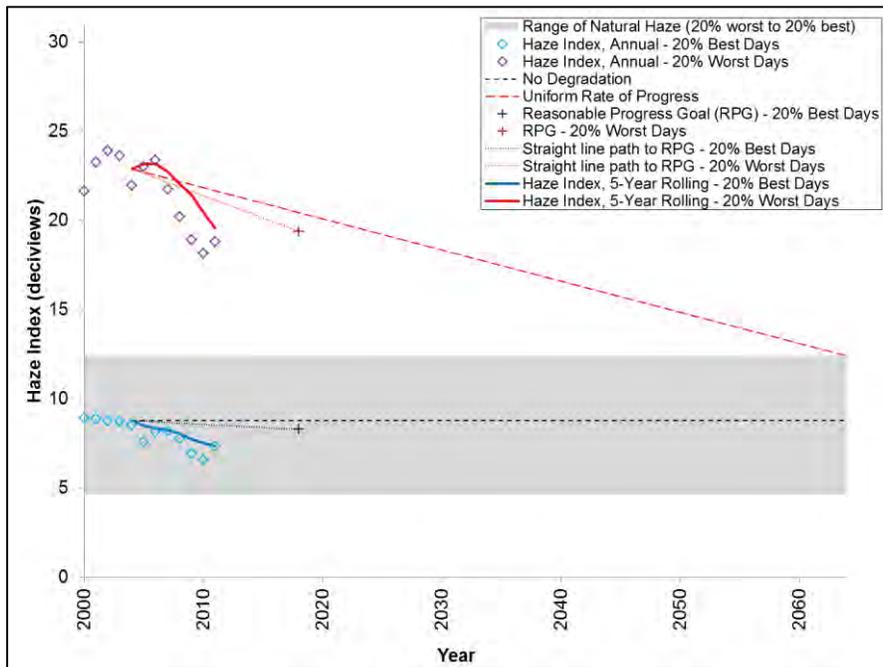


Figure 2.1.b. Brigantine Wilderness

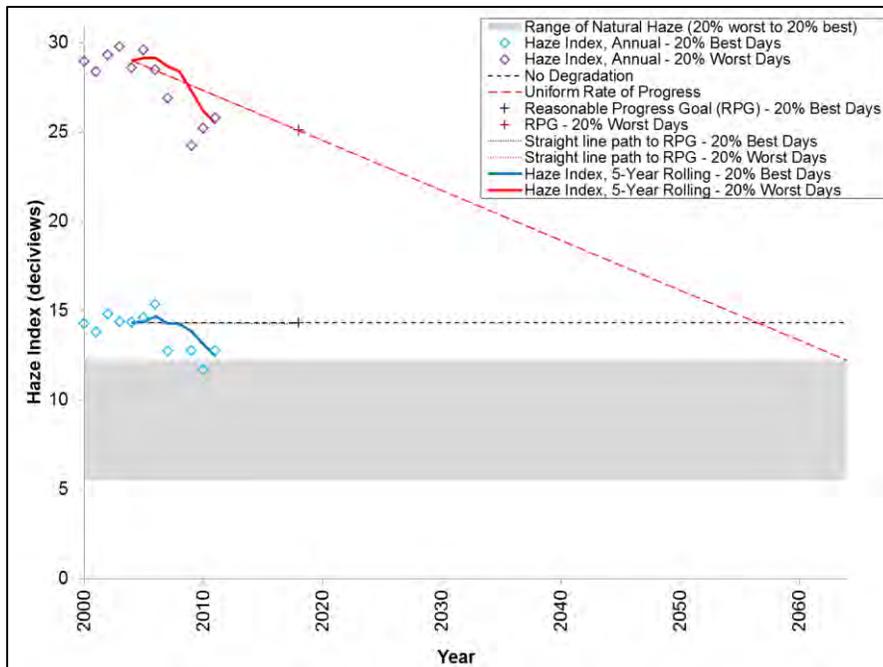


Figure 2.1.c. Great Gulf Wilderness

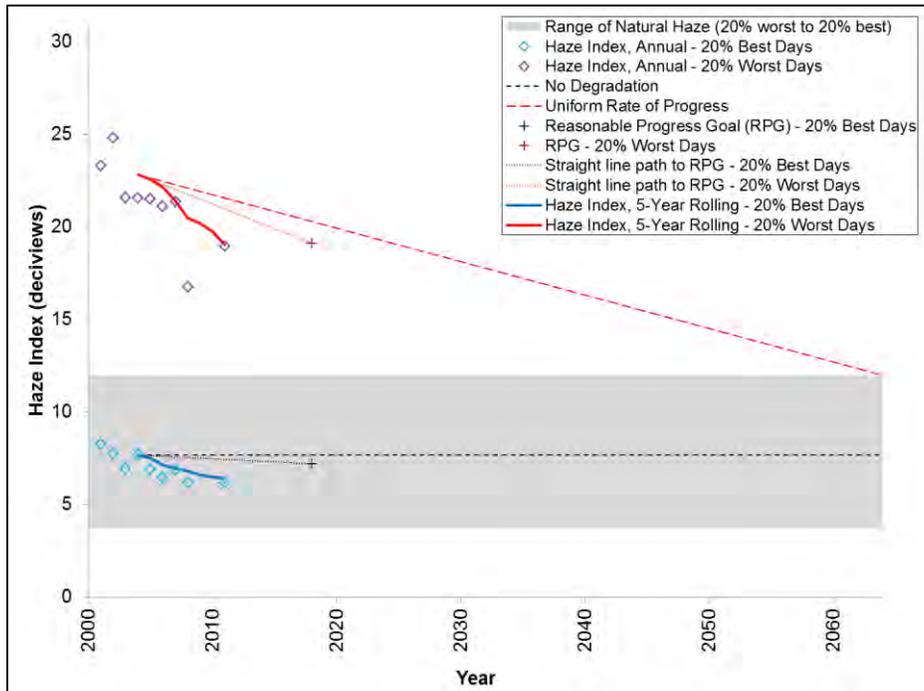


Figure 2.1.d. Lye Brook Wilderness

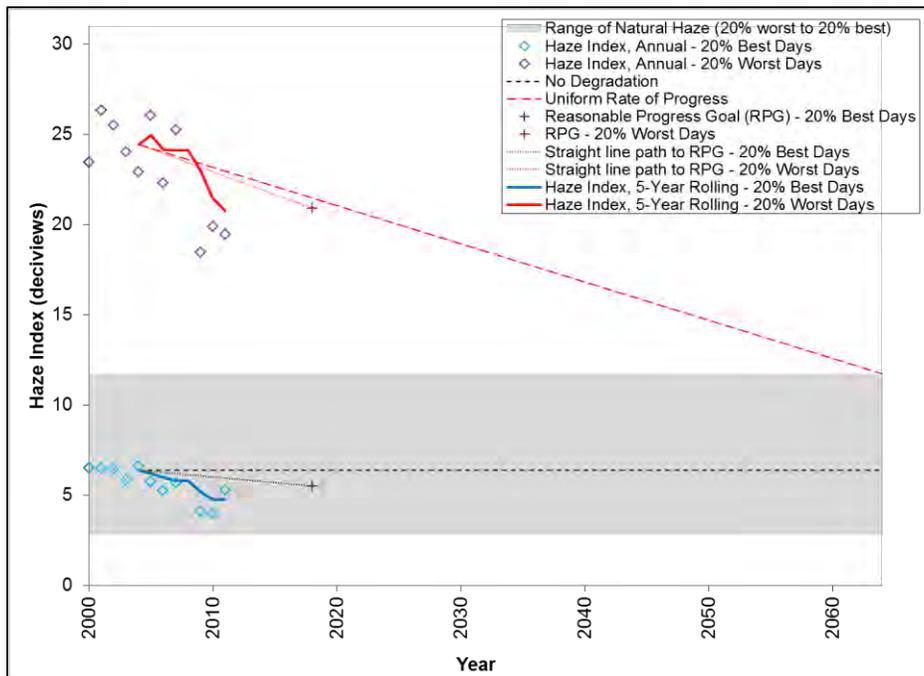
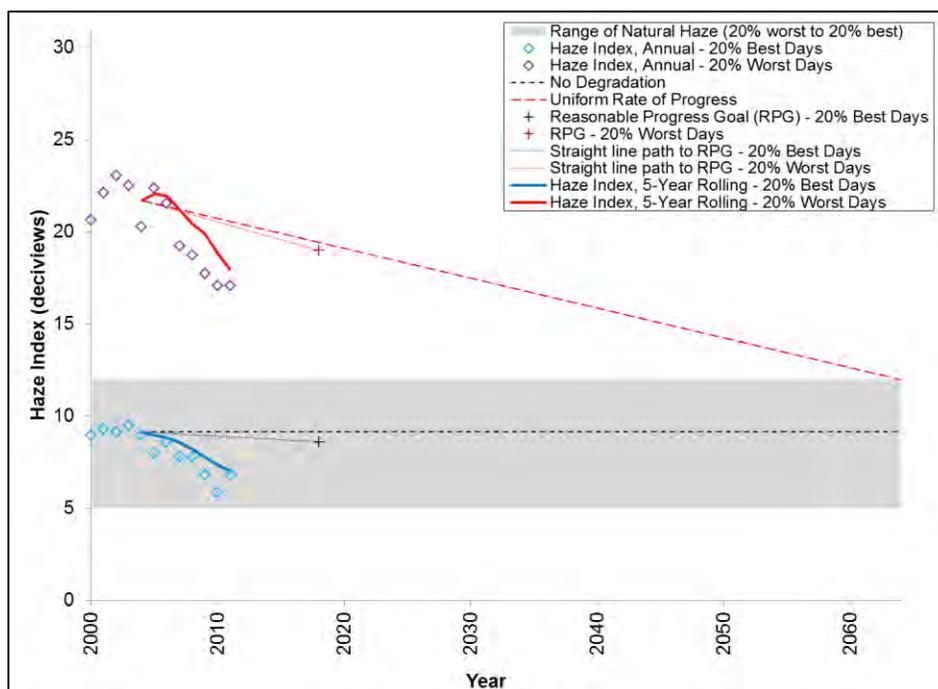


Figure 2.1.e. Moosehorn Wilderness



2.4. Tracking Visibility Progress – National Evaluation

The 2011 IMPROVE Report V: *Spatial and Seasonal Patterns and Temporal Variability of Haze and its Constituents in the United States*, reported on five-year average reconstructed light extinction (the regional haze tracking metric) at IMPROVE sites for the baseline 2000-2004 period as well as for the next five-year period, 2005-2009.² These five-year averages include total light extinction as well as the extinction contributed by separate pollutant species for the haziest 20% of days and for the clearest 20% of days for each of these 5-year periods.

Visibility at all MANE-VU Class I Area IMPROVE sites improved for the 2005-2009 period compared to the 2000-2004 baseline period. These improvements occurred for both the haziest 20% days (which are required to get gradually cleaner over time) as well as for the cleanest 20% days (which are required to get no worse over time). Improvements in total light extinction on both the haziest and the cleanest days resulted from reductions in light extinction from all four of the major visibility-impairing pollutant species: sulfates, nitrates, particulate organic matter, and elemental carbon.

For more details, see Chapter 9 and Appendix G of the IMPROVE Report V.

² Jenny L. Hand, et al., *Spatial and Seasonal Patterns and Temporal Variability of Haze and its Constituents in the United States: Report V*, June 2011, posted on the IMPROVE website at <http://vista.cira.colostate.edu/improve/publications/Reports/2011/2011.htm>

The IMPROVE Report V defined the baseline period as 2000 through 2004 and the first trend period as being 2005 through 2009. However, Tables 2.2 and 2.3 below have been updated to include data for the trend period of 2009-2013. The visibility index used is based on inverse megameters (Mm^{-1}), a measure of light extinction, and the deciview (dv) scale, a logarithmic transformation of light extinction, which for the Regional Haze Rule is derived from IMPROVE aerosol composition.

Table 2.2. Visibility Improvements by Particle Constituents through 2013 on Haziest 20% Days in MANE-VU Class I Areas

Haziest 20%	Acadia		Brigantine		Great Gulf		Lye Brook*		Moosehorn	
	2000-04	2009-13	2000-04	2009-13	2000-04	2009-13	2000-04	2009-13	2000-04	2009-13
Sulfate Bext	69.2	30.7	127.1	51.5	76.6	25.6	87.3	37.9	58.5	26.7
Nitrate Bext	8.0	4.8	15.7	16.1	3.0	2.3	9.1	6.6	6.4	3.3
POM Bext	11.2	8.3	24.2	13.7	14.4	11.0	15.3	8.6	11.9	8.4
EC Bext	4.3	2.4	7.0	4.8	3.9	2.3	4.8	2.9	4.4	2.2
Soil Bext	0.5	0.3	1.0	0.5	0.6	0.2	0.6	0.4	0.4	0.3
Coarse Bext	1.9	2.5	5.4	10.7	3.0	2.7	1.8	2.0	2.1	1.8
Sea Salt Bext	1.3	2.5	0.4	1.7	0.1	0.5	0.1	0.2	1.0	2.0
Total PM Bext	96.4	51.5	180.7	99.1	101.6	44.7	119.0	58.6	84.6	44.6
Deciview (dv)	22.9	17.9	29.0	23.8	22.8	16.7	24.4	18.8	21.7	16.8

*Bext means light extinction, and values are given in inverse megameters (Mm^{-1})

*2000-11 data from LYBR1 site and 2012-13 data from LYEB1 site

Table 2.3. Visibility Improvements by Particle Constituents through 2013 on Clearest 20% Days in MANE-VU Class I Areas

Clearest 20%	Acadia		Brigantine		Great Gulf		Lye Brook*		Moosehorn	
	2000-04	2009-13	2000-04	2009-13	2000-04	2009-13	2000-04	2009-13	2000-04	2009-13
Sulfate Bext	6.8	4.2	5.8	3.7	5.8	3.7	4.4	2.8	6.7	3.7
Nitrate Bext	1.1	0.6	1.0	0.6	1.0	0.6	1.2	0.8	1.1	0.5
POM Bext	2.2	1.7	2.0	1.3	2.0	1.3	1.3	0.9	3.1	1.8
EC Bext	0.9	0.5	0.8	0.4	0.8	0.4	0.6	0.4	1.0	0.5
Soil Bext	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1
Coarse Bext	0.7	0.8	0.9	0.7	0.9	0.7	0.5	0.4	1.1	0.7
Sea Salt Bext	0.4	0.6	0.2	0.3	0.2	0.3	0.1	0.1	0.3	0.5
Total PM Bext	12.2	8.4	10.7	7.1	10.7	7.1	8.1	5.5	13.3	7.7
Deciview (dv)	8.8	7.0	7.7	5.9	7.7	5.9	6.4	4.9	9.2	6.7

*Bext means light extinction, and values are given in inverse megameters (Mm^{-1})

*2000-11 data from LYBR1 site and 2012-13 data from LYEB1 site

Note that on both the haziest days and the clearest days, the constituent causing the most light extinction was sulfate, and in most cases, the data for 2009-2013 in each area shows improvement over the baseline period of 2000-2004.

Figure 2.2 Visibility Improvements through 2013 by Particle Constituents on Haziest 20% Days at Acadia National Park

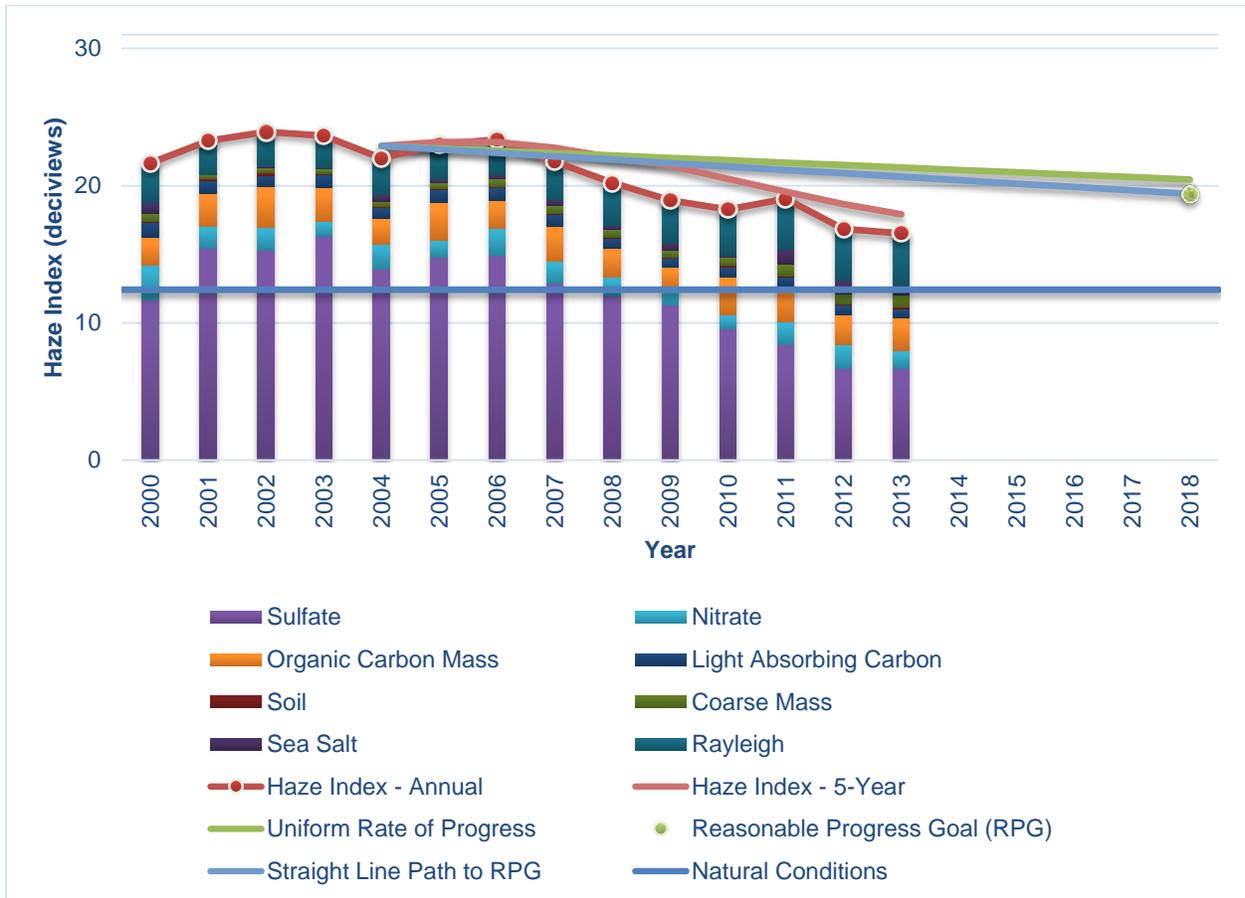


Figure 2.3 Visibility Improvements through 2013 by Particle Constituents on Clearest 20% Days at Acadia National Park

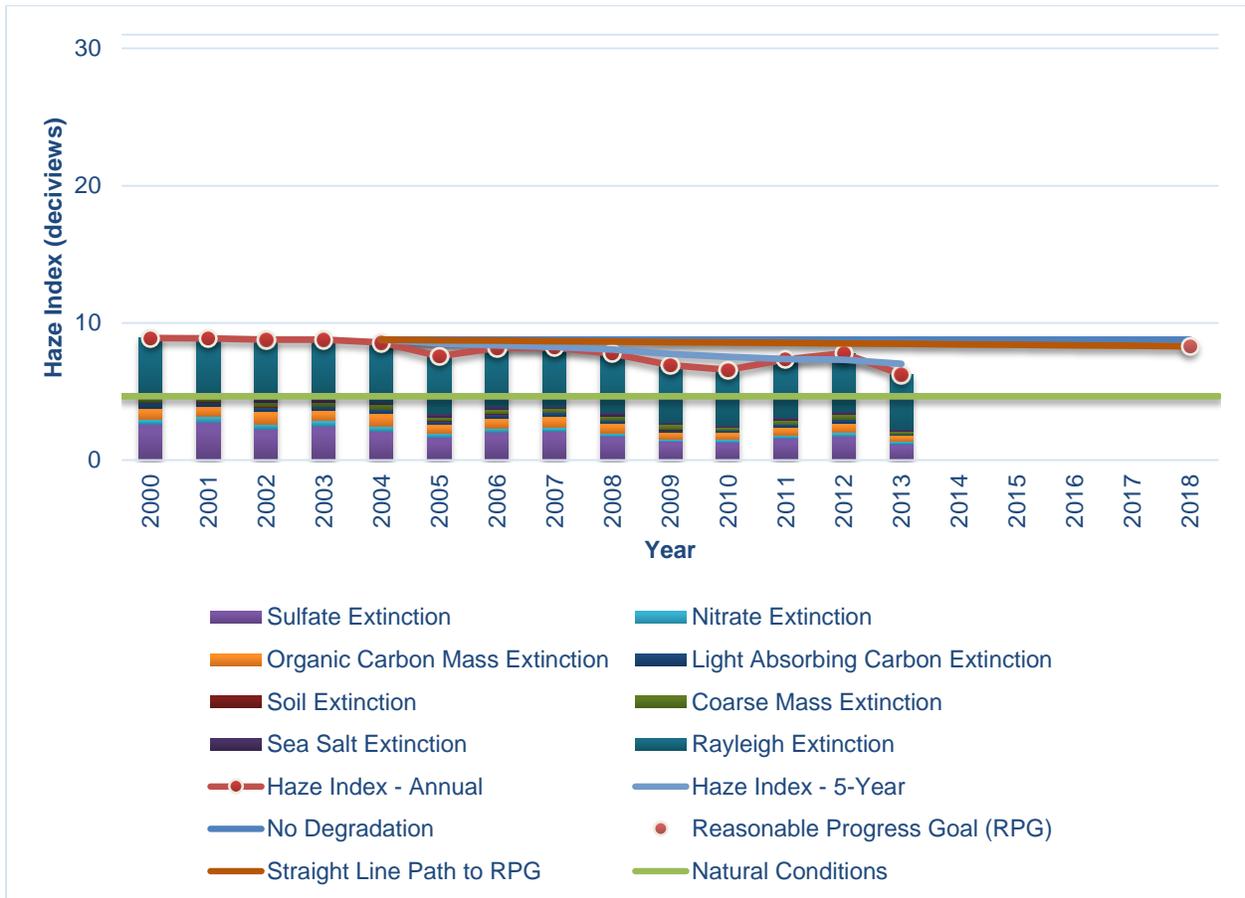


Figure 2.4 Visibility Improvements through 2013 by Particle Constituents on Haziest 20% Days at Brigantine Wilderness

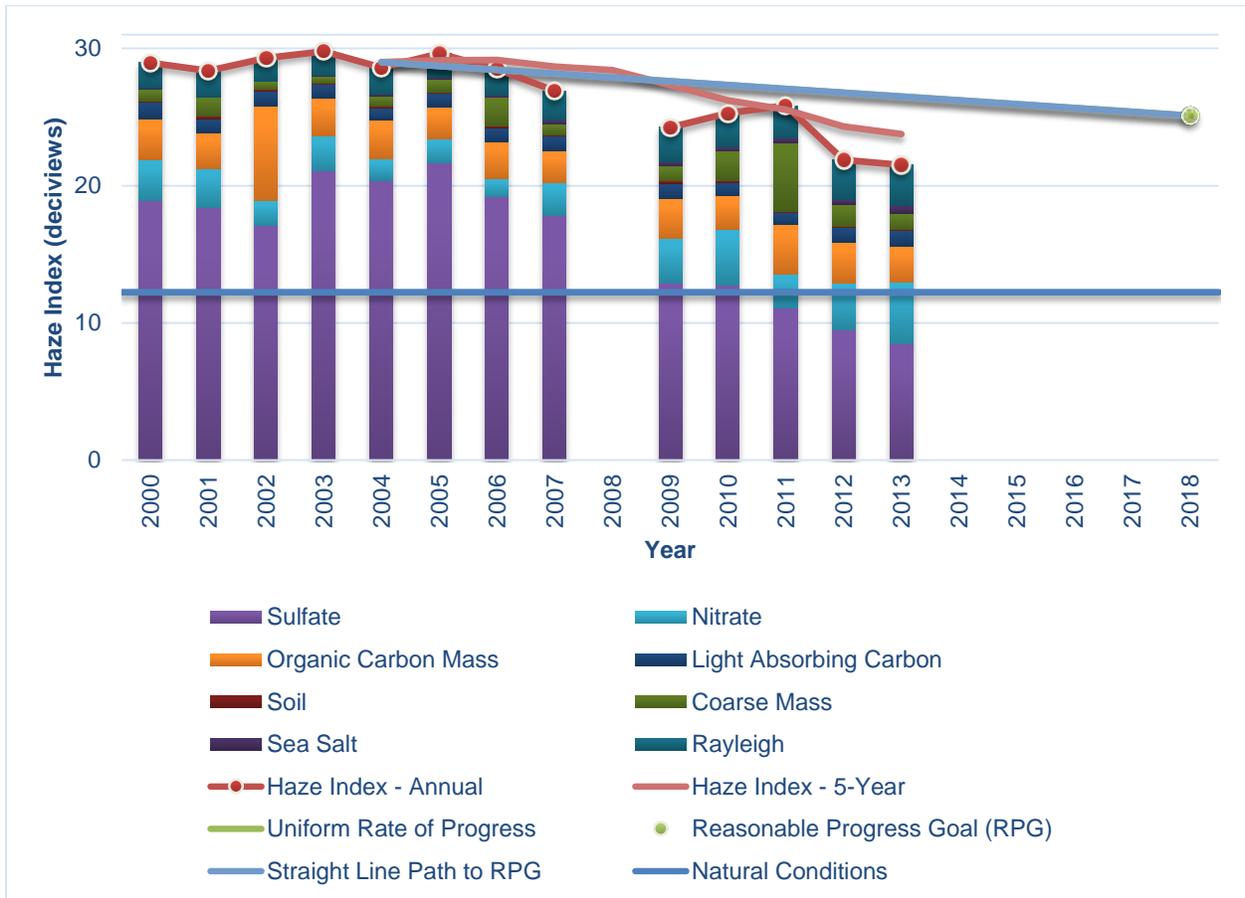


Figure 2.5 Visibility Improvements through 2013 by Particle Constituents on Clearest 20% Days at Brigantine Wilderness

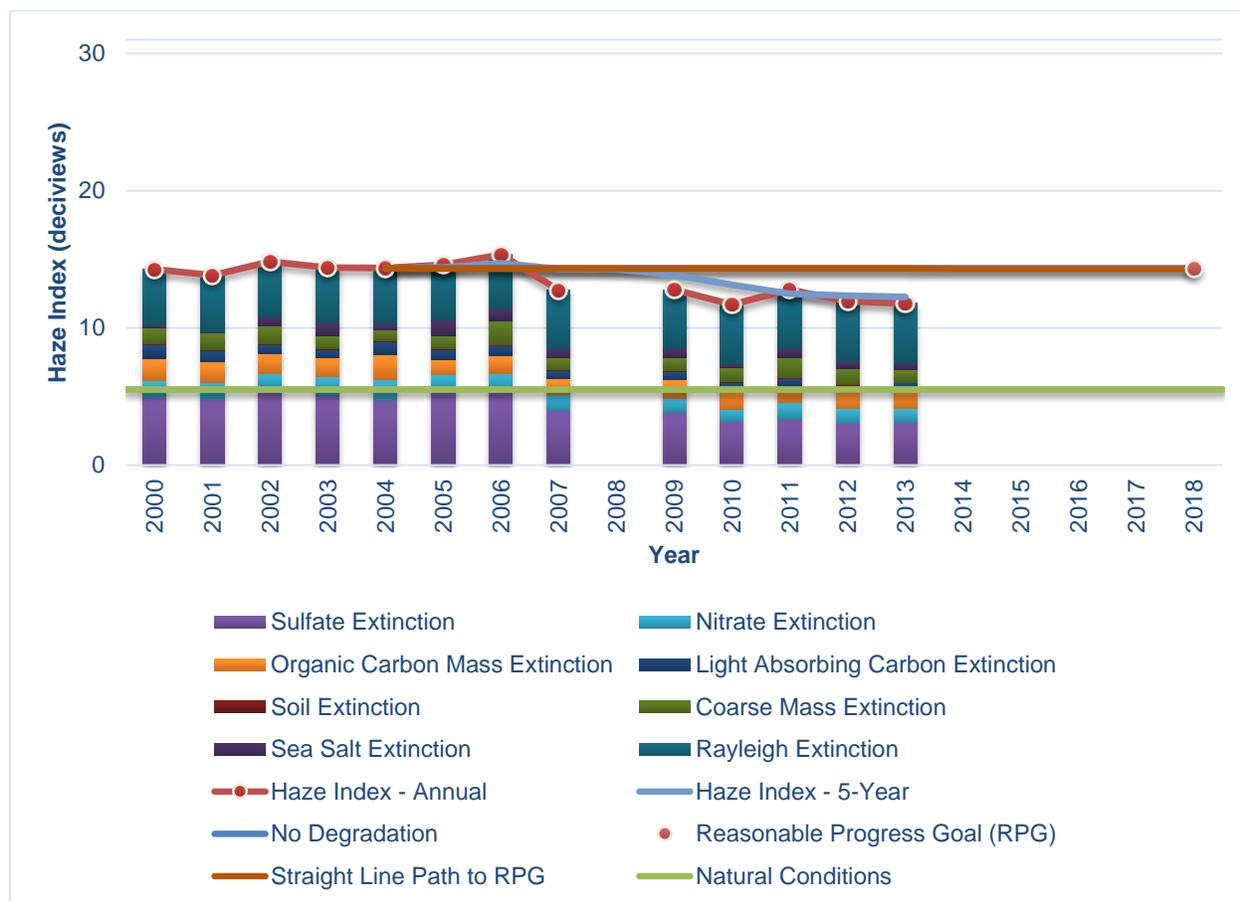


Figure 2.6 Visibility Improvements through 2013 by Particle Constituents on Haziest 20% Days at Great Gulf Wilderness

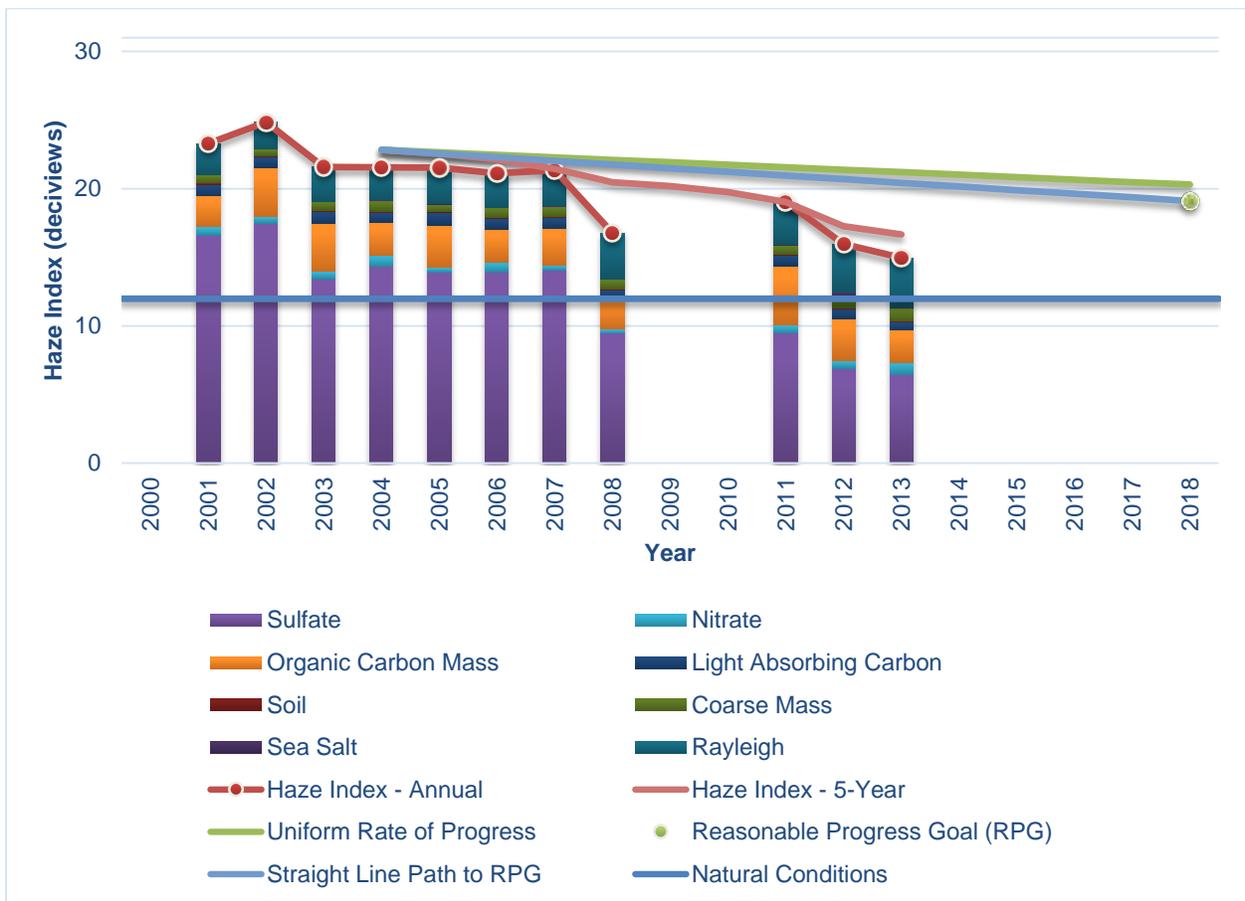


Figure 2.7 Visibility Improvements through 2013 by Particle Constituents on Clearest 20% Days at Great Gulf Wilderness

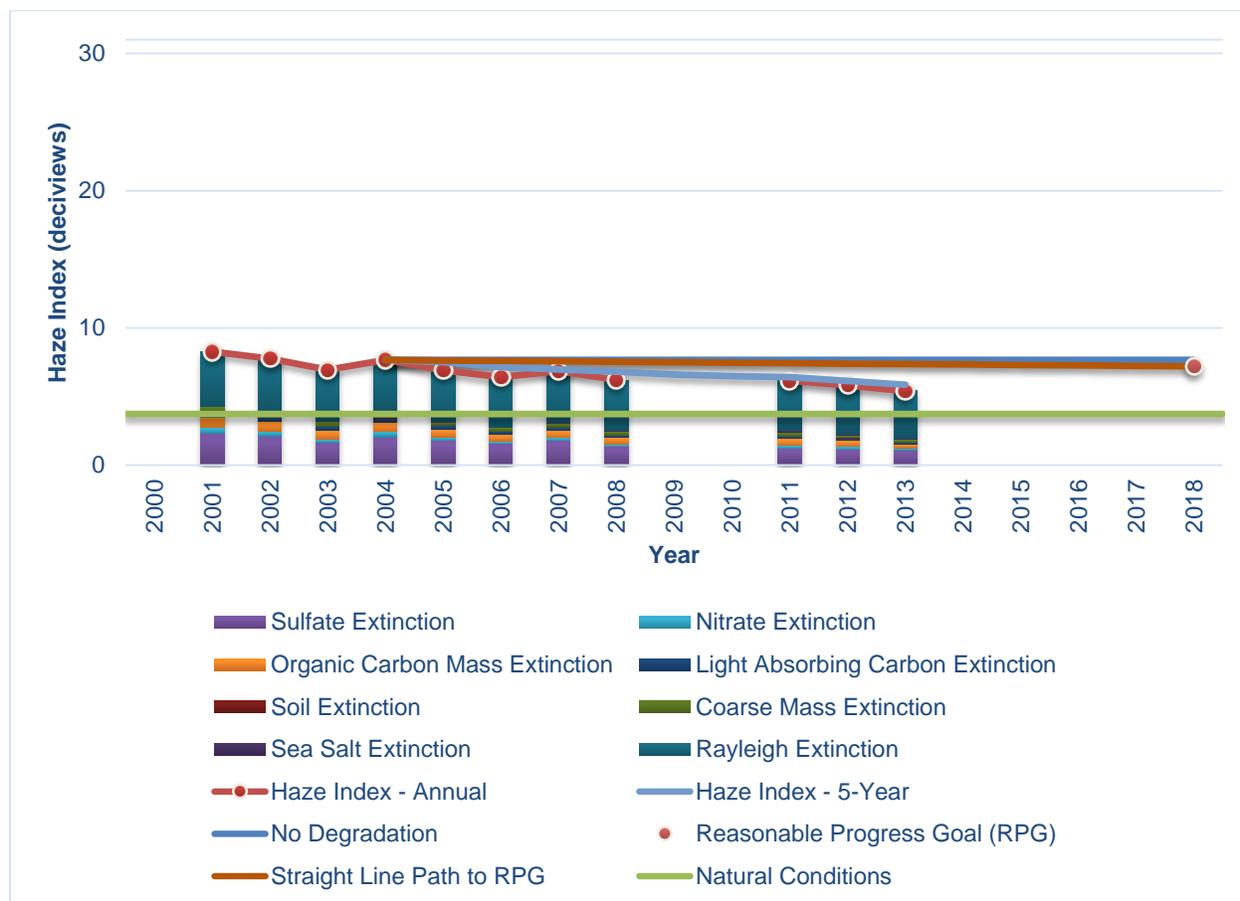


Figure 2.8 Visibility Improvements through 2013 by Particle Constituents on Haziest 20% Days at Lye Brook Wilderness

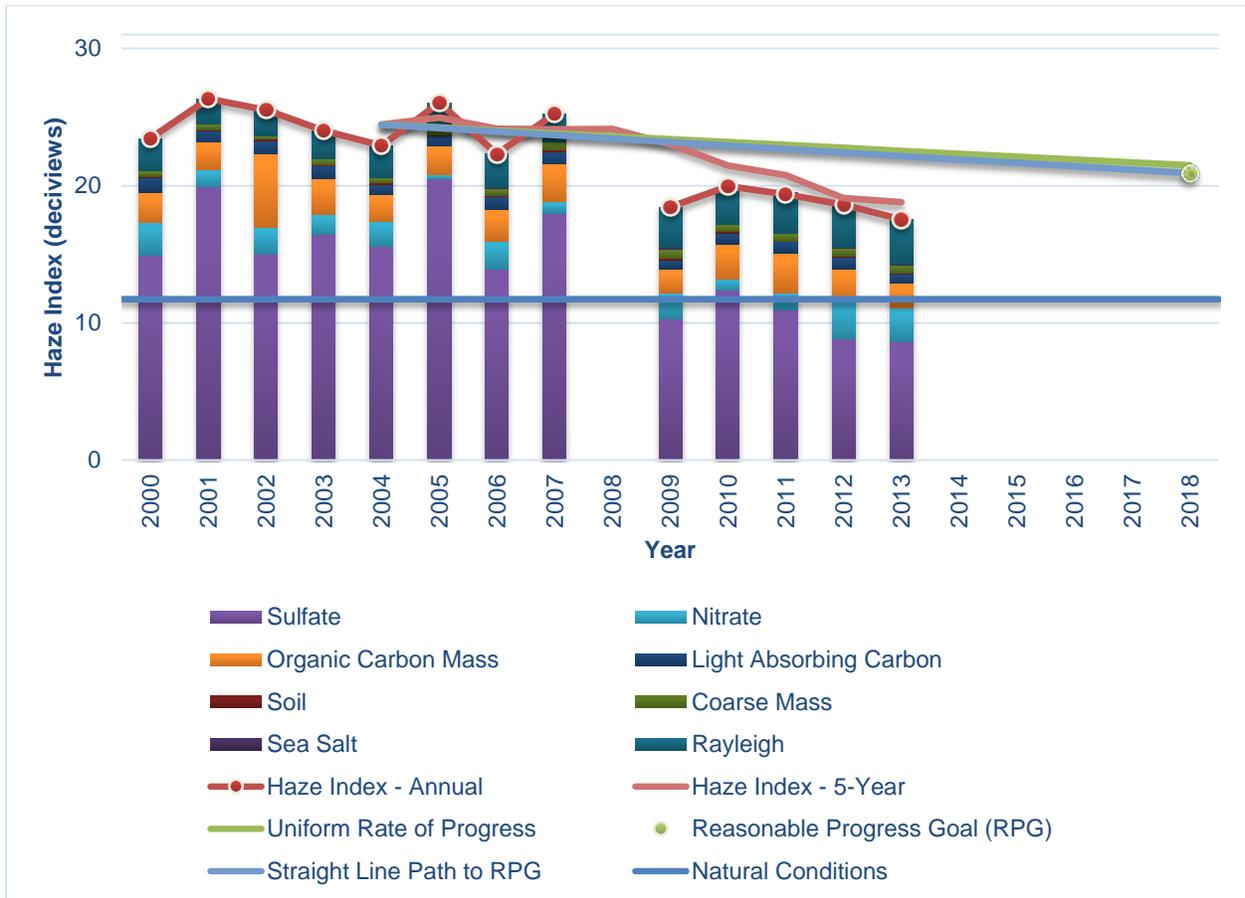


Figure 2.9 Visibility Improvements through 2013 by Particle Constituents on Clearest 20% Days at Lye Brook Wilderness

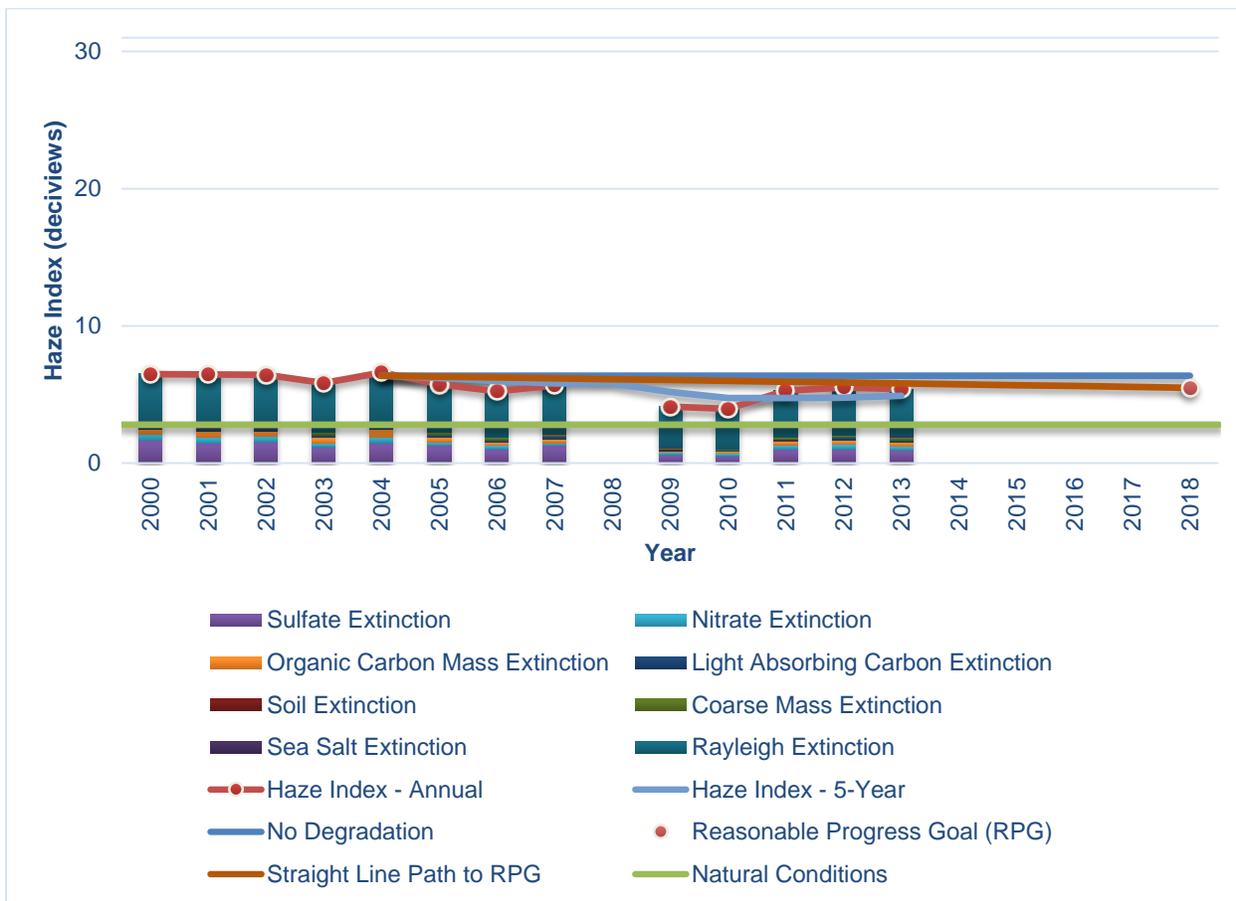


Figure 2.10 Visibility Improvements through 2013 by Particle Constituents on Haziest 20% Days at Moosehorn Wilderness

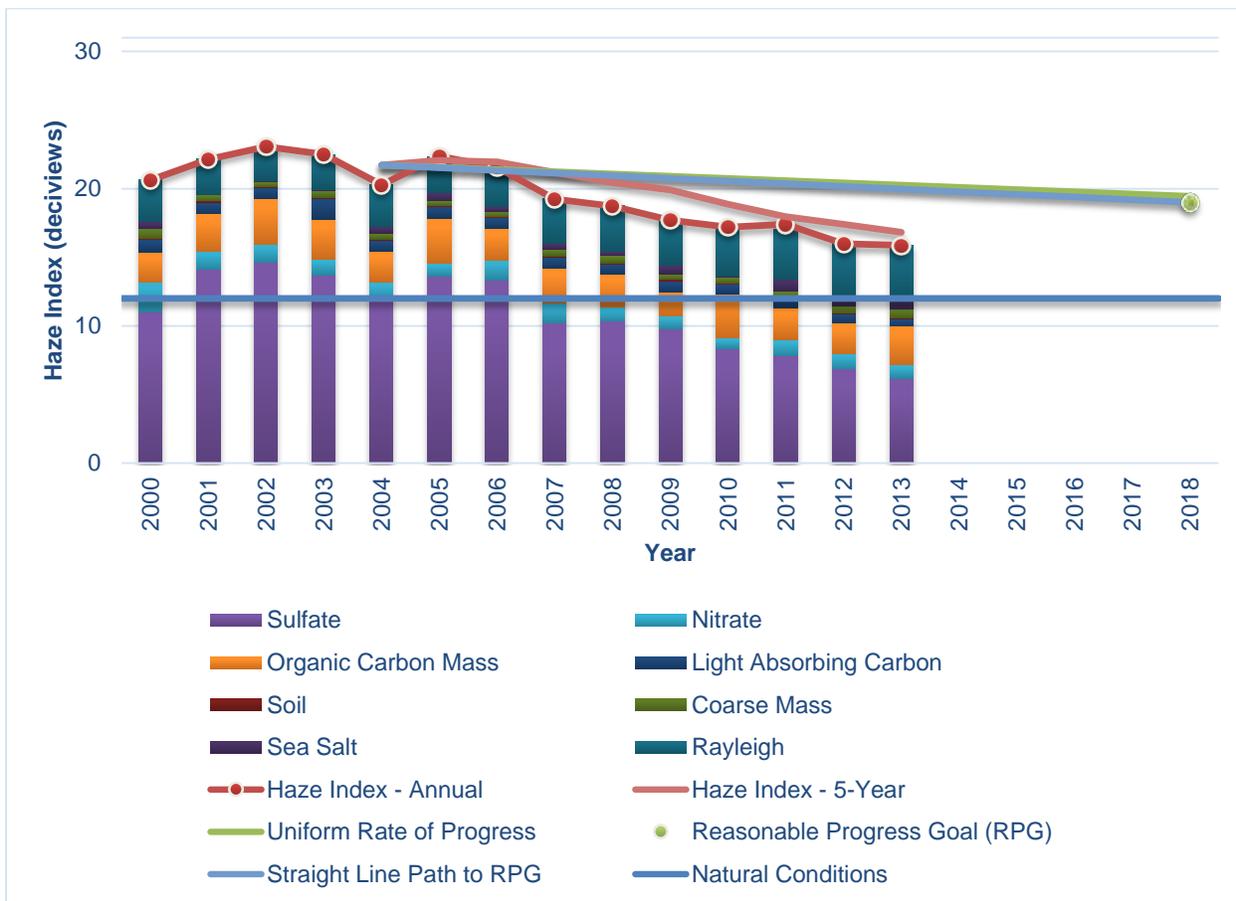
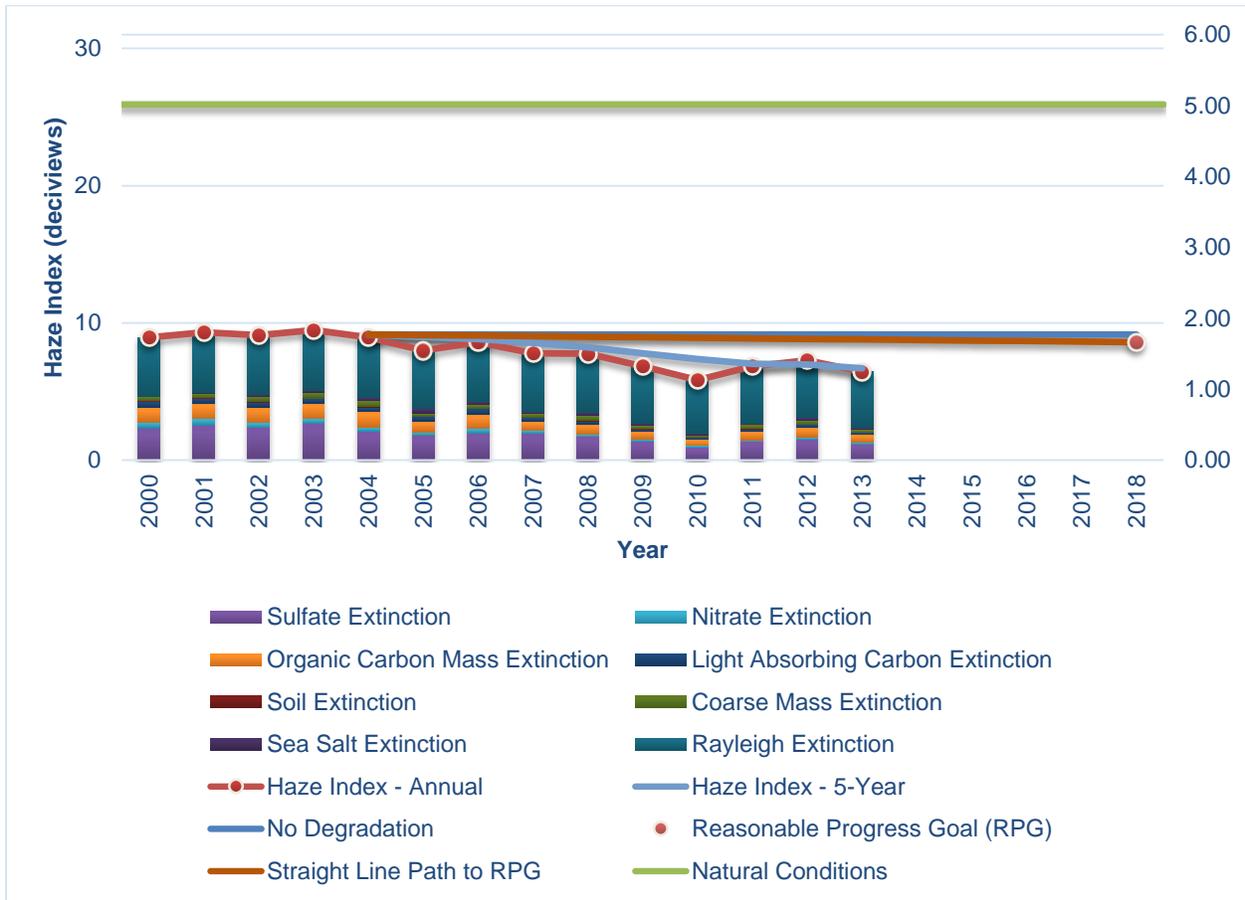


Figure 2.11 Visibility Improvements through 2013 by Particle Constituents on Clearest 20% Days at Moosehorn Wilderness



Section 3: Status of BART Measures in the Regional Haze SIP

3.1. Requirement to Track BART Implementation

In the 1977 Amendments to the CAA, Congress directed EPA and the states to identify existing sources that had been in operation for no more than 15 years and that caused or contributed to visibility impairment in National Parks and Wilderness Areas designated as Class I areas. Those sources were to install and operate BART to reduce their impacts on Class I areas.

40 CFR 51.308(g)(1) requires that this progress report describe the status of implementation of all measures included in the SIP for achieving RPGs for Class I areas (within and outside the State) that are affected by emissions from within the State. In establishing RPGs, MANE-VU Class I states relied in part on timely implementation of BART requirements. This section provides information on the progress of DEC in implementing BART requirements.

The BART requirement is an important element of EPA's Regional Haze Rule. Initially promulgated in 1999 and revised most recently in 2005, the BART portion of EPA's rule required BART determinations to be part of the SIP. The state must require sources to comply with any BART determinations as expeditiously as practicable, but no later than five years after EPA approval of the SIP. Full implementation of BART in New York State occurred on July 1, 2014.

Further visibility benefits are likely to result from installation of new emission controls at BART-eligible facilities located in neighboring states outside MANE-VU. However, the MANE-VU modeling did not account for BART controls outside MANE-VU and, consequently, did not include visibility improvements at MANE-VU Class I Areas that would be likely to accrue from such measures.

3.2. Status of BART Measures

Based on EPA regulations and guidance, several MANE-VU states relied on CAIR as meeting BART requirements for some EGUs. CAIR was challenged in court and remanded to EPA for revision. Because EPA's CAIR program was overturned by the courts, some MANE-VU states, including New York State, made determinations for BART-eligible CAIR EGUs instead of relying on CAIR for BART. In 2011, EPA replaced CAIR with CSAPR. CSAPR was also challenged and subsequently was vacated, leaving CAIR in effect.

On April 29, 2014, the Supreme Court ruled in favor of EPA by upholding the EPA's interpretation of the Good Neighbor Provision, (42 USC 7410(a)(2)(D)(i)(I)), which gives EPA the power to cut down interstate pollution that interferes with the attainment and maintenance of the national ambient air quality standards protecting public health. On June 26, 2014, the case was remanded to the D.C. Circuit Court for resolution of the remaining issues raised on appeal. On October 23, 2014, the U.S. Court of Appeals for

the D.C. Circuit ordered that EPA's motion to lift the stay of CSAPR be granted. On January 1, 2015, CSAPR went into effect and replaced CAIR.

Table 3.1 lists New York State sources subject to BART controls and provides control requirements for specific emission units at each facility. These emission limits were approved as SIP revisions by EPA, on August 28, 2012 in 77 FR 51915 and FIPs were issued for two sources, Danskammer and Roseton, in the same document.

Table 3.1 Status of BART Controls at New York State Facilities

Facility	Emission Unit(s)	Control Requirements ¹	
		NO _x	SO ₂
EF Barrett Power Station	Boiler 2	NO _x	Limits of 0.20 lb/mmBtu on oil and 0.10 lb/mmBtu on gas, 24-hr avg basis.
		SO ₂	Existing 0.37% fuel sulfur limit.
		PM	Current operation with no control. Limit of 0.1 lb/mmBtu.
Northport Power Station	Boilers 1-4	NO _x	Installation of SOFA with limits of 0.20 lb/mmBtu on oil and 0.10 lb/mmBtu on gas on 24-hr avg basis.
		SO ₂	0.7% fuel sulfur limit (currently 1% for Units 1-3, 0.75% for Unit 4).
		PM	Existing ESP for each unit. Limit of 0.1 lb/mmBtu.
Con Ed 59th St. Station	Steam Boilers 114 + 115	NO _x	Current use of off-stoichiometric firing. Limit of 0.32 lb/mmBtu on 30-day rolling avg for both boilers.
		SO ₂	Existing 0.3% fuel sulfur limit.
		PM	Current operation with low-sulfur oil. Limit of 0.1 lb/mmBtu.
Arthur Kill Gen. Station	Boiler 30	NO _x	Commit to firing natural gas exclusively; Limit of 0.15 lb/mmBtu (24-hr avg during ozone season, 30-day avg during non-ozone season).
		SO ₂	Firing natural gas exclusively; Accepting BART limit of 0.15 lb/mmBtu.
		PM	Current operation and firing natural gas exclusively. 359 tpy limit.
Ravenswood Gen. Station	Boilers 10, 20, 30	NO _x	Existing LNB+CCOFA; Limit of 0.15 lb/mmBtu on a 30-day rolling avg
		SO ₂	Existing 0.3% fuel sulfur limit.
		PM	Current operation with low-sulfur oil. Limit of 0.1 lb/mmBtu.
Ravenswood Steam Plant	Boiler 2	NO _x	No controls; Limit of 0.32 lb/mmBtu on a 30-day rolling avg
		SO ₂	Existing 0.3% fuel sulfur limit.
		PM	Current operation with low-sulfur oil. Limit of 0.1 lb/mmBtu.
Bowline Pt. Gen. Station	Boilers 1 + 2	NO _x	Current use of off-stoich. firing (Blr1), off-stoich.firing + OFA + FGR (Blr2). Limit of 0.15 lb/mmBtu (gas) and 0.25 lb/mmBtu (oil) (24-hr avg during ozone season, 30-day avg non-ozone season). Limited to burning oil in amounts no more than 3.1M barrels (ozone season) or 4.6M barrels (non-ozone season). Effective 7/1/2014.
		SO ₂	Existing 0.37% fuel sulfur limit.
		PM	Current operation with no control. Limit of 0.1 lb/mmBtu.
Danskammer Gen. Station	Boiler 4	NO _x	Limit of 0.12 lb/mmBtu (24-hr avg during ozone season, 30-day avg during non-ozone season). Effective 7/1/2014.
		SO ₂	Limit of 0.50 lb/mmBtu (24-hr avg) Effective 7/1/2014.
		PM	Existing ESP. Limit of 0.06 lb/mmBtu (1-hour avg). Effective 7/1/2014.

Facility	Emission Unit(s)	Control Requirements ¹	
Roseton Gen. Station	Boilers 1 + 2	NO _x	Limit of 0.20 lb/mmBtu (24-hr avg during ozone season, 30-day avg during non-ozone season).
		SO ₂	1.0% fuel sulfur limit.
		PM	Existing mechanical dust collectors. Limit of 0.1 lb/mmBtu.
Holcim Inc. Catskill Plant	Wet Process Kiln	-	Facility has closed permanently; permits expired effective 2/13/2012.
Lafarge Building Materials	Two Wet Process Kilns	-	Retiring BART units as per consent order.
Owens Corning - Feura Bush	Units 2, 3, 12, 13, 14	-	Accepted combined 249 tpy cap on eligible units for NO _x , SO ₂ , PM ₁₀ . Cap went into effect on 5/18/2012.
International Paper Ticonderoga Mill	Power Boiler	NO _x	Existing low NO _x burners, FGR. Limit of 0.25 lb/mmBtu (24-hr avg during ozone season; 30-day rolling avg otherwise).
		SO ₂	Existing wet scrubber with sodium hydroxide injection. Limits of 309 lb/hr (rolling 24-hr avg) and 435 lb/hr (rolling 3-hr avg). Additional compliance with Boiler MACT acid gas requirements.
		PM	Existing multicyclone and wet scrubber; Compliance with major source Boiler MACT (40 CFR 63 Subpart DDDDD). Currently subject to particulate emission rate of 0.10 lb/mmBtu.
	Recovery Furnace	NO _x	Current operation with staged combustion system. Limit of 100 ppmv @8% O ₂ .
		SO ₂	Existing 1.5% sulfur fuel oil and staged combustion system. Limit for total reduced sulfur of 4 ppmv @8% O ₂ on daily average.
		PM	Existing ESP; Continued compliance with MACT (40 CFR 63.862(a)(ii) Subpart MM) limit of 0.03 grains/dscf@8% O ₂ .
Lehigh Northeast Cement	Wet Process Kiln + Clinker Cooler	NO _x	Installation of SNCR; Limit of 2.88 lb NO _x per ton of clinker on a 30-day rolling avg Effective 7/1/2012.
		SO ₂	Lime slurry injection via existing lime spray dryer; permitted for max.opacity of 20%. Additional SO ₂ emission limit of 1.50 lb/mmBtu (weighted avg of 3 1-hr runs in both roller mill on & off conditions).
		PM	Kiln: Existing ESP; limit 0.3 lb/ton feed (1-hr avg). Clinker Cooler: Existing baghouse, compliance with 6 NYCRR Part 225-1, 40 CFR 63.1343, and upcoming PC MACT. Limit 0.1 lb/ton dry feed (1-hr avg)
ALCOA Massena Operations (West Plant)	Potline	NO _x	Current operation. Existing limit of 3.0 lb/hr; additional BART limit of 50 tpy.
		SO ₂	Existing scrubber + dry alumina injection. Sulfur level in coke limited to 2.5% by weight.
		PM	Existing baghouse. Emission limit of 168 tpy.
	Baking Furnace	NO _x	Current operation. Emission limit of 203 tpy.
		SO ₂	Current operation. Sulfur level in coke limited to 2.5% by weight.
		PM	Existing baghouse. Emission limit of 24 tpy.
	Package Boilers	NO _x	Existing low NO _x burners and FGR. Existing limit of 0.30 lb/mmBtu.
		SO ₂	Existing 1.5% fuel sulfur limit.
		PM	Current operation. Limit of 0.10 lb/mmBtu.

Facility	Emission Unit(s)	Control Requirements ¹	
Oswego Harbor Power	Boilers 5 + 6	NO _x	Existing controls (LNB, LN-REACH, OFA, and FGR). Emission limit of 383 tons (Unit 5) and 665 tons (Unit 6) as 12-month rolling totals.
		SO ₂	0.75% fuel sulfur limit, measured as 0.80 lb/mmBtu on 3-hour rolling avg future oil purchases of no greater than 0.5% sulfur.
		PM	Existing ESP. Permit limit = 0.10 lb/mmBtu.
Syracuse Energy Corp.	Boiler 1	-	Eligible unit shut down 9/2013.
Kodak	Boilers 41, 42, 43	-	Comprehensive compliance plan, entailing the following: Shut down Boiler 41 by 12/31/13; Shut down OR repower Boiler 42 by Boiler MACT compliance deadline (no later than 8/16/17); Comply with NO _x RACT on Boiler 43 (and 42 if still operating) by 7/1/14; Install NESHAP controls on Boiler 43 (and 42 if still operating) pursuant to Boiler MACT.
S.A. Carlson Gen. Station	Boiler 12	-	Eligible unit shut down early 2013.

¹Compliance date 1/1/2014 unless otherwise noted

Section 4: Status of EGU Controls including Controls at 167 Key Sources

4.1. Requirement to Track Implementation of EGU Control Measures

40 CFR 51.308(g)(1) requires that the progress report describe the status of implementation of all measures included in the SIP for achieving RPGs for Class I areas outside the State that are affected by emissions from within the State. As noted in Section 1 of this report, in establishing RPGs MANE-VU Class I states relied in part on implementation of emissions reductions at 167 key EGU sources or other alternative measures by 2018.

This section provides information on the progress of New York State in reducing emissions from EGUs.

4.2. MANE-VU Focus on Sulfates and EGUs

The MANE-VU Contribution Assessment³ produced a conceptual model of regional haze in which sulfate emerged as the most important single constituent of haze-forming fine particle pollution and the principal cause of visibility impairment across the region. The report concluded that, during the baseline period, sulfate alone accounted for anywhere from one-half to two-thirds of total fine particle mass on the 20 percent haziest days at MANE-VU Class I sites. Even on the 20 percent clearest days, sulfate generally accounted for the largest fraction (40 percent or more) of total fine particle mass in the region. Sulfate has an even larger effect when one considers the differential visibility impacts of different particle constituents. It typically accounted for 70 to 82 percent of estimated particle-induced light extinction at northeastern and mid-Atlantic Class I sites.

The MANE-VU Contribution Assessment also indicates that SO₂ emissions from within MANE-VU in 2002 were responsible for approximately 25 percent of the sulfate at MANE-VU Class I Areas. Sources in the Midwest and Southeast regions were responsible for about 15 to 25 percent each. Point sources dominated the inventory of SO₂ emissions. Therefore, MANE-VU's long-term strategy included additional measures to control sources of SO₂ both within the MANE-VU region and in other states that were determined to contribute to regional haze at MANE-VU Class I Areas. The largest source category responsible for SO₂ emissions within these areas was determined to be EGUs, and EPA's CAIR was expected to reduce emissions from EGUs by 2018.

³ *Contributions to Regional Haze in the Northeast and Mid-Atlantic United States*. NESCAUM, 2006

4.3. Status of Implementation of EPA's Clean Air Interstate Rule and other EGU Controls

Emissions from EGUs have been reduced since 2002 through a number of mechanisms, including Federal and State regulatory programs, consent agreements, and various source-specific permitting actions. The EGU emissions used in MANE-VU's modeling to help determine RPGs are documented in the August 2009 report *Documentation of 2018 Emissions from Electric Generating Units in the Eastern United States for MANE-VU's Regional Haze Modeling*, which is posted on the Mid-Atlantic Regional Air Management Association's (MARAMA's) web site at http://www.marama.org/publications_folder/EGU_Projections_Summary_Final_Aug_2009.pdf. Changes in emissions from 2002 are summarized in Section 7 of this report. The following information discusses various control measures that have reduced emissions since 2002.

4.3.1. CAIR and CSAPR

On May 12, 2005, EPA promulgated CAIR, which required reductions in emissions of NO_x and SO₂ from large fossil fuel fired EGUs. Expected emission reductions were included as part of the MANE-VU 2018 modeling effort. The U.S. Court of Appeals for the D.C. Circuit ruled on petitions for review of CAIR and CAIR FIPs, including their provisions establishing the CAIR NO_x annual and ozone season and SO₂ trading programs. On July 11, 2008, the Court issued an opinion vacating and remanding these rules. However, parties to the litigation requested rehearing of aspects of the Court's decision, including vacating them. The resulting December 23, 2008, ruling left CAIR in place until EPA issued a new rule to replace CAIR in accordance with the July 11, 2008 decision.

Based on EPA regulations and guidance, several MANE-VU states relied on CAIR as meeting BART requirements for some EGUs. CAIR was challenged in court and remanded to EPA for revision. Because EPA's CAIR program was overturned by the courts, some MANE-VU states, including New York State, made determinations for BART-eligible CAIR EGUs instead of relying on CAIR for BART. On July 6, 2011, EPA finalized CSAPR, which was meant to replace CAIR. EPA intended for this rule to replace CAIR beginning in 2012, requiring 27 states in the eastern half of the United States to reduce power plant emissions. EPA also issued a supplemental proposal for six states to make summertime NO_x reductions. This supplemental proposal brought the total number of states subject to the summertime NO_x program to 28. CSAPR was estimated to reduce EGU emissions from 2005 levels by 6.5 million tons of SO₂ annually and 1.4 million tons of NO_x annually. These estimates represented a 71 percent reduction in SO₂ and a 52 percent reduction in NO_x from 2005 levels.

On December 30, 2011, the U.S. Court of Appeals for the D.C. Circuit issued a ruling to stay CSAPR pending judicial review. On August 17, 2012, the D.C. Circuit Court of Appeals vacated CSAPR. On October 5, 2012, EPA requested a rehearing *en banc* of the CSAPR vacatur. The court denied this request on January 24, 2013. CAIR remained in effect in light of this decision, and EPA requested review by the Supreme Court. On November 19, 2012, EPA Assistant Administrator Gina McCarthy provided guidance that allowed states to continue to rely on CAIR for purposes of implementing the Regional Haze Rule.

On December 10, 2013 the Supreme Court heard oral arguments on EPA's appeal of the CSAPR decision. On April 29, 2014, the Supreme Court ruled in favor of EPA by upholding the EPA's interpretation of the Good Neighbor Provision, (42 USC 7410(a)(2)(D)(i)(I)) which gives EPA the power to cut down interstate pollution that interferes with the attainment and maintenance of the national ambient air quality standards protecting public health. On June 26, 2014, the case was remanded to the D.C. Circuit Court for resolution of the remaining issues raised on appeal. On October 23, 2014, the U.S. Court of Appeals for the D.C. Circuit ordered that EPA's motion to lift the stay of CSAPR be granted. On November 21, 2014, EPA issued a ministerial rule that aligns the dates in the CSAPR rule text with the revised court-ordered schedule, including 2015 Phase 1 implementation and 2017 Phase 2 implementation.

In a separate ministerial action, EPA issued a Notice of Data Availability that aligns the final CSAPR default allowance allocation years with the revised court-ordered schedule. CSAPR took effect January 1, 2015; CAIR was implemented through the 2014 compliance periods, and then replaced by CSAPR. CSAPR took effect starting January 1, 2015 for SO₂ and annual NO_x, and May 1, 2015 for ozone season NO_x. Combined with other final state and EPA actions, CSAPR will reduce power plant SO₂ emissions by 73 percent and NO_x emissions by 54 percent from 2005 levels in the CSAPR region. In Phase II, power plants in states common to both CSAPR and CAIR will achieve annual SO₂ emissions around 1.8 million tons lower and annual NO_x emissions around 76,000 tons lower than what would have been achieved at that time under CAIR.

4.3.2. EGU Control Measures in New York State other than CAIR

The following emission controls originating from specific measures to reduce emissions from EGUs were considered in the regional modeling used to establish the MANE-VU RPGs.

Table 4.1. Status of EGU Control Measures in New York State

Measure	Status
<i>6 NYCRR Part 237, Acid Deposition Reduction NO_x Budget Trading Program:</i> Limits NO _x emissions on all fossil-fuel-fired EGUs greater than 25 MW to a non-ozone season cap of 39,908 tons in 2007.	Repealed September 2014
<i>6 NYCRR Part 238, Acid Deposition Reduction SO₂ Budget Trading Program:</i> Limits SO ₂ emissions from all fossil-fuel-fired EGUs greater than 25 MW to an annual cap of 197,046 tons per year starting in 2007 and an annual cap of 131,364 tons per year starting in 2008.	Repealed September 2014
<i>6 NYCRR Part 243, CAIR NO_x Ozone Season Trading Program:</i> Establishes an ozone season (May 1 - September 30) cap to limit NO _x emissions from fossil fuel-fired electricity generating units with a nameplate capacity equal to or greater than 15 MW, Portland cement kilns, and fossil fuel-fired non-electricity generating units equal to or greater than 250 mmBtu/hr.	NYS CAIR rules replaced by CSAPR and will be repealed
<i>6 NYCRR Part 244, CAIR NO_x Annual Trading Program:</i> Establishes an annual cap to limit NO _x emissions from fossil fuel-fired electricity generating units with a nameplate capacity equal to or greater than 25 MW.	NYS CAIR rules replaced by CSAPR and will be repealed
<i>6 NYCRR Part 245, CAIR SO₂ Trading Program:</i> Establishes an annual cap to limit SO ₂ emissions from fossil fuel-fired electricity generating units with a nameplate capacity equal to or greater than 25 MW.	NYS CAIR rules replaced by CSAPR and will be repealed

4.3.3. Specific EGU Estimates and Reductions

Table 4.2 lists all EGU facilities in New York State with SO₂ controls. The table shows controls assigned, and the SO₂ emissions in 2002 and 2011 from those units.

Table 4.2. SO₂ Controls on EGUs in New York State

Plant Name	ORIS ID	SO ₂ Emissions		SO ₂ Controls
		2002	2011	
BLACK RIVER	10464	684	0	Fuel Switch-Coal to Wood in 2011
C R HUNTLEY	2549	38,998	4,316	Fabric Filter & Dry Spray Injection
DANSKAMMER	2480	8,330	2,902	None
DUNKIRK	2554	32,141	4,092	Dry Injection & ESP
GREENIDGE	2527	19,444	80	Shut down 3/18/11
NIAGARA GEN.	50202	471	0	Did not operate in 2011
NORTHPORT	2516	7,407	270	None
OSWEGO	2594	1,746	258	Dry Injection & ESP
ROCHESTER 7	2642	14,725	0	Shut down 2008
ROSETON	8006	6,821	281	None
SOMERSET	6082	4,149	10,024	Wet Scrubber
WESTOVER (GOUDEY)	2526	15,071	21	Flooded Fall 2011-No active permit

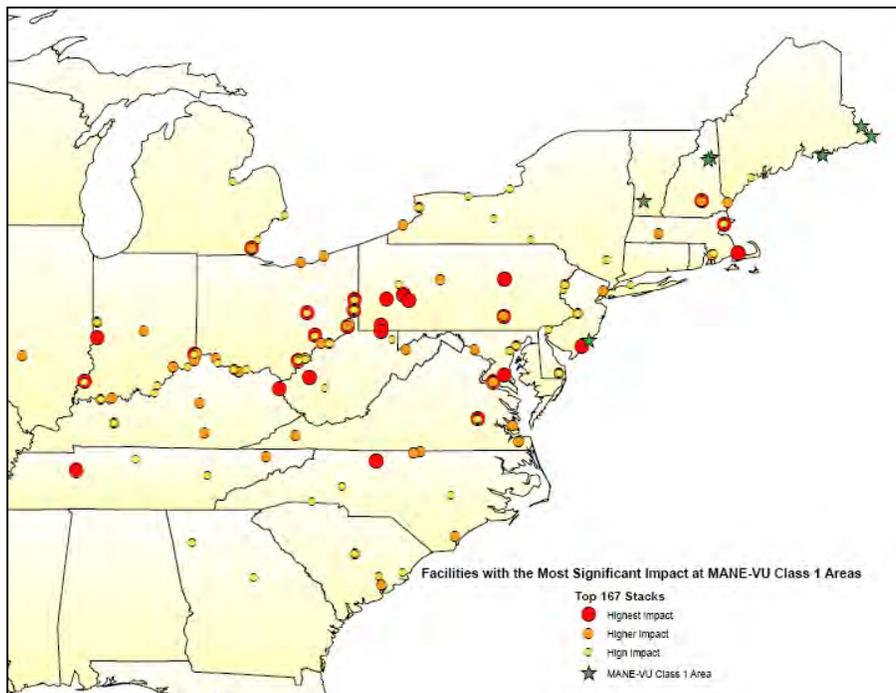
Section 7 provides information on state-wide emissions reductions by sector.

4.4. Status of Controls at 167 EGU Sources

MANE-VU identified 167 EGU sources whose 2002 emissions contributed to visibility impairment in MANE-VU Class I areas. The location of these sources is shown in Figure 4.1. The MANE-VU Long Term Strategy called for a 90% reduction in emissions at these sources, or if it was infeasible to achieve that level of reduction from a unit, alternative measures were to be pursued by the State.

The “167 EGU strategy,” could lead to large reductions in SO₂ emissions due to installation of stack control technologies such as SO₂ scrubbers. To determine the possible benefits of this EGU control program, NESCAUM modeled 2018 emissions for the 167 EGUs in the Northeast, Southeast, and Midwest at levels equal to 10 percent of their 2002 emissions. NESCAUM used the Community Multi-scale Air Quality Model (CMAQ) to model sulfate concentrations in 2018 after implementation of this control program and converted sulfate concentrations to PM_{2.5} concentrations.

Figure 4.1. 167 EGU Stacks Identified as Affecting MANE-VU Class I Area(s) in 2002



NESCAUM reported on the status of emission reductions at those key sources. As shown in Table 4.3(a), in 2002, emissions from the 167 key stacks were nearly 4.6 million tons per year. By 2013, data indicates these emissions had dropped by over 3 million tons per year. Overall, there was an 81% drop in emissions. Table 4.3(b) includes a list of units in New York Included in the List of 167 Stacks identified by MANE-VU. Table 4.3(c) includes emissions from these units for 2002 and 2011.

Fifty-eight (58) of the 167 key EGU stacks are located in MANE-VU. Forty-five (45) of those, located in six states, had already achieved 90% emissions reductions by 2013.

Table 4.3 (a). SO₂ Emissions from 167 Key EGU Stacks, 2002 and 2013

State	Number of Stacks	SO ₂ Emissions (Tons per Year)		Percent Change
		2002	2013	
Delaware	5	22,088	2,168	*-90%
Georgia	5	208,419	19,707	*-91%
Illinois	1	42,331	109	*-100%
Indiana	15	528,263	139,145	-74%
Kentucky	10	257,971	56,697	-78%
Maine	1	1,159	668	-42%
Maryland	9	235,435	22,110	*-91%
Massachusetts	10	80,562	9,740	-88%
Michigan	5	131,709	70,733	-46%
New Hampshire	3	35,883	1,729	*-95%
New Jersey	4	43,241	764	*-98%
New York	11	138,609	3,821	*-97%
North Carolina	12	323,190	34,251	-89%
Ohio	28	958,593	224,771	-77%
Pennsylvania	15	636,693	183,124	-71%
South Carolina	6	103,514	6,553	*-94%
Tennessee	5	226,251	28,302	-87%
Virginia	8	141,890	24,266	-83%
West Virginia	14	465,647	61,634	-87%
Total	167	4,581,447	890,292	-81%

Source: Spreadsheet summarizing the SO₂ Emissions status of the "167 EGU stacks" identified in the MANE-VU Ask as of 2013. See link at <http://otcair.org/manevu/document.asp?Fview=Reports#>

*By 2013, Delaware, Georgia, Illinois, Maryland, New Hampshire, New Jersey, New York and South Carolina emissions had already met the target of a 90% reduction by 2018. Other states also may have met the target by reducing emissions from other sources not included in this table. This is a "point in time" snap shot, not a determination of whether a state achieved the MANE-VU "Ask."

Table 4.3 (b) Units in New York Included in the List of 167 Stacks Identified by MANE-VU

Plant Name	Type	Unit(s)	NO _x Control		SO ₂ Control	
			Existing	Planned	Existing	Planned
C R HUNTLEY ¹	Coal Steam	67,68	LNB	SNCR	Low Sulfur Coal	Low S Coal, Fabric filter & Dry Spray Injection
C R HUNTLEY ¹	Coal Steam	63 through 66	LNB	Shutdown	Low Sulfur Coal	Shutdown
DANSKAMMER	O/G Steam	4	LNB & OFA	Nothing additional planned	None	FIP for BART SO ₂ : 0.09 lb/mmBtu by 7/1/14
DUNKIRK ¹	Coal Steam	3,4	LNB & OFA	SNCR	Low Sulfur Coal	Dry Injection & ESP Low S Coal, Shutdown 9/11/12
WESTOVER (GOUDEY)	Coal Steam	11,12,13	Burners out of service	SCR	None	Facility permit expired 12/20/12
GREENIDGE	Coal Steam	6	SNCR/SCR	SNCR/SCR Hybrid	Dry scrubber w/lime injection	Shutdown 3/18/11
NORTHPORT	O/G Steam	3	OFA System-wide averaging	New plant to be constructed	Low S Fuel	None
OSWEGO	O/G Steam	5	Emission limit	Emission limit	Fuel S Limit (Oil)	Dry Injection & ESP
ROCHESTER 7	Coal Steam	3,4	SNCR	Shutdown	None	Shut down in 2008
ROSETON	O/G Steam	1	System-wide averaging	Nothing planned	Fuel S Limit	FIP for BART SO ₂ : 0.55 lb/mmBtu by 7/1/14 - Included in permit
ROSETON	O/G Steam	2	System-wide averaging	Nothing planned	Fuel S Limit	FIP for BART SO ₂ : 0.55 lb/mmBtu by 1/1/14- Included in permit

¹Consent order requires NO_x and SO₂ emissions reductions by 2013.

Table 4.3 (c) Units in New York Included in the List of 167 Stacks Identified by MANE-VU

Plant Name	Unit(s)	SO ₂ Emissions			NO _x Emissions		
		2002	2011	2013*	2002	2011	2013*
C R HUNTLEY	67,68	26,689	4,316	3,218	3,895	1,230	853
C R HUNTLEY	63 through 66	12,309	0	0	3,424	0	0
DANSKAMMER	4	8,330	2,902	0	3,329	781	0
DUNKIRK	3,4	32,141	4,092	0	3,814	1,245	0
WESTOVER (GOUDEY)	11,12, 13	15,071	21	0	2,748	12	0
GREENIDGE	6	13,370	80	0	1,821	134	0
NORTHPORT	3	7,407	270	310	1,511	392	254
OSWEGO	5	1,746	258	177	340	55	56
ROCHESTER 7	3,4	14,725	0	0	1,449	0	0
ROSETON	1	3,825	142	18	902	70	77
ROSETON	2	2,996	139	98	750	98	89

*2013 emissions have been added to highlight further progress in New York

Section 5: Status of Additional Measures in the Regional Haze SIP

5.1. Requirement to Track Implementation of Other Control Measures

40 CFR 51.308(g)(1) requires that the progress report describe the status of implementation of all measures included in the SIP for achieving RPGs for Class I areas outside the State that are affected by emissions from within the State. In establishing RPGs, MANE-VU Class I states relied in part on a low sulfur fuel strategy to be implemented within MANE-VU as well as efforts to reduce emissions through other reasonable measures by 2018.

This section provides information on the progress of New York State in implementing the measures included in New York State's Regional Haze SIP for sources other than EGUs.

5.2. Status of Low Sulfur Oil Strategy

The MANE-VU states agreed that a low-sulfur oil strategy was reasonable to pursue by 2018, and by March 2013, five MANE-VU states had adopted sulfur in fuel limits with various implementation dates through 2018.

The July 1, 2012 amendments to the New York State ECL required that all #2 heating oil sold for use in residential, commercial or industrial heating within New York State must have a sulfur content of 15 ppm or less.

6 NYCRR Part 225, "Fuel Composition and Use" was amended effective April 5, 2013 to reflect purchase and use dates for #2, #4 and #6 oils in New York State. Specific limits are listed in Table 5.1.

Table 5.1. Current New York State Sulfur in Fuel Limits

State	Limits Adopted as reported by MANE-VU in 2013	
	#2 Distillate Oil	#4 / #6 Residual Oil
New York	Purchase date- 15 ppm by 7/1/12 - heating oil 15 ppm by 7/1/14 - other sources Use date 7/1/16	0.3% in New York City 0.37% in Nassau, Rockland, and Westchester Counties 0.5% in the rest of the state (Purchase date 7/1/14, Use date 7/1/16)

Source: MANE-VU Technical Support Committee summary of status of low sulfur fuel requirement

5.3. Status of Additional State-Specific Control Measures

This section discusses implementation of the state specific provisions included in New York's Regional Haze SIP.

5.3.1. Agricultural and Forestry Smoke Management

40 CFR 51.308(d)(3)(v)(E) requires each state to consider smoke management techniques related to agricultural and forestry management in developing their long-term strategy to improve visibility at Class I areas. MANE-VU's analysis of smoke management in the context of regional haze is documented in "Technical Support Document on Agricultural and Forestry Smoke Management in the MANE-VU Region, September 1, 2006." As that report notes, fires used for resource benefits are of far less significance to the total inventory of fine-particle pollutant emissions than other sources of wood smoke in the region. The largest MANE-VU wood smoke source categories, with respect to PM_{2.5} emissions, are residential wood combustion (73 percent); open burning (15 percent); and industrial, commercial, and institutional wood combustion (9 percent). Accidental fires involving buildings and wild lands make up only a minor fraction of wood burning emissions and cannot be reasonably addressed in a SIP. Fires that are covered under smoke management plans, including agricultural and prescribed forest burning, constitute less than one percent of total wood smoke emissions in MANE-VU.

Wild fire emissions within MANE-VU states are also relatively small and infrequent contributors to regional PM emissions. However, MANE-VU Class I areas are occasionally impacted by wild fire smoke emissions from other regions, such as from the lightning-induced forest fires in Quebec Province in July 2002. These natural wild fire smoke emissions occasionally impair visibility, but are not considered manmade or controllable – and in fact are part of "natural background" conditions.

In New York, prescribed fires have not been shown to significantly contribute to visibility impairment in mandatory Class I Federal areas. Prescribed burns are those that are less than 10 acres in size. The regulation of prescribed burns is dealt with pursuant to 6 NYCRR Part 194. However, New York has adopted a smoke management program (SMP) outlining elective prescribed guidelines for prescribed burns that consider the possible impacts in Class I areas. These measures are described below.

New York State has a process for authorizing or granting approval to allow certain fires. The Division of Forest Protection and Fire Management at DEC manages prescribed fires. The prescribed fires are conducted for wildlife and habitat management, and rare and endangered species management purposes. Table 5.2 provides information on wildland fires in New York State, and Table 5.3 provides information on prescribed fires in New York State

Table 5.2. Wildland Fires and Acres Burned in New York State, 2005 - 2013

Year	Number of Wildfires	Acres Burned
2005	210	668.62
2006	231	2323
2007	211	854.9
2008	157	3633.7
2009	159	1404.6
2010	155	1410.5
2011	47	232.4
2012	177	2145.9
2013	126	1058.5

Table 5.3. Prescribed Fires and Acres Burned in New York State, 2005 - 2013

Year	Number of Prescribed Burns	Acres Burned
2005	23	272.8
2006	30	329.98
2007	13	301
2008	21	211.5
2009	14	238.5
2010	9	121.9
2011	9	172.5
2012	11	267
2013	19	452.6

DEC has encouraged wildland owners/managers to consider alternatives to burning, which include mowing techniques, and herbicide use for cost effective removal.

DEC has documented the steps taken prior to the burn and actions taken during and after the burn to reduce air pollutant emissions. Steps are taken to ensure that air quality impacts are minimized during burning, and the prescribed burn plans for an area of 10 acres or more must go through a State Environmental Quality Review and DEC review process (USDA Forest Service lands and Department of Defense lands are exempt from the review process for all prescribed burns).

The smoke management components of burn plans are as follows:

- Actions to minimize fire emissions which include measures that will be taken to reduce residual smoke, such as rapid and complete mop-ups and mop-ups of certain fuels.
- Evaluate smoke dispersion conditions prior to authorizing fires. Burn plans should evaluate potential smoke impacts at sensitive receptors and time fires to minimize exposure of sensitive populations and avoid visibility impacts in

mandatory Class I Federal areas. The burn plan should identify the distance and direction from the burn site to local sensitive receptor areas and to regional/interstate areas where appropriate. Fire prescriptions submitted prior to the day of the fire must specify minimum requirements for the atmospheric capacity for smoke dispersal such as minimum surface and upper level wind speeds, desired wind direction, minimum mixing height, and dispersion index.

- The burn plan should identify actions that will be taken to notify populations and authorities (e.g., local air quality managers) at sensitive receptors, including those in adjacent jurisdictions, prior to the fire. DEC has a public notification process and exposure reduction process in place to reduce the impacts of burning. The plan should also identify contingency actions that will be taken during a fire to reduce the exposure of people at sensitive receptors if smoke intrusions occur. Appropriate short-term (less than 24-hour) contingency actions may, among other things, include:
 - Notifying the affected public (especially sensitive populations) of elevated pollutant concentrations,
 - Suggesting actions to be taken by sensitive persons to minimize their exposure (e.g., remain indoors, avoid vigorous activity, avoid exposure to tobacco smoke and other respiratory irritants),
 - Providing clean-air facilities for sensitive persons,
 - Halting ignitions of any new open burning that could impact the same area,
 - Analyzing the fire situation and identifying alternative management responses upon becoming aware that a fire is out of air quality prescription with regard to the air quality criteria,
 - Consulting State air quality managers regarding appropriate short-term fire management response to abate verified impacts,
 - Implementing management responses that will mitigate the adverse impacts to public health,
 - Reporting the steps taken to mitigate adverse impacts to the public and appropriate State agencies after they have been completed.

In addition, DEC has a process to evaluate potential smoke impacts at sensitive receptors and schedule fires to minimize exposure of sensitive populations and avoid visibility impacts in Class I areas. There are several ways to reduce emissions from a single fire. The approaches fall into four categories and their applicability varies by fuel type:

- Minimize the area burned
- Reduce the fuel loading in the area to be burned
- Reduce the amount of fuel to be consumed by the fire
- Minimize emissions per ton of fuel consumed

DEC has monitoring in place to determine how fires affect visibility in Class I areas. New York's SMPs identify how the effects of the fire on air quality at sensitive receptors, and visibility in mandatory Federal Class I areas will be monitored. The extent of the monitoring plan should match the size of the fire. For small fires, visual monitoring of the direction of the smoke plume and monitoring nuisance complaints by the public may be sufficient. Other monitoring techniques include posting personnel on vulnerable roadways to look for visibility impairment and initiate safety measures for motorists, posting personnel at other sensitive receptors to look for smoke intrusions, using aircraft to track the progress of smoke plumes, and continued tracking of meteorological conditions during the fire. For large fires expected to last more than one day, locating real-time PM monitors at sensitive receptors may be warranted to facilitate timely response to smoke impacts.

New York State has established a policy to issue health advisories when necessary. Air Quality Health Advisories help provide increased notice for at-risk individuals to reduce exposure to ozone and PM_{2.5} by taking the recommended preventative measures. DEC and the New York State Department of Health will issue Air Quality Health Advisories when DEC meteorologists predict levels of pollution, either ozone or fine particulate matter (PM_{2.5}), are expected to exceed an AQI value for 100. The AQI was created by the EPA as an easy way to correlate levels of different pollutants to one scale, with a higher AQI value leading to a greater health concern. Air Quality Health Advisories are issued with an effective date and time for locations in one of more of eight air quality regions.

Pursuant to EPA's interim guidance (cited above), New York State has adopted a program that will help prevent NAAQS violations and addresses visibility impairment due to fires. This program established basic parameters: wind speed, direction, location, and distance to sensitive receptors.

Public education and awareness programs have been implemented to explain the use and importance of fire for ecosystem management, the implications to public health and safety, and the goals of the SMP. Wildland and air quality managers should work with the press to announce pre-fire health advisories, and post-fire results including such things as the management objectives met; smoke intrusions observed, and/or successful minimization of air quality impacts.

DEC has a program in which owners/managers must get prior authorization and a permit prior to implementing fire plans. There must also be an approved burn plan in place, approved by the Natural Resource Supervisor in the DEC region affected.

6 NYCRR Part 215 "Open Fires" was revised and became effective October 14, 2009. This regulation allows (in any town with a total population less than 20,000) for the burning of downed limbs and branches (including branches with attached leaves or needles) less than six inches in diameter and eight feet in length between May 15th and the following March 15th. The burning of all other household generated wastes is prohibited. DEC thinks that the strengthened rule will reduce the impacts of pollutants

such as dioxins, particulate matter and carbon monoxide. A strengthened ban has had the additional benefit of reducing forest fires and the impacts from them. Exemptions from this rule will include restricted categories such as camp fires, agricultural burning, prescribed burning, and ceremonial fires.

5.3.2. Measures to Mitigate Impacts of Construction Activities

40 CFR 51.308(d)(3)(v)(B) of the Regional Haze Rule requires each state to consider measures to mitigate the impacts of construction activities on regional haze. MANE-VU's Contribution Assessment found that, from a regional haze perspective, crustal material generally does not play a major role in visibility impairment at MANE-VU Class I areas. On the 20 percent best visibility days during the 2000-2004 baseline period, crustal material accounted for 6 to 11 percent of particle-related light extinction at MANE-VU Class I Areas. On the 20 percent worst-visibility days, however, the ratio was reduced to 2 to 3 percent. Furthermore, the crustal fraction is largely made up of pollutants of natural origin (e.g., soil or sea salt) that are not targeted under the Regional Haze Rule. Nevertheless, the crustal fraction at any given location can be heavily influenced by the proximity of construction activities; and construction activities occurring in the immediate vicinity of MANE-VU Class I Areas could have a noticeable effect on visibility.

For its first Regional Haze SIP, New York considered additional measures to mitigate the impacts of construction activities but decided to defer evaluation of further controls. New York committed to document future deliberations on potential control measures for construction activities and their possible implementation in this progress report. At this time, New York is again deferring deliberations on control measures for construction activities to the next SIP revision.

5.3.3. Prevention of Significant Deterioration

DEC continues to implement requirements for an Air Quality Impact Evaluation that demonstrates that new allowable emissions will not result in an exceedance of the remaining increments for SO₂, NO₂, PM_{2.5}, or PM₁₀ in any Class I area. The applicant must also demonstrate "that the increase in allowable emissions will not cause an adverse impact on visibility in any Class I Federal area and will not interfere with reasonable progress toward the remedying of existing man-made visibility impairment. Said demonstration shall be submitted to the EPA and the appropriate FLM at least 60 days prior to the close of the public comment period on the source or modification." In this manner, new major sources and existing sources making major modifications will be constructed and operated in a manner that will not degrade air quality or visibility. The PSD permitting program is an integral part of DEC's long-term strategy for meeting its regional haze goals.

5.3.4. Enforceability of Emission Limitations and Control Measures

40 CFR Section 51.308(d)(3)(v)(F) requires states, including New York, to ensure that emission limitations and control measures used to meet RPGs are enforceable. New York's operating permit program requires major source Title V permits to include all applicable requirements. CAA Section 110(a)(2)(C) requires States to include a program providing for enforcement of all SIP measures and the regulation of construction of new or modified stationary sources to meet PSD and NNSR requirements. New York's SIP currently includes both PSD and NNSR requirements.

ECL Section 19-0305 and Article 71 Sections 71-2103 and 71-2105 authorizes the Commissioner of Environmental Conservation to enforce the codes, rules and regulations of DEC established in accordance with Article 19. The SIP is a compilation of rules and regulations that have been duly promulgated by DEC in accordance with its statutory authority and consistent with SAPA. Therefore, DEC has the authority to enforce all SIP measures.

5.3.5. Status of Controls on Non-EGU Point Sources

To develop the 2018 emissions inventory used for modeling conducted to help MANE-VU Class I states set RPGs, control factors were applied to the 2018 MANE-VU inventory for non-EGUs to represent national, regional, or state control measures. Table 5.4 indicates the status of implementation within New York of control measures applied to source categories. Table 5.5 lists the status of measures applied to individual non-EGU point sources within New York.

Table 5.4. Status of Control Measures Applied to Source Categories in New York State

Measure	Status
NO _x control measures for combustion of coal; natural gas; and #2, #4, and #6 fuel oils	Promulgated 2010- Compliance date 7/1/14
2-, 4-, 7-, and 10-year MACT Standards**	All MACT standards are in effect, but these apply in New York State: Cellulose Products Manufacturing (70FR46684); Combustion Sources at Kraft, Soda, and Sulfite Pulp & Paper Mills (66FR3180); Coke Ovens: Pushing, Quenching, & Battery Stacks (70FR44285); Fabric Printing, Coating, & Dyeing (69FR47049); Friction Products Manufacturing (67FR64498); Leather Finishing Operations (67FR9156); Metal Coil (68FR12590); Metal Furniture (68FR28606); Misc. Coating Manufacturing (71FR58499); Misc. Organic Chemical Production and Processes (71FR40316); Paper and Other Web Coating (67FR72330); Polymers and Resins III (79FR60898); Plastic Parts Coating (69FR20968); Reinforced Plastic Composites Production (68FR19375); Plywood and Composite Wood Products (72FR61060); Reciprocating Internal Combustion Engines (69FR33474); Secondary Aluminum Production (80FR2067); Site Remediation; (71FR69011); Stationary Combustion Turbines (69FR51184)
Combustion Turbine and RICE MACT (NO _x co-benefits were not included and assumed to be small)	-Turbine MACT effective 8/18/04 -RICE MACT effective 4/1/13, but part of the rule under reconsideration and was finalized 8/15/14 after reconsideration
Industrial Boiler/Process Heater MACT*	EPA finalized 12/21/2012

*The inventory was prepared before the MACT for Industrial Boilers and Process Heaters was vacated. Control efficiency was assumed to be 4 percent for SO₂ and 40 percent for PM. EPA revised and re-adopted the MACT with some changes. The overall effects of including these reductions in the inventory are estimated to be minimal.

**Categories for which controls were applied within MANE-VU are Asphalt Process and Asphalt Roofing Manufacturing; Auto and Light Truck Surface Coating; Boat Manufacturing; Brick and Structural Clay Products Manufacturing; Cellulose Products Manufacturing; Combustion Sources at Kraft, Soda, and Sulfite Pulp & Paper Mills; Coke Ovens: Pushing, Quenching, & Battery Stacks; Fabric Printing, Coating, & Dyeing; Flexible Polyurethane Foam Fabrication Operations; Friction Products Manufacturing; Generic MACT (Carbon Black Production), Generic MACT (Cyanide); Iron and Steel Foundries (Major Sources); Leather Finishing Operations; Lime Manufacturing;

Manufacturing Nutritional Yeast; Metal Can; Metal Coil; Metal Furniture; Misc. Coating Manufacturing; Misc. Organic Chemical Production and Processes; Paper and Other Web Coating; Pesticide Active Ingredient Production; Petroleum Refineries; Petroleum Refineries (FCC); Polymers and Resins III; Plastic Parts Coating; Reinforced Plastic Composites Production; Plywood and Composite Wood Products; Reciprocating Internal Combustion Engines; Rubber Tire Manufacturing; Secondary Aluminum; Site Remediation; Stationary Combustion Turbines; Wet Formed Fiberglass Mat Production; Wood Building Products

In addition to the above control measures which were applied on a regional basis, states provided control measure information about specific individual non-EGU sources or regulatory programs in their states. MANE-VU used the state-specific data to the extent it was available. These control measures were included by MANE-VU in the inventories used for regional haze modeling.

Table 5.5. Status of Control Measures for Non-EGU Point Sources in New York State

MEASURE	STATUS
Asphalt production plants	6 NYCRR Section 212.12 effective 9/30/10 SIP revision approved by EPA 7/12/13 at 78 FR 41846
Portland cement plants	6 NYCRR Subpart 220-1; effective 7/11/10
Glass plants	6 NYCRR Subpart 220-2 effective 7/11/10 SIP revision approved* by EPA 7/12/13 at 78 FR 41846

*Conditionally approved, based on DEC submitting the RACT determinations as SIP revisions. These were submitted December 18, 2013.

Asphalt Production Plants: The new requirements for hot mix asphalt production plants included operational requirements such as annual burner tune-ups and stockpile moisture maintenance plans (each beginning calendar year 2011), and a cost analysis for a low NO_x burner when the current burner undergoes replacement. All new plants are required to install low NO_x burners.

Glass Plants: 6 NYCRR Part 220 was revised to require new NO_x Reasonably Available Control Technology (RACT) analyses based on updated technologies and costs for Portland cement and glass plants. These analyses were due December 1, 2010. RACT, as approved by DEC, was required to be implemented by July 1, 2012. This regulatory revision affected two Portland cement plants and four glass plants statewide.

5.3.6. Controls on Area Sources Expected by 2018

In general, MANE-VU developed the 2018 inventory for area sources by applying growth and control factors to the 2002 Version 3.0 inventory. Area source control factors for SO₂ or NO_x were developed for residential woodstoves (See Table 5.6). Volatile organic compound (VOC) controls are not included here, as they were not expected to have significant visibility benefits.

Table 5.6. Status of Control Measures – Area Sources

Measure	Status
Federal Residential woodstove NSPS	EPA released proposed rule on 1/3/14. Final rule signed by EPA Administrator on 2/3/15.

The MANE-VU emissions inventory and 2018 modeling did not consider the rapid development of oil and gas resources that has occurred in and near the region since 2007. MANE-VU states are collaborating with EPA and other states to estimate emissions from oil and gas development and to conduct additional modeling to assess impacts on air quality. At this time sufficient data is unavailable. Regional Haze SIPs due in 2018 will consider emissions from this source category based on the latest estimate of activities.

New York’s moratorium on high volume hydraulic fracturing remains in effect. DEC Commissioner Martens has stated that he will issue a legally binding findings statement that will prohibit high-volume hydraulic fracturing in New York State.

5.3.7. Controls on Mobile Sources Expected by 2018

MANE-VU’s Version 3.0 emission inventory included the following emission control measures:

Table 5.7. Status of Control Measures – Mobile Sources

Measure	Status
Federal Tier 2 Vehicle and Gasoline Sulfur Program	In effect (See below)
Federal Tier 3 Vehicle Emission and Fuel Standards Program*	In effect (See below)
Low Emission Vehicle Regulations (6 NYCRR Part 218)	In effect (see below)
Motor Vehicle Enhanced Inspection and Maintenance Program (6 NYCRR Subpart 217-6)	In effect (see below)
Federal Heavy-Duty Diesel Engine Emission Standards for Trucks and Buses	See below
Federal Emission Standards for Large Industrial Spark-Ignition Engines and Recreational Vehicles	See below
Diesel Emissions Reduction Act of 2006	In effect (see below)

*Tier 3 was not included in MANE-VU’s version 3.0 emissions inventory. It is included here because it is a control program that will have an impact on future inventories.

Federal Tier 2 Vehicle and Gasoline Sulfur Program: (40 CFR 80, Subpart H; 40 CFR 85; 40 CFR 86; <http://www.epa.gov/tier2/>): The Tier 2 Vehicle and Gasoline Sulfur Program (Program) applied the same set of emission standards ("Tier 2 standards") to passenger cars, light trucks, large SUVs and passenger vehicles for the first time. For commercial gasoline, the Program significantly reduced average gasoline sulfur levels nationwide as early as 2000, and were fully phased-in in 2006. Mobile source emissions continue to decrease due to this program as motorists replace older, more polluting vehicles with newer, cleaner vehicles. MANE-VU region emissions reductions are reflected in on-road and non-road mobile source emission estimates provided in section 7.

Federal Tier 3 Vehicle Emission and Fuel Standards Program: On March 3, 2014, EPA finalized this program designed to reduce air pollution from passenger cars and trucks. The final rule became effective on June 27, 2014. Starting in 2017, Tier 3 sets new vehicle emissions standards and lowers the sulfur content of gasoline, considering the vehicle and its fuel as an integrated system. The tailpipe standards include different phase-in schedules that vary by vehicle class but generally phase in between model years 2017 and 2025. In addition to the gradual phase-in schedules, other flexibilities include credits for early compliance and the ability to offset some higher-emitting vehicles with extra-clean models. Under the final Tier 3 program, federal gasoline will not contain more than 10 ppm of sulfur on an annual average basis by January 1, 2017.

Low Emission Vehicle Program: Section 177 of the CAA permits states to adopt new motor vehicle emissions standards that are identical to California's standards. New York has exercised this option by promulgating 6 NYCRR Part 218, "Emission Standards for Motor Vehicles and Motor Vehicle Engines," which incorporates California's emissions standards for light-duty vehicles. These regulations apply to 1993, 1994, 1996 and newer model year vehicles.

The Low Emission Vehicle (LEV) regulations provide flexibility to auto manufacturers by allowing them to certify their vehicle models to one of several different emissions standards. These consist of several different tiers of increasingly stringent LEV emission standards to which a manufacturer may certify a vehicle, including LEV, ultra-low-emission vehicle (ULEV), super-ultra-low-emission vehicle (SULEV), and zero-emission vehicle (ZEV). The different standards are intended to provide flexibility to manufacturers in meeting program requirements. However, manufacturers must demonstrate that the overall fleet for each model year meets the specified non methane organic gas (NMOG) standard for that year. These requirements are progressively lower with each model year.

In 2010, New York incorporated revisions that California made to its emission control program to amend the ZEV requirements, and incorporated revisions that California made to its LEV program to amend its GHG standards and GHG emission standards. In 2012, New York incorporated revisions California made to its emission control program to amend the LEV standards; adopted new aftermarket and used catalytic converter requirements; and adopted new vehicle emissions warranty and recall

requirements.

Motor Vehicle Enhanced Inspection and Maintenance (I/M) Program: DEC and the New York State Department of Motor Vehicles (DMV) jointly administer the statewide New York Vehicle Inspection Program (NYVIP). NYVIP is a statewide program that requires annual emission inspections of applicable vehicles, and was initially phased into the Upstate I/M area during 2004 and later expanded into NYMA in 2005. The type of annual emissions inspection is determined by vehicle model year, vehicle weight, fuel type, and registration class.

Most vehicles receive either a low enhanced or on-board diagnostic (OBDII) emissions inspection. OBD II is a computer system designed by vehicle manufacturers to monitor the operation of the vehicle's power train and associated emissions control systems. Most light-duty vehicles (passenger cars, and most SUVs, vans, and light-duty pick-up trucks) beginning with the 1996 model year are equipped with standardized OBD II computer systems. If the OBD II system detects a problem that could result in excessive emissions, the malfunction indicator light ("MIL" or "Check Engine light") located on the dashboard will illuminate to inform the driver of a detected fault code. The NYVIP OBD II inspection pass/fail criteria are based on proper MIL function and on electronic data collected from the vehicle's on-board computer.

Additional information on New York State Motor Vehicle I/M Programs can be found at: <http://www.dec.ny.gov/chemical/8391.html>.

Federal Heavy-Duty Diesel Engine Emission Standards for Trucks and Buses: EPA set a PM emissions standard of 0.01 grams per brake-horsepower-hour (g/bhp-hr) for new heavy-duty diesel engines in trucks and buses for the 2007 model year. This rule also includes standards for NO_x and non-methane hydrocarbons (NMHC) of 0.20 g/bhp-hr and 0.14 g/bhp-hr, respectively. These NO_x and NMHC standards were phased in together between 2007 and 2010. Lowering sulfur in diesel fuel enables modern pollution control technology to be effective on the trucks and buses that use this fuel. EPA required a 97 percent reduction in the sulfur content of highway diesel fuel from its previous level of 500 ppm (low-sulfur diesel) to 15 ppm (ultra-low sulfur diesel). These requirements were successfully implemented on the timeline in the regulation. Emissions reductions are reflected in on-road mobile source emissions estimates for 2007 and later years. (See section 6)

Federal Emission Standards for Large Industrial Spark-Ignition Engines and Recreational Vehicles: EPA has adopted new standards for emissions of NO_x, hydrocarbons (HC), and carbon monoxide (CO) from several groups of previously unregulated non-road engines. Included are large industrial spark-ignition engines and recreational vehicles. The affected spark-ignition engines are those powered by gasoline, liquid propane, or compressed natural gas rated over 19 kilowatts (kW) (25 horsepower). These engines are used in commercial and industrial applications, including forklifts, electric generators, airport baggage transport vehicles, and a variety of farm and construction applications. Non-road recreational vehicles include

snowmobiles, off-highway motorcycles, and all-terrain vehicles. These rules were initially effective in 2004 and were fully phased-in by 2012.

Diesel Emissions Reduction Act of 2006: In 2006, the New York State Legislature passed and the Governor enacted the "Diesel Emissions Reduction Act of 2006" (DERA). The legislation charged the DEC with implementing a regulatory program that would require the use of ultra-low sulfur diesel (ULSD) fuel and BART for any diesel powered heavy duty vehicle (HDV) that is owned by, operated by or on behalf of, or leased by a state agency and state and regional public authority. DEC subsequently promulgated 6 NYCRR Part 248, "Use of Ultra Low Sulfur Diesel Fuel and Best Available Retrofit Technology for Heavy Duty Vehicles", with an effective date of July 30, 2009 to implement DERA. The current version of 6 NYCRR Part 248 became effective on February 9, 2013. In March 2014, DERA was amended to extend the BART compliance date to December 31, 2015. Furthermore, a recent change in the underlying statute (Chapter 58, Laws of 2015) extended the retrofit compliance deadline for certain heavy duty vehicles from December 31, 2013 until December 31, 2016 and extended the useful life waiver compliance deadline from December 31, 2013 until December 31, 2017.

5.3.8. Controls on Nonroad Sources Expected by 2018

Version 3.0 of the MANE-VU 2002 Emissions Inventory was used to model the impacts of projected 2018 emissions from nonroad sources. Nonroad mobile source emissions for the 2018 emission inventory were calculated using EPA's NONROAD2005 emissions model (NONROAD)⁴ as incorporated into the NMIM2005 (National Mobile Inventory Model) database. The 2005 version of NONROAD incorporates EPA emissions standards that were finalized at the time of release and include standards for both gasoline powered and diesel powered sources as summarized below.

Emissions Standards for Nonroad Compression Ignition Sources

EPA has established several emissions standards for compression ignition (diesel) powered nonroad sources that have undergone several revisions. These sources include construction equipment, agricultural equipment, industrial equipment and some lawn and garden equipment as well as recreational equipment. The categories that have emissions reductions reflected in NONROAD are:

- Compression-Ignition Engines at or above 37 Kilowatts (Finalized July 18, 1994, Revised December 3, 1996, January 13, 1997)
- Nonroad Diesel Engines (all sources) (Finalized December 22, 1998, Revised August 30, 2004)
- Marine Compression-Ignition Engines at or above 37 Kilowatts (Finalized January 28, 2000, Revised April 29, 2003, June 29, 2010)

⁴ EPA has since released a 2008 version of NONROAD which includes additional emissions standards.

Emissions Standards for Nonroad Spark Ignition Sources

EPA has established emissions standards for spark ignition (gasoline, LPG, CNG) powered nonroad sources which have also undergone several revisions over the years. These sources include lawn and garden equipment and recreational equipment as well as some construction, agricultural and industrial equipment. The categories that have emissions reductions reflected in NONROAD are:

- Gasoline Spark-Ignition Marine Engines (Finalized December 3, 1996, Revised April 2, 1997, June 26, 2000)
- Nonroad Spark-Ignition Engines at or Below 19 Kilowatts (Finalized August 2, 1995, Revised December 3, 1996, June 1, 1999, June 26, 2000, March 12, 2004)
- Nonroad Large Spark-Ignition Engines (Finalized January 7, 2003)
- Marine and Land-Based Recreational Engines (Finalized January 7, 2003)

Emissions Standards Not Reflected in NONROAD 2005

EPA has established additional emissions standards for nonroad sources since the release of the 2005 version of NONROAD. These standards are either reflected in the 2008 version of NONROAD or will be included in the next release of the model. They include:

- 2012 and Later Model Year Snowmobiles (Finalized August 25, 2008)
- Marine Compression-Ignition Engines less than 30 Liters per Cylinder (Finalized July 7, 2008)
- Nonroad Spark-Ignition Engines, Equipment and Vessels (Finalized December 8, 2008, Revised November 15, 2010)
- Greenhouse Gas Emissions Standards for Medium- and Heavy-Duty Engines (Finalized November 14, 2011, Revised August 16, 2013)

Aircraft, Commercial Marine Vessels, and Locomotives: Because NONROAD does not include aircraft, commercial marine vessels, and locomotives, MANE-VU's contractor, MACTEC, developed the inventory for these sources. MACTEC used emissions projections developed by EPA for CAIR and a linear interpolation methodology described in the February 2007 report: *Development of Emissions Projections for 2009, 2012, and 2018 for Non-EGU Point, Area, and Nonroad Sources in the MANE-VU Region*. Emissions standards applicable to commercial marine vessels, locomotives and aircraft include:

- Locomotives and Locomotive Engines (Finalized June 15, 1998, Revised July 7, 2008)
- Marine Compression-Ignition Engines at or above 30 Liters per Cylinder (Finalized June 29, 2010)
- Aircraft NO_x Emissions Standards for Aircraft Gas Turbine Engines (Finalized June 18, 2012)

Section 6: Summary of Emission Reductions in New York State Resulting from Implementation of Control Measures

6.1. Requirement to Summarize Emissions Reductions

40 CFR 51.308(g)(2) requires that the progress report summarize the emissions reductions achieved throughout the State through implementation of the measures included in the State's SIP for achieving reasonable progress at Class I areas.

6.2. Summary of Key Emissions Changes in Last 9 Years

Section 7 of this Report lists emissions estimated by MANE-VU and New York State for 2002 and 2018 and compares those estimates to the 2011 emission inventory for all of the major emission sectors in New York State. Changes in emissions from key EGUs located in New York State are shown and discussed in Section 4 of this Report.

Reductions from all sectors for key pollutants in New York State are listed below.

Table 6.1. SO₂ Sector Emissions and Reductions in New York State

Sector	2002 Emissions	2011 Emissions	Emissions Reduction
Area	113,978	78,761	35,217
Point	686,426	70,454	615,972
Nonroad	13,288	180	13,108
Onroad	10,229	1,323	8,906
Total	823,921	150,718	673,203

Table 6.2. NO_x Sector Emissions and Reductions in New York State

Sector	2002 Emissions	2011 Emissions	Emissions Reduction
Area	98,804	113,951	(15,147)
Point	584,450	62,793	521,657
Nonroad	119,808	62,622	57,186
Onroad*	313,888	197,085	116,803
Total	1,116,950	436,451	680,499

*See discussion in Section 7.2.3

Table 6.3. PM_{2.5} Sector Emissions and Reductions in New York State

Sector	2002 Emissions	2011 Emissions	Emissions Reduction
Area	85,841	71,993	13,848
Point	25,075	5,702	19,373
Nonroad	9,000	6,135	2,865
Onroad	5,402	7,664	(2,262)
Total	125,318	91,494	33,824

Section 7: Analysis of Emission Changes in the Last Five Years from Visibility Impairing Pollutants

7.1. Requirement to Analyze and Track Changes in Emissions

Section 40 CFR 51.308(g)(4) of the federal Regional Haze Rule requires each state to analyze and track changes over the past five years in emissions of pollutants contributing to visibility impairment from all sources and activities within the State. Emissions changes are to be identified by type of source or activity. The analysis must be based on the most recent updated emissions inventory, with estimates projected forward as necessary and appropriate, to account for emissions changes during the applicable 5-year period.

7.2. MANE-VU Emissions Trends

Several data sources were used to develop the information in this Report, including:

- The 2002 based modeling inventory with a projection to 2018 (MANE-VU Version 3.3),
- The 2011 US EPA Clean Air Markets Division (CAMD) actual emissions as reported by sources, and
- The 2011 New York State Inventory.

While emissions for 2002, 2011, and 2018 are presented in this Report, there are several reasons why it is difficult to make comparisons among those years. The pollutants and source sectors included in these data sources vary. For example, CAMD collects data for NO_x and SO₂, but not for PM and VOCs. Inconsistencies arise due to differences in calculation methodologies, different emissions sources, emissions factor growth projection changes, unanticipated shutdowns, new sources and new control programs.

Current estimates for 2011 were developed using different methodologies and assumptions than estimates developed in 2006 for the years 2002 and 2018. Notably, emissions models used to calculate mobile sources are different now than they were in 2006. Projections of future emissions always involve assumptions – for example, assumptions about population growth, growth in fuel consumption, and the balance among different fuels, such as coal and natural gas. Much has changed in the last few years as natural gas prices have declined and old coal-fired units have been shut down due to the relatively higher price of coal.

7.2.1. 2002 Modeling Inventory with Projections to 2018

The 2002 modeling inventory suite was prepared by MARAMA and finalized in 2006. , Future year projections were prepared for 2009 and 2018 based on the base year 2002 inventory. Two scenarios for the future year were prepared as follows:

- On the Books /On the Way (OTB/OTW) – These projections reflect a scenario accounting for all in-place controls that are fully adopted into federal or individual state regulations or SIPs. On the way controls included CAIR. Modelers often refer to this scenario as the "future base case".
- Beyond On the Way (BOTW) - These projections reflect a scenario accounting for all measures in the OTB/OTW scenario and also additional controls that states commit to adopt as part of the SIP process. Modelers often refer to this scenario as the "future controlled case".

The BOTW projection for 2018 was used for this emission trend analysis.

Several versions of the 2002 modeling inventory suite were prepared. Improvements were made to the emissions estimation with each subsequent version. Version 3.3 is the version that was used in air quality modeling and this emission trend analysis. Details of the approach taken to prepare the 2002 modeling inventory suite are found in the documentation for the base year and future projections.⁵

7.2.2. 2007 Modeling Inventory with Projections to 2017 and 2020

The 2007 modeling inventory suite was prepared by MARAMA and finalized in 2012.⁶ Future year projections were prepared based on the base year 2007 emissions for 2013, 2017 and 2020 for all sectors except the electric generation and onroad sectors.⁷

However, EGU emissions are only available for the 2007 base year. For modeling purposes, provisional EGU estimates were developed for future year 2020 based on the CSAPR allocations. High quality future year modeling inventories for EGUs are currently being developed under a separate effort led by the Eastern Regional Technical Advisory Committee (ERTAC).

Also, onroad emissions are only available for base year 2007 and future year 2020. Use of the MOVES model proved so resource intensive that no funds were available to develop a 2017 onroad inventory. Under a separate effort, NESCAUM developed a

⁵ http://marama.org/visibility/Inventory%20Summary/MANE-VU_Final_V3_TSD_11-20-06.pdf

⁶ **MARAMA 2012a.** Prepared by AMEC Environment and Infrastructure and SRA International for the Mid-Atlantic Regional Air Management Association. *Technical Support Document for the Development of the 2007 Emission Inventory for Regional Air Quality Modeling in the Northeast / Mid-Atlantic Region Version 3_3.* January 23, 2012.

⁷ **MARAMA 2012b.** Prepared by AMEC Environment and Infrastructure and SRA International for the Mid-Atlantic Regional Air Management Association. *Technical Support Document for the Development of the 2013/2017/2020 Emission Inventories for Regional Air Quality Modeling in the Northeast / Mid-Atlantic Region Version 3_3.* January 23, 2012

2007 onroad inventory using the MOVES model to support air quality modeling. Those runs were further revised by Virginia to adjust for the height at which temperature was measured. This adjusted run (Version 2) was used in OTC Level 3 screening modeling and also in the emissions trend analysis.

The OTB/OTW projection for 2017 and 2020 was used for this emission trend analysis.

Several versions of the 2007 modeling inventory suite were prepared. Improvements were made to the emissions estimation with each subsequent version. Version 3.3 is the version that was used in OTC Level 3 screening air quality modeling and also in this emission trend analysis. Details of the approach taken to prepare the 2007 modeling inventory suite are found in the documentation for the base year and future projections.

7.2.3. 2011 Clean Air Markets Division (CAMD) Reported Emissions

CAMD implements the provisions of 40 CFR 75, which requires an hourly accounting of emissions from each affected unit - i.e., sources participating in an emissions cap and trade program under the Acid Rain Control Program, the NO_x Budget Trading Program, or CAIR. Most of the CAMD sources are traditional power plants that sell electricity to the electrical grid. However, there are other types of sources that report to CAMD that are not considered to be EGUs, such as petroleum refineries and cement kilns.

Emissions of NO_x, SO₂, and heat input (HI) are posted on the CAMD website (<http://camddataandmaps.epa.gov/>). The annual unit level CAMD NO_x and SO₂ emissions for 2011 were downloaded from this website for use as needed.

Table 7.1 identifies the data sources used for the emissions trend analysis.

Table 7.1. Emissions Data Sources by Sector

	2002 Actual	2007 Actual	2011 Actual	2017 Projected	2018 Projected	2020 Projected
EGU Point	MANE-VU 3.3	MARAMA V3	NY/CAMD*	MARAMA V3	MANE-VU 3.3	MARAMA V3
NonEGU Point	MANE-VU 3.3	MARAMA V3	NY**	MARAMA V3	MANE-VU 3.3	MARAMA V3
Mobile	MANE-VU 3.3	MARAMA V3	NY**	-----	MANE-VU 3.3	MARAMA V3
Area	MANE-VU 3.3	MARAMA V3	NY**	MARAMA V3	MANE-VU 3.3	MARAMA V3
Nonroad (NMIM)	MANE-VU 3.3	MARAMA V3	NY**	MARAMA V3	MANE-VU 3.3	MARAMA V3
MAR	MANE-VU 3.3	MARAMA V3	NY**	MARAMA V3	MANE-VU 3.3	MARAMA V3

* CAMD 2010.

** New York data applied to tables 7.3, 7.4 and 7.5.

Table 7.2 summarizes the MANE VU regional emissions trends for NO_x, SO₂, PM_{2.5} and VOC by sector. Numbered columns and footnotes have been added to distinguish between the three data sources used in the analysis. Blue columns (1) and (5) are from

the 2002 inventory suite, tan columns (2), (4), and (6) are from the 2007 inventory suite and the white column (3) is from CAMD 2010. Methods for estimating emissions from on-road mobile sources changed from MOBILE to MOVES. The 2002 and 2018 estimates in Table 7.2 were based on the MOBILE model, while the 2007 and 2020 estimates were based on MOVES. It is not possible to establish trends in mobile source emissions by comparing MOVES and MOBILE estimates. Similarly, there were significant improvements in methods used to calculate Marine and Rail (MAR) (part of nonroad MAR) and area sources, which means that determining trends for those sectors was problematic.

Some general regional observations by pollutant include:

- **NO_x** - Regional NO_x emissions are dominated by the onroad mobile and EGU sectors. Regional EGU NO_x emissions decreased significantly between 2007 and 2010. The shift from the MOBILE6 model to the MOVES model represents a significant shift in methodology that occurred between completion of the 2002 and 2007 modeling inventory suite for mobile source NO_x emissions. Generally, future NO_x emissions estimated using the MOVES model results in higher emissions estimates than when using the MOBILE6 model. Therefore, combining or comparing these data sets does not add understanding to the NO_x trend analysis. Overall, NO_x is projected to decline in future years for both individual inventory suites (i.e., from 2002 to 2018 and from 2007 to 2017 and 2020). While the New York State tables highlight 2002 (Mobile), 2011 (MOVES) and 2018 (Mobile), DEC notes that statewide inventories for 2007, 2011 and 2018, all run in MOVES, show a downward trend (2007 – 312,398 tpy, 2011 – 197,085 tpy and 2018 – 99,126 tpy). Notably, recent measurements indicate that emissions from the EGU sector are declining rapidly.
- **PM_{2.5}** - Directly emitted fine particle emissions are regionally dominated by the area sector and, in particular, residential wood combustion. Improvements in both the estimation methodology and emission factors occurred between the 2002 and 2007 inventory suites for residential wood combustion direct PM_{2.5}. These improvements generally result in much lower emissions estimates in the 2007/2017/2020 data than in the 2002/2018 inventory suite. Therefore combining these data sets does not add understanding to the PM_{2.5} source trend analysis. For many states, EGU emissions of fine particles have not been reviewed by states. Therefore, PM_{2.5} emission estimates for this sector are not included in Table 7.2. Overall, the trend for directly emitted PM_{2.5} is mixed, with some sectors remaining largely unchanged, while others, particularly engine-based sectors, are projected to decrease.
- **SO₂** - Regional SO₂ emissions are dominated by EGU emissions. All sectors are complete for SO₂ without any significant impact of changing methodologies for any sector. In addition, SO₂ emissions reductions are expected to be significant. As with NO_x, regional EGU SO₂ emissions in 2010 are significantly lower than were estimated for 2007. As a result, a clear

overall regional SO₂ trend exists with emissions dropping dramatically every year.

- **VOC** - Regional VOC emissions are dominated by biogenic emissions which are estimated to remain unchanged in future years. EGU emissions are incomplete as not all states have had a chance to review the data. However, since EGU VOC emissions are very minor and the reductions from the other sectors are so significant, it can be concluded that total anthropogenic emissions of VOC will drop.

Table 7.2. Air Pollutant Emission Trends between 2002 and 2020 for the MANE-VU Region ⁸

	(1)	(2)	(3)	(4)	(5)	(6)
	2002	2007	2010	2017	2018	2020
Data Source(1)	2002 V3	2007 V3	CAMD	2007 V3	2002 V3	2007 V3
Oxides of Nitrogen (TPY)						
Area(4)	266,747	207,054	---	194,832	263,954	194,868
Nonroad MAR(4)	137,733	173,855	---	127,391	111,425	118,025
Nonroad NMIM(4)	289,392	263,931	---	153,553	158,843	135,962
Onroad Mobile(4)	1,308,235	1,175,916	---	---	303,956	471,558
Point EGU(2)	453,395	338,488	214,623	---	168,268	---
Point nonEGU(3)	213,414	174,043	---	169,188	174,218	169,668
Total	2,668,916	2,333,286	---	---	1,180,664	---
Direct PM_{2.5} (TPY)						
Area(4)	332,676	259,938	---	262,887	339,518	264,959
Nonroad MAR(4)	7,929	7,430	---	3,906	7,927	3,503
Nonroad NMIM(4)	27,922	24,701	---	16,536	15,952	14,421
Onroad Mobile(4)	22,108	45,616	---	---	9,189	28,365
Point EGU(2)	20,670	44,921	---	---	51,109	---
Point nonEGU(3)	33,948	29,881	---	29,659	38,393	29,868
Total	445,253	412,486	---	---	462,087	---
Sulfur Dioxide (TPY)						
Area(4)	316,287	212,471	---	119,215	190,437	116,511
Nonroad MAR(4)	32,123	30,318	---	4,870	8,172	4,183
Nonroad NMIM(4)	24,774	14,167	---	420	466	443
Onroad Mobile(4)	40,092	8,974	---	---	8,756	7,202
Point EGU(2)	1,670,176	1,546,335	620,183	---	365,024	---
Point nonEGU(3)	239,400	129,615	---	112,784	201,478	112,828
Total	2,322,851	1,941,879	---	---	774,333	---
Volatile Organic Compounds (TPY)						
Area(4)	1,366,735	784,233	---	702,289	1,334,175	696,125
Nonroad MAR(4)	14,026	19,066	---	17,057	14,962	16,962
Nonroad NMIM(4)	557,536	412,890	---	244,126	364,980	222,226
Onroad Mobile(4)	789,560	600,638	---	---	269,979	269,647
Point EGU(2)	11,943	4,975	---	---	4,344	---
Point nonEGU(3)	92,562	68,003	---	68,099	103,727	68,005
Total	2,832,364	1,889,805	---	---	2,092,168	---

- (1) There are three data sources:
 2002 V3 with future projection to 2018 (Columns 1 and 5)
 2007 V3 with future projections to 2017 and 2020 (Columns 2 and 6)
 CAMD actual 2010 emissions as reported to the US EPA CAMD (Column 3)
- (2) Data meets or exceeds target of 90% complete across all years for most states. Units with incomplete data for one or more years have been completed by states or have been removed so that a consistent set of data is presented across years. Therefore totals are not identical to modeled inventory or TSD.

⁸ "Regional Emissions Trends Analysis for MANE-VU States: Technical Support Document, Revision 3," March 22, 2013 (posted on MARAMA website www.marama.org) Exhibit 8.1 p. 22.

- (3) Data does not meet target of 90% complete across all years. Total represents all units completed by states. Totals are not identical to modeled inventory or TSD.
- (4) Data identical to modeled inventory and TSD for most states. No revision to correct inconsistent methodology.
 Nonroad MAR – includes commercial marine vessels, airports, and railroad locomotives
 Nonroad NMIM – includes equipment included in EPA's NMIM/NONROAD model

Note that on road mobile source emissions estimation methods changed from MOBILE to MOVES, and that this makes inter-annual comparisons impossible between certain years.

Table 7.3 - MANE-VU Region Sector Totals for EPA's 2011 V1 Platform (TPY)

Sector	NO_x	Direct PM_{2.5}	SO₂	VOC
Area	213,158	163,257	176,126	696,833
MAR	86,985	2,720	2,183	3,300
Nonroad	223,765	22,430	649	361,543
Mobile	751,981	28,825	4,804	348,927
EGU	213,619	14,445	479,287	2,543
NonEGU	164,647	30,090	97,001	55,246
Totals	1,654,155	261,767	760,050	1,468,392

Tables 7.4, 7.5 and 7.6 below include emissions for 2002, 2011 and 2018 for New York State.

Table 7.4 - New York State 2002 Emissions Inventory Summary (TPY)

Sector	CO	NO_x	VOC	NH₃	SO₂	PM₁₀	PM_{2.5}
Area	356,287	98,804	514,425	67,422	113,978	369,595	85,841
Point	53,563	584,450	134,363	1,861	686,426	10,326	25,075
Nonroad	1,205,509	119,808	158,121	79	13,288	9,605	9,000
Onroad	2,942,730	313,888	179,731	14,439	10,229	7,599	5,402
Biogenic	63,436	8,313	492,483	-	-	-	-
Totals	4,621,525	1,125,263	1,479,123	83,801	823,921	397,125	125,318

Source: NO_x, SO₂ and PM_{2.5}: DEC's Proposed PM_{2.5} Attainment Demonstration (May 2008)
 CO and VOC: DEC's Proposed 8-Hour Ozone Attainment Demonstration (Feb 2008)
 Others: MACTEC, 2007. "Development of Emission Projections for 2009, 2012, and 2018 for non-EGU Point, Area, and Nonroad Sources in the MANE-VU Region." February 28, 2007.
 See: <http://www.marama.org/visibility/Inventory%20Summary/FutureEmissionsInventory.htm>

Table 7.5 - New York State 2011 Emissions Inventory Summary (TPY)

Sector	CO	NO _x	VOC	NH ₃	SO ₂	PM ₁₀	PM _{2.5}
Area	284,047	113,951	549,814	44,997	78,761	256,889	71,993
Point	71,445	62,793	10,219	2,176	70,454	8,093	5,702
Nonroad	780,376	62,622	107,912	92	180	6,468	6,135
Onroad	958,491	197,085	87,718	4,944	1,323	11,211	7,664
Biogenic	68,725	7,597	339,306	-	-	-	-
Totals	2,163,084	444,048	1,094,969	52,209	150,718	282,661	91,494

Source: DEC Database Files (Summer 2014): For Biogenic: "2011EPA_BIOGENICS";
For 2011 Emissions: "2011NEIV1WITHBIOGENICS"

Table 7.6 - New York State 2018 Emissions Inventory Summary (TPY) ⁹

Sector	CO	NO _x	VOC	NH ₃	SO ₂	PM ₁₀	PM _{2.5}
Area	307,659	108,444	457,421	96,078	141,408	392,027	86,422
Point	101,118	55,681	13,091	2,767	118,936	17,062	13,460
Nonroad	1,474,727	72,400	104,562	103	1,686	5,830	5,349
Onroad	1,694,820	78,365	68,104	19,167	1,794	2,775	2,542
Biogenic	63,436	8,313	492,483	--	--	--	--
Totals	3,641,760	323,203	1,135,571	118,115	263,824	417,694	107,773

Source: MACTEC, 2007. "Development of Emission Projections for 2009, 2012, and 2018 for non-EGU Point, Area, and Nonroad Sources in the MANE-VU Region." February 28, 2007.
See <http://www.marama.org/visibility/Inventory%20Summary/FutureEmissionsInventory.htm>

⁹ The source of New York State's 2018 Emissions Inventory projections was developed in 2007, so while SO₂ emissions declined from 2002 to 2018, the reduction does not reflect New York's efforts to reduce sulfur in heating oil and other fuels that were implemented in 2012 and 2014 (See Table 5.1).

Section 8: Assessment regarding whether Current Regional Haze SIP Elements and Strategies are Sufficient to Meet Reasonable Progress Goals

8.1. Requirement to Assess Sufficiency of Plan

40 CFR 51.308(g)(6) requires “an assessment of whether the current implementation plan elements and strategies are sufficient to enable the State, or other States with mandatory Federal Class I areas affected by emissions from the State, to meet all established reasonable progress goals.”

8.2. Assessment

DEC confirms that the elements and strategies in the existing New York Regional Haze SIP are sufficient to meet all established RPGs as demonstrated by the analyses in this Report.

Section 9: Monitoring Strategy Review

9.1. Requirement to Review Monitoring Strategy

40 CFR 51.308(g)(7) requires each state with a Class I area to review the State's visibility monitoring strategy and any modifications to the strategy as necessary.

9.2. Review

This requirement is not applicable to New York State because there are no Class I areas in the State.

Section 10: Determination of Adequacy of Current Regional Haze SIP

10.1. Requirement to Determine Adequacy of Current SIP

40 CFR 51.308(h) requires the State to determine the adequacy of its regional haze SIP based upon information presented in its progress report.

10.2. Determination

DEC confirms that the existing SIP is adequate for continued reasonable progress towards natural conditions in all mandatory Class I Federal areas impacted by emissions from New York based on the analyses conducted for this Report.

Section 11: Consultation with Federal Land Managers

11.1. Requirement to Consult with Federal Land Managers

40 CFR 51.308(i) requires that the state provide the FLMs responsible for Class I areas affected by emissions from within the state an opportunity for consultation, in person and at least 60 days before holding any public hearing on this progress report.

11.2. Consultation Process

DEC sent the draft SIP revision to the FLMs on December 1, 2014. DEC sent the proposed SIP revision to the FLMs as part of the public review comment period on March 4, 2015. DEC incorporated the FLMs comments on the draft SIP revision into the proposed SIP revision, along with other comments (see Appendix E).

DEC will continue to coordinate and consult with the FLMs on future SIP revisions, including progress reports, as well as during the implementation of programs having the potential to contribute to visibility impairment in the mandatory Class I areas.

Appendix A: Regional Haze Rule Metric

IMPROVE aerosol sampling and filter analysis at MANE-VU Class I sites are conducted according to procedures described in “*IMPROVE Standard Operating Protocols: Particle Monitoring Network*”.¹⁰ Data are available from the FLM Database.¹¹

The haze-relevant aerosol measurements include PM₁₀ mass and PM_{2.5} mass (from which coarse mass is calculated), fine sulfate and nitrate ions (from which ammonium sulfate and ammonium nitrate are calculated), fine organic carbon (from which particulate organic matter is calculated), fine elemental carbon, fine elemental chlorine and chloride ion (from which sea salt mass is calculated), and fine crustal elements (Si, Al, Fe, Ca, Ti, from which fine soil is calculated). The calculated aerosol species concentrations are then combined with estimated dry light extinction efficiencies and enhanced by hygroscopic growth functions (for sulfate nitrate & sea salt) using climatologically derived monthly relative humidity and f(RH) growth functions. This aerosol light extinction is added to Rayleigh Scattering from natural gaseous air molecules.

The equation presented below is used for these extinction calculations and is referred to as the IMPROVE Equation, Version II, and recommended by the IMPROVE Steering Committee as described in “*Review of the IMPROVE Equation for Estimating Ambient Light Extinction Coefficients - Final Report*”¹²

$$B_{\text{ext}} \approx 2.2 \times f_s (\text{RH}) \times [\text{Small } (\text{NH}_4)_2\text{SO}_4] + 4.8 \times f_L (\text{RH}) \times [\text{Large } (\text{NH}_4)_2\text{SO}_4] \\ + 2.4 \times f_s (\text{RH}) \times [\text{Small } \text{NH}_4\text{NO}_3] + 5.1 \times f_L (\text{RH}) \times [\text{Large } \text{NH}_4\text{NO}_3] \\ + 2.8 \times [\text{Small Organic Mass}] + 6.1 \times [\text{Large Organic Mass}] \\ + 10 \times [\text{Elemental Carbon}] + 1 \times [\text{Fine Soil Mass}] \\ + 1.7 \times f_{\text{SS}} (\text{RH}) \times [\text{Sea Salt Mass}] + 0.6 \times [\text{Coarse Mass}] \\ + \text{Rayleigh Scattering (Site Specific)} + 0.33 \times [\text{NO}_2 \text{ (ppb)}]$$

Where:

B_{ext} = The light extinction coefficient in inverse megameters [Mm^{-1}]

f_s (RH) and f_L (RH) = Humidity factor associated with small and large mode mass size distributions of $(\text{NH}_4)_2\text{SO}_4$ and NH_4NO_3

f_{SS} (RH) = Humidity factor associated with Sea Salt

NO_2 data are not available and concentrations are assumed to be negligible. Apportionment of the total concentrations of ammonium sulfate ($(\text{NH}_4)_2\text{SO}_4$) into the concentrations of small and large size fractions is accomplished using the following equations:

$$[\text{Large } (\text{NH}_4)_2\text{SO}_4] = [\text{Total } (\text{NH}_4)_2\text{SO}_4] / 20 \times [\text{Total } (\text{NH}_4)_2\text{SO}_4] \\ [\text{Small } (\text{NH}_4)_2\text{SO}_4] = [\text{Total } (\text{NH}_4)_2\text{SO}_4] - [\text{Large } (\text{NH}_4)_2\text{SO}_4]$$

¹⁰ http://vista.cira.colostate.edu/improve/Publications/IMPROVE_SOPs.htm

¹¹ <http://views.cira.colostate.edu/fed/QueryWizard/Default.aspx>

¹² http://vista.cira.colostate.edu/improve/Publications/GrayLit/gray_literature.htm

Similar equations are used to apportion total ammonium nitrate (NH_4NO_3) and total particulate organic mass ($\text{POM} = 1.8 \times \text{OC}$) concentrations into the small and large size fractions.

The above IMPROVE Equation replaced the equation in EPA's September 2003 *Guidance for Tracking Progress Under the Regional Haze Rule* (EPA-454/b-03-004).¹³ Other aspects of that guidance are not affected by the IMPROVE Equation.

The resulting light extinction estimates (B_{ext} in Mm^{-1}) can be converted to deciviews using the following natural logarithm function:

- Deciviews (dv) = $10 \ln (B_{\text{ext}}/10)$

For each year meeting data completeness requirements, averages are calculated, in deciviews, for the 20% haziest days and for the 20% clearest days at each site. These annual means are aggregated into 5-year averages for a "baseline" period (2000-2004) and for later 5-year periods.

The EPA Regional Haze Rule target requires that the 20% clearest days not deteriorate over time, while the 20% haziest days are expected to improve visibility to the level of "natural background" by 2064. To achieve a "Uniform Rate of Progress," consistent with reaching natural background by 2064, the haziest 20% days would need to improve at an annual rate of at least:

$$\text{Annual Uniform Improvement} = (\text{Baseline} - \text{Natural Background}) / 60$$

For each 5-year period, uniform progress would be maintained if:

$$\text{5-year Uniform Improvement} = (\text{Baseline} - \text{Natural Background}) / 12$$

Each state with a Class I area establishes a RPG for that Class I area for each 10-year period that is based on decisions about how much progress in reducing regional haze would be reasonable by that date. The first regional haze SIPs set RPGs for 2018. The Uniform Rate of Progress is considered by the state in setting the RPG, but the goal must reflect what is considered reasonable, which may be more or less progress than would be expected based on the Uniform Rate of Progress.

¹³ <http://www.epa.gov/ttnamti1/files/ambient/visible/tracking.pdf>

Appendix B: Statement on Controls in MANE-VU

Members
Connecticut
Delaware
District of Columbia
Maine
Maryland
Massachusetts
New Hampshire
New Jersey
New York
Pennsylvania
Penobscot Indian Nation
Rhode Island
St. Regis Mohawk Tribe
Vermont
Nonvoting Members
U.S. Environmental Protection Agency
National Park Service
U.S. Fish and Wildlife Service
U.S. Forest Service
MANE-VU Class I Areas
ACADIA NATIONAL PARK ME
BRIGANTINE WILDERNESS NJ
GREAT GULF WILDERNESS NH
LYE BROOK WILDERNESS VT
MOOSEHORN WILDERNESS ME
PRESIDENTIAL RANGE DRY RIVER WILDERNESS NH
ROOSEVELT CAMPOBELLO INTERNATIONAL PARK ME/NB, CANADA

Mid-Atlantic/Northeast Visibility Union

MANE-VU



*Reducing Regional Haze for
Improved Visibility and Health*

STATEMENT OF THE MID-ATLANTIC/NORTHEAST VISIBILITY UNION (MANE-VU) CONCERNING A COURSE OF ACTION WITHIN MANE-VU TOWARD ASSURING REASONABLE PROGRESS

The federal Clean Air Act and Regional Haze rule require States that are reasonably anticipated to cause or contribute to impairment of visibility in mandatory Class I Federal areas to implement reasonable measures to reduce visibility impairment within the national parks and wilderness areas designated as mandatory Class I Federal areas. Most pollutants that affect visibility also cause unhealthy concentrations of ozone and fine particles. In order to assure protection of public health and the environment, any additional air pollutant emission reduction measures necessary to meet the 2018 reasonable progress goal for regional haze should be implemented as soon as practicable .

To address the impact on mandatory Class I Federal areas within the MANE-VU region, the Mid-Atlantic and Northeast States will pursue a coordinated course of action designed to assure reasonable progress toward preventing any future, and remedying any existing impairment of visibility in mandatory Class I Federal areas and to leverage the multi-pollutant benefits that such measures may provide for the protection of public health and the environment. This course of action includes pursuing the adoption and implementation of the following “emission management” strategies, as appropriate and necessary:

- timely implementation of BART requirements; and
- a low sulfur fuel oil strategy in the inner zone States (New Jersey, New York, Delaware and Pennsylvania, or portions thereof) to reduce the sulfur content of: distillate oil to 0.05% sulfur by weight (500 ppm) by no later than 2012, of #4 residual oil to 0.25% sulfur by weight by no later than 2012, of #6 residual oil to 0.3 – 0.5% sulfur by weight by no later than 2012, and to further reduce the sulfur content of distillate oil to 15 ppm by 2016; and
- a low sulfur fuel oil strategy in the outer zone States (the remainder of the MANE-VU region) to reduce the sulfur content of distillate oil to 0.05% sulfur by weight (500 ppm) by no later than 2014, of #4 residual oil to 0.25 – 0.5% sulfur by weight by no later than 2018, and of #6 residual oil to no greater than 0.5 % sulfur by weight by no later than

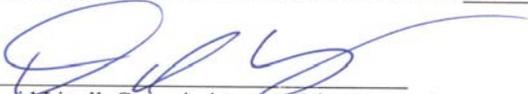
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2018, and to further reduce the sulfur content of distillate oil to 15 ppm by 2018, depending on supply availability; and

- A 90% or greater reduction in sulfur dioxide (SO₂) emissions from each of the electric generating unit (EGU) stacks identified by MANE-VU (Attachment 1- comprising a total of 167 stacks – dated June 20, 2007) as reasonably anticipated to cause or contribute to impairment of visibility in each mandatory Class I Federal area in the MANE-VU region. If it is infeasible to achieve that level of reduction from a unit, alternative measures will be pursued in such State; and
- continued evaluation of other control measures including energy efficiency, alternative clean fuels, and other measures to reduce SO₂ and nitrogen oxide (NO_x) emissions from all coal-burning facilities by 2018 and new source performance standards for wood combustion. These measures and other measures identified will be evaluated during the consultation process to determine if they are reasonable and cost-effective.

This long-term strategy to reduce and prevent regional haze will allow each state up to 10 years to pursue adoption and implementation of reasonable and cost-effective NO_x and SO₂ control measures.

Adopted by the MANE-VU States and Tribes on 20 June 2007



David Littell, Commissioner – Maine Dept. of Environmental Protection
Chair

Appendix C: Statement on Controls Outside of MANE-VU

Members
 Connecticut
 Delaware
 District of Columbia
 Maine
 Maryland
 Massachusetts
 New Hampshire
 New Jersey
 New York
 Pennsylvania
 Penobscot Indian Nation
 Rhode Island
 St. Regis Mohawk Tribe
 Vermont

Nonvoting Members
 U.S. Environmental
 Protection Agency
 National Park Service
 U.S. Fish and Wildlife
 Service
 U.S. Forest Service

MANE-VU Class I Areas

ACADIA NATIONAL PARK
 ME

BRIGANTINE WILDERNESS
 NJ

GREAT GULF WILDERNESS
 NH

LYE BROOK WILDERNESS
 VT

MOOSEHORN WILDERNESS
 ME

PRESIDENTIAL RANGE
 DRY RIVER WILDERNESS
 NH

ROOSEVELT CAMPOBELLO
 INTERNATIONAL PARK
 ME/NB, CANADA



STATEMENT OF THE MID-ATLANTIC/NORTHEAST VISIBILITY UNION (MANE-VU) CONCERNING A REQUEST FOR A COURSE OF ACTION BY STATES OUTSIDE OF MANE-VU TOWARD ASSURING REASONABLE PROGRESS

The federal Clean Air Act and the Regional Haze rule require States that are reasonably anticipated to cause or contribute to impairment of visibility in mandatory Class I Federal areas to implement reasonable measures to reduce visibility impairment within the national parks and wilderness areas designated as mandatory Class I Federal areas. Most pollutants that affect visibility also cause unhealthy concentrations of ozone and fine particles. In order to assure protection of public health and the environment, air pollutant emission reductions required to meet the 2018 reasonable progress goal for regional haze should be achieved as soon as practicable.

To address the impact on mandatory Class I Federal areas within the MANE-VU region, the Mid-Atlantic and Northeast States request that States outside of the MANE-VU region that are identified as contributing to visibility impairment in the MANE-VU mandatory Class I Federal areas pursue a course of action designed to assure reasonable progress toward preventing any future, and remedying any existing, impairment of visibility in mandatory Class I Federal areas and to leverage the multi-pollutant benefits that such actions may provide for the protection of public health and the environment. This request for a course of action includes pursuing the adoption and implementation of the following control strategies, as appropriate and necessary:

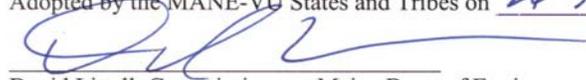
- timely implementation of BART requirements; and
- A 90% or greater reduction in sulfur dioxide (SO₂) emissions from each of the electric generating unit (EGU) stacks identified by MANE-VU (Attachment 1- comprising a total of 167 stacks – dated June 20, 2007) as reasonably anticipated to cause or contribute to impairment of visibility in each mandatory Class I Federal area in the MANE-VU region. If it is infeasible to achieve that level of reduction from a unit, alternative measures will be pursued in such State; and

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- the application of reasonable controls on non-EGU sources resulting in a 28% reduction in non-EGU SO₂ emissions, relative to on-the-books, on-the-way 2018 projections used in regional haze planning, by 2018, which is equivalent to the projected reductions MANE-VU will achieve through its low sulfur fuel oil strategy ; and
- continued evaluation of other measures including measures to reduce SO₂ and nitrogen oxide (NO_x) emissions from all coal-burning facilities by 2018 and promulgation of new source performance standards for wood combustion. These measures and other measures identified will be evaluated during the consultation process to determine if they are reasonable.

This long-term strategy to reduce and prevent regional haze will allow each state up to 10 years to pursue adoption and implementation, of reasonable NO_x and SO₂ control measures.

Adopted by the MANE-VU States and Tribes on 24 June 2007



David Littell, Commissioner – Maine Dept. of Environmental Protection
Chair

Appendix D: Statement on National Controls

Members

Connecticut
Delaware
District of Columbia
Maine
Maryland
Massachusetts
New Hampshire
New Jersey
New York
Pennsylvania
Penobscot Indian Nation
Rhode Island
St. Regis Mohawk Tribe
Vermont

Nonvoting Members

U.S. Environmental
Protection Agency
National Park Service
U.S. Fish and Wildlife
Service
U.S. Forest Service

MANE-VU Class I Areas

ACADIA NATIONAL PARK
ME

BRIGANTINE WILDERNESS
NJ

GREAT GULF WILDERNESS
NH

LYE BROOK WILDERNESS
VT

MOOSEHORN WILDERNESS
ME

PRESIDENTIAL RANGE
DRY RIVER WILDERNESS
NH

ROOSEVELT CAMPOBELLO
INTERNATIONAL PARK
ME/NB, CANADA

Mid-Atlantic/Northeast Visibility Union

MANE-VU



*Reducing Regional Haze for
Improved Visibility and Health*

**STATEMENT OF THE
MID-ATLANTIC / NORTHEAST VISIBILITY UNION (MANE-VU)
CONCERNING A REQUEST FOR A COURSE OF ACTION BY
THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
TOWARD ASSURING REASONABLE PROGRESS**

The US Clean Air Act and the EPA Regional Haze rule require States that are reasonably anticipated to cause or contribute to impairment of visibility in mandatory Class I Federal areas to implement reasonable measures to reduce visibility impairment within the national parks and wilderness areas designated as mandatory Class I Federal areas.

Most pollutants that affect visibility also cause unhealthy concentrations of ozone and fine particles, and contribute to other adverse environmental impacts. In order to assure protection of public health and the environment, air pollutant emission reductions required to meet the 2018 reasonable progress goal for regional haze should be achieved as soon as practicable.

MANE-VU assessments indicate that sulfur dioxide emissions from power plants in a broad region of the Eastern US are the most important contributor to regional haze at mandatory Class I Federal areas within MANE-VU.

By 2018, emissions from these plants will be substantially reduced under requirements of EPA's Clean Air Interstate Rule. This will result in improved visibility at MANE-VU Class I areas.

However, even after implementation of the CAIR rule, emissions from power plants will remain a substantial source of pollutants contributing to visibility impairment in MANE-VU Class I areas.

Furthermore, under more stringent national ambient air quality standards, these same pollutants will continue to contribute to ozone pollution and fine particle pollution in nonattainment areas within the region.

Therefore, it is an important responsibility of both EPA and the MANE-VU states to determine whether additional emissions reductions at power

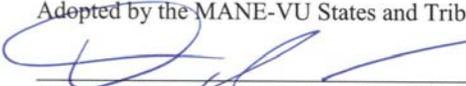
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plants should be a part of a reasonably available strategy to improve visibility in the MANE-VU region.

MANE-VU sponsored additional modeling using the Integrated Planning Model (IPM[®]). Results of this modeling indicate that an additional 18% emissions reduction in SO₂ emissions beyond CAIR levels could be achieved by 2018 at a reasonable cost.

The MANE-VU states and tribes request that EPA work with the eastern Regional Planning Organizations to develop a proposal for tightening the CAIR program to achieve an additional 18% reduction in SO₂ by no later than 2018.

Adopted by the MANE-VU States and Tribes on June 20, 2007



David Littell, Commissioner – Maine Dept. of Environmental Protection
Chair

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JUN 20 2007

Appendix E: Summary of and Response to Comments from Federal Land Managers

As required by 40 CFR 51.308(i), the FLMs were provided 60 days to review and comment on DEC's draft Five-Year Progress Report for 2010-2015. The document was sent electronically on December 1, 2014 to FLMs at the U.S. Fish and Wildlife Service, the U.S. Forest Service and the National Park Service. Comments were received from the U.S. Forest Service and the National Park Service. The U.S. Fish and Wildlife Service indicated that they did not have any comments as of February 3, 2015.

This appendix contains the comments that were received from the FLMs. The following changes have been made to DEC's draft Five Year Progress Report for Regional Haze SIP based on comments received from the FLMs.

- A typographical error was corrected in Section 2.1.
- Tables 2.1 and 2.2 were combined to make the document more readable.
- Tables 2.3 and 2.4 were edited for easier readability.
- Figure 2.1 was edited to remove inconsistencies with other tables.
- Table 4.2 was edited to remove data inconsistencies.

One commenter requested a clarification of the time period of New York's moratorium on high volume hydraulic fracturing for oil and gas production, mentioned in Section 5.3.6. New York's moratorium on high volume hydraulic fracturing remains in effect. DEC Commissioner Martens has stated that he will issue a legally binding findings statement that will prohibit high-volume hydraulic fracturing in New York State.

During the public comment period, one additional comment from the FLMs noted a typographical error in Section 11.2 which has been corrected.



United States
Department of
Agriculture

Forest
Service

Green Mountain & Finger Lakes
National Forests
Supervisor's Office

231 North Main St.
Rutland, Vermont 05701
Tel. (802) 747-6700
FAX (802) 747-6766

www.fs.fed.us/r9/gmf

File Code: 2580

Date: January 13, 2015

Robert Sliwinski, P.E., Director
Bureau of Air Quality Planning
Division of Air Resources
New York State Department of Environmental
Conservation
625 Broadway
Albany, NY 12233-3251

Dear Mr. Sliwinski:

The USDA Forest Service has completed our review of the Draft document titled "New York State Implementation Plan For Regional Haze, Five-Year Progress Report For 2010 – 2015" dated December, 2014. We appreciate the opportunity to review and comment on this very thorough and informative report. Based on our review, we have attached a document, with specific questions, and suggested edits, related to this report. If you have any questions regarding the enclosure, please contact Air Quality Specialist Ralph Perron at (802) 222-1444.

I concur with the New York State Department of Environmental Conservation's declaration that New York State's Regional Haze State Implementation Plan is sufficient in its current form to achieve the necessary emission reductions to meet the 2018 reasonable progress goals for visibility. Further revisions of the New York State Regional Haze State Implementation Plan are not needed at this time. I am pleased to note that the observed five year average for visibility, for the years 2009-2013, at the Lye Brook Class I area located in the Green Mountain National Forest, are already better than the 2018 reasonable progress goals.

We look forward to our continued close cooperation toward the national goal of no "man-made" visibility impairment to the Class I areas in our region by 2064.

Sincerely,

/s/ Dee Hines
DEE HINES
Acting Forest Supervisor

cc: Judi Henry
Bret A Anderson
Charles E Sams
diana.rivenburgh



Caring for the Land and Serving People

Printed on Recycled Paper

USDA Forest Service Comments

January 13, 2015

Page 8, second paragraph, suggest adding "haziest" to last sentence, suggested wording:

Regional haze impairs visibility. The deciview is a measure of visibility which is calculated from light extinction based on measurements of various air pollutants. (See Appendix xxx.) Each MANE-VU State with one or more Class I areas adopted a Regional Haze SIP identifying baseline visibility for the 5-year period from 2000 through 2004 and establishing goals that provide for reasonable progress in improving visibility at Class I areas in the state by 2018. Baseline visibility and reasonable progress goals were established for the 20% haziest days and the 20% clearest days.

Page 9 and 12, Table 2.1 and 2.2: Consider combining these tables to allow reader to see Baseline Visibility, Current Visibility, Reasonable Progress Goal (2018), and Natural Conditions in one table. This would save the reader from going back and forth between tables.

Noted inconsistencies in which different Class I areas were discussed for different table and figures, which make it difficult for reader to follow:

Since Dolly Sods and Shenandoah are included in Table 2.2 and Figure 2.1, why not include them in the rest of the tables and figures for consistency, or perhaps exclude them for consistency?

Table 2.1 includes Acadia, Brigantine, Great Gulf & Presidential Range-Dry River, Lye Brook, Moosehorn and Roosevelt Campobello.

Table 2.2 includes Acadia, Brigantine, Great Gulf & Presidential Range-Dry River, Lye Brook, Moosehorn and Roosevelt Campobello, Dolly Sods, and Shenandoah.

Figure 2.1 includes Acadia, Brigantine, Great Gulf, Lye Brook, Moosehorn, Dolly Sods, and Shenandoah.

Tables 2.3 and 2.4 include Brigantine, Lye Brook, Great Gulf, Acadia, and Moosehorn.

Figures 2.2 -2.11 includes Acadia, Brigantine, Great Gulf, Lye Brook, and Moosehorn.

Tables 2.3 and 2.4: Consider moving placement of Acadia to first column for easier comparison, as Acadia is first in other tables and figures. It appears that Table 2.3 columns were placed in order, from highest to lowest value for Sulfate Bext, but we would suggest staying with alphabetical order (Acadia, Brigantine, Great Gulf, etc.) for consistency.

Page 36, Table 4.2: Since Rochester 7 was shut down in 2000, why were there SO2 emissions in 2002 (also Table 4.3 (b) and (c) for Rochester 7)?

Page 36, Table 4.2: A modern 70 MW wood fired EGU might have SO2 emissions of 49 tons per year; how can the Black River facility, and the Niagara Gen. facility, have zero SO2 emissions in 2011, after converting from coal to wood?



United States Department of the Interior

NATIONAL PARK SERVICE
Air Resources Division
P.O. Box 25287
Denver, CO 80225-0287

TRANSMITTED VIA ELECTRONIC MAIL - NO HARDCOPY TO FOLLOW

N3615 (2350)

January 30, 2015

Robert Sliwinski, P.E., Director
Division of Air Resources
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-3251

Dear Mr. Sliwinski:

Thank you for the opportunity to review and comment on New York's draft Five Year Progress Report for the Regional Haze State Implementation Plan. We believe that New York Department of Environmental Conservation (NYDEC) has met the requirements for the regional haze periodic progress report as outlined in 40 CFR 51.308(g) and (h). No Class I areas are located in New York. Monitoring data for Class I areas in nearby states demonstrate that visibility in the 2009-2013 period is already better than the visibility goals set by the MANE-VU states for 2018. NYDEC has included comprehensive discussion of existing emission reduction requirements and controls that are being implemented between 2002 and 2018. NYDEC has demonstrated that sulfur dioxide (SO₂) emissions are the largest contributors to visibility impairment at MANE-VU Class I areas and that SO₂ emissions in New York are currently well below the 2018 emissions projections that were used to set the 2018 visibility goals. We agree with NYDEC that New York is meeting its commitment to the MANE-VU states' long term strategy to improve visibility and that substantive revision of the existing state implementation plan is not necessary at this time.

In Section 2.2 we suggest combining information in Tables 2.1 and 2.2 so the reader can directly compare the current visibility conditions (2009-2013) with the 2018 visibility projections.

Section 5.3.6 mentions that New York currently has a moratorium on high volume hydraulic fracturing for oil and gas production. Please clarify if that moratorium is indefinite or will be reconsidered before 2018. We support NYDEC's commitment to assess oil and gas impacts to air quality in the next Regional Haze State Implementation Plan.

We appreciate the opportunity to work closely with New York to improve visibility in our Class I national parks and wilderness areas. If you have questions, please contact me at patricia_f_brewer@nps.gov or 303-969-2153.

Sincerely,

A handwritten signature in blue ink that reads "Pat Brewer". The signature is written in a cursive style with a long, sweeping underline.

Pat Brewer

cc: Bob Kelly, EPA Region 2

Appendix F: List of 167 EGU Stacks

The list of 167 stacks that MANE-VU reasonably anticipated to cause or contribute to impairment of visibility in each mandatory Class I Federal area in the MANE-VU region can be found at <http://otcair.org/manevu/document.asp?Fview=Reports#>.