

# **MANE-VU Technical Support Committee**

**OTC/MANE-VU Stakeholders Online Meeting**

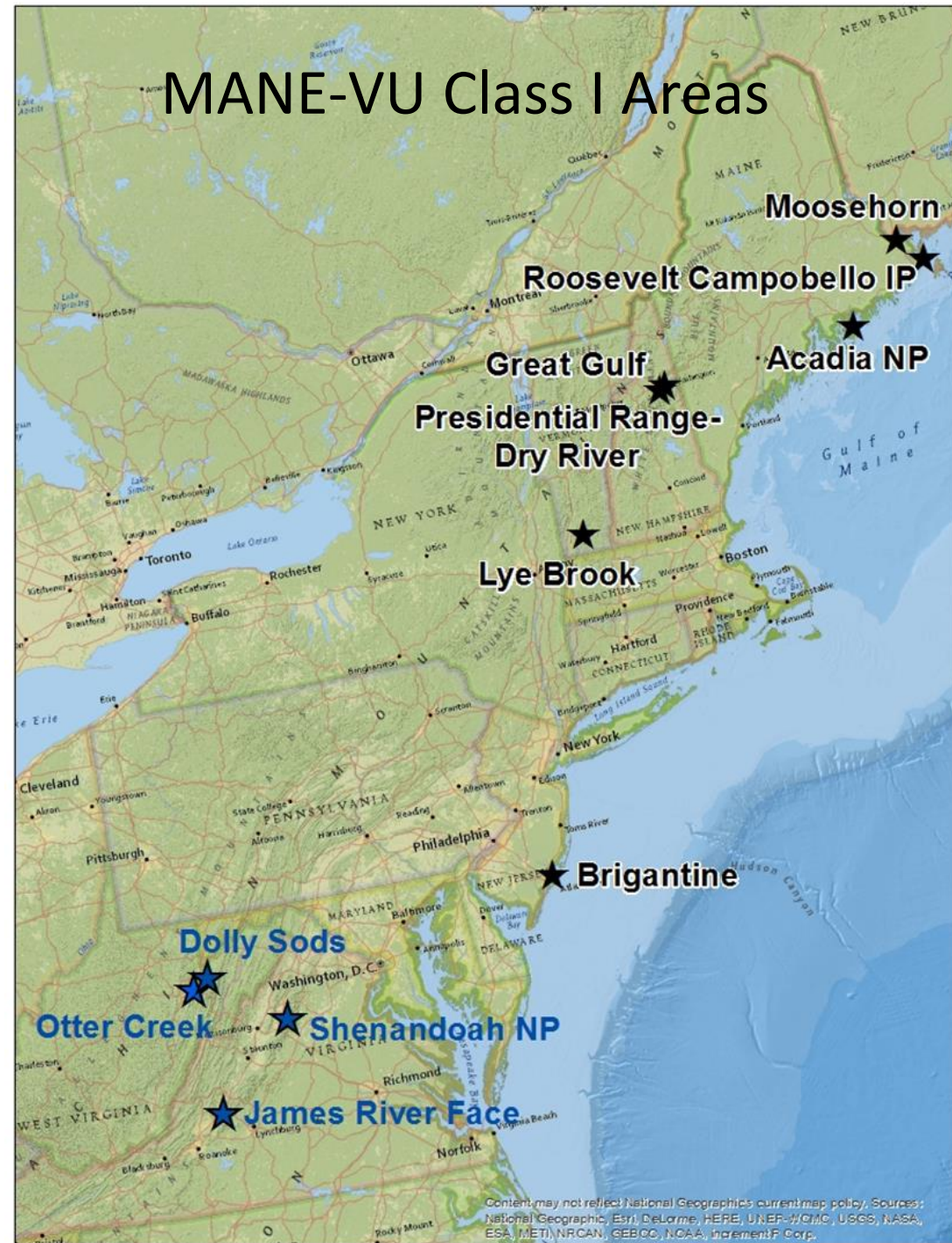
**April 11, 2019**

# Overview

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1. Regional Haze SIPs - 2<sup>nd</sup> Planning Period Update
2. Visibility Report - Monitoring Data Updated
3. Consultation/MANE-VU Ask
4. Modeling, including the MANE-VU BenMAP Paper
5. SIP Writing & Tracking
6. EPA Roadmap & Anticipated Actions

# MANE-VU Class I Areas



## Maine

- Acadia National Park
- Moosehorn Wilderness Area

## New Hampshire

- Great Gulf Wilderness
- Presidential Range - Dry River Wilderness Area

## Vermont

- Lye Brook Wilderness

## New Jersey

- Brigantine Wilderness Area

## New Brunswick Canada

- Roosevelt Campobello International Park

Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WFP, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, iNaturalist Corp.

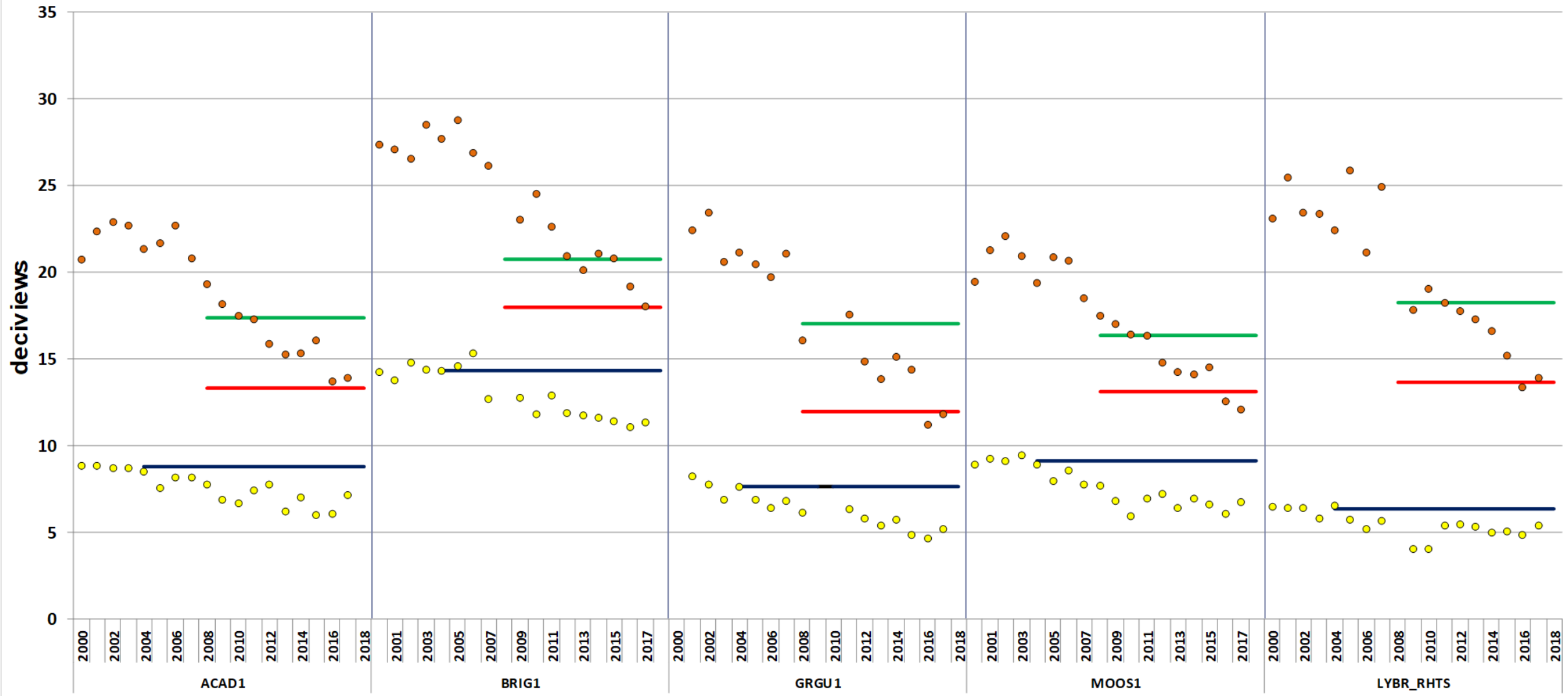
# Regional Haze SIP 2<sup>nd</sup> Planning Period – Schedule

<b>IMPROVE Data Analysis</b>	<ul style="list-style-type: none"> <li>✓ Decisions on Methods</li> <li>✓ 1<sup>st</sup> &amp; 2<sup>nd</sup> Planning Period Calculations, QA, and TSD</li> </ul>
<b>Inventory Development &amp; Analysis</b>	<ul style="list-style-type: none"> <li>✓ 2011/2028 Alpha 2 &amp; TSD</li> <li>✓ Emissions Trends Analysis</li> </ul>
<b>Modeling</b>	<ul style="list-style-type: none"> <li>✓ 2011 Base Case Modeling</li> <li>✓ 2028 Base Case Modeling</li> <li>✓ 2028 Control Case Modeling</li> <li>✓ Document Modeling Platform and Results</li> </ul>
<b>Four-Factor Analysis/Contribution Assessment</b>	<ul style="list-style-type: none"> <li>✓ Qc/d</li> <li>✓ CALPUFF Assessment</li> <li>✓ Back Trajectory &amp; IMPROVE Data Analysis</li> <li>✓ 4-Factor Data Collection</li> <li>✓ HEDD Analysis</li> <li>✓ Winter EGU NOx Control</li> <li>✓ Synthesize Assessments</li> </ul>
<b>Updating RPGs</b>	<ul style="list-style-type: none"> <li>✓ Draft RPGs and Document</li> </ul>
<b>Consultation</b>	<ul style="list-style-type: none"> <li>✓ Establish Consultation Process</li> <li>✓ Intra-RPO Consultation</li> <li>✓ Inter-RPO Consultation</li> </ul>
<b>SIP Submission</b>	<ul style="list-style-type: none"> <li>• SIP Submission (2019)</li> <li>• Rule Adoption as needed</li> </ul>

# Visibility is Improving – Current Levels are Near 2028 RPGs

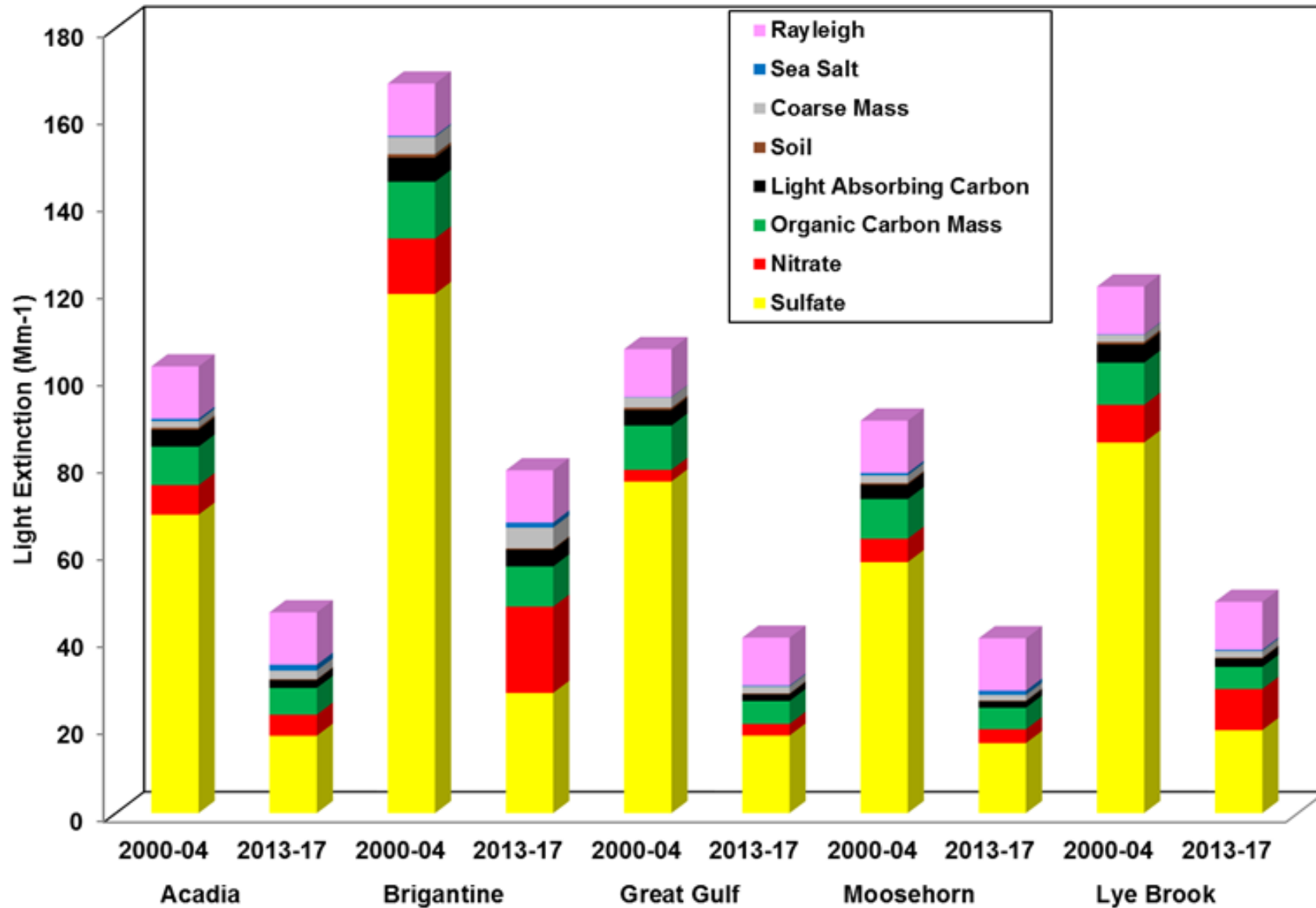
20% MOST IMPAIRED DAYS METRICS / 20% CLEAREST DAYS METRICS

- 20% Most Impaired Days
- 20% Clearest Days
- No Deg.
- 2028 URP
- 2028 RPG



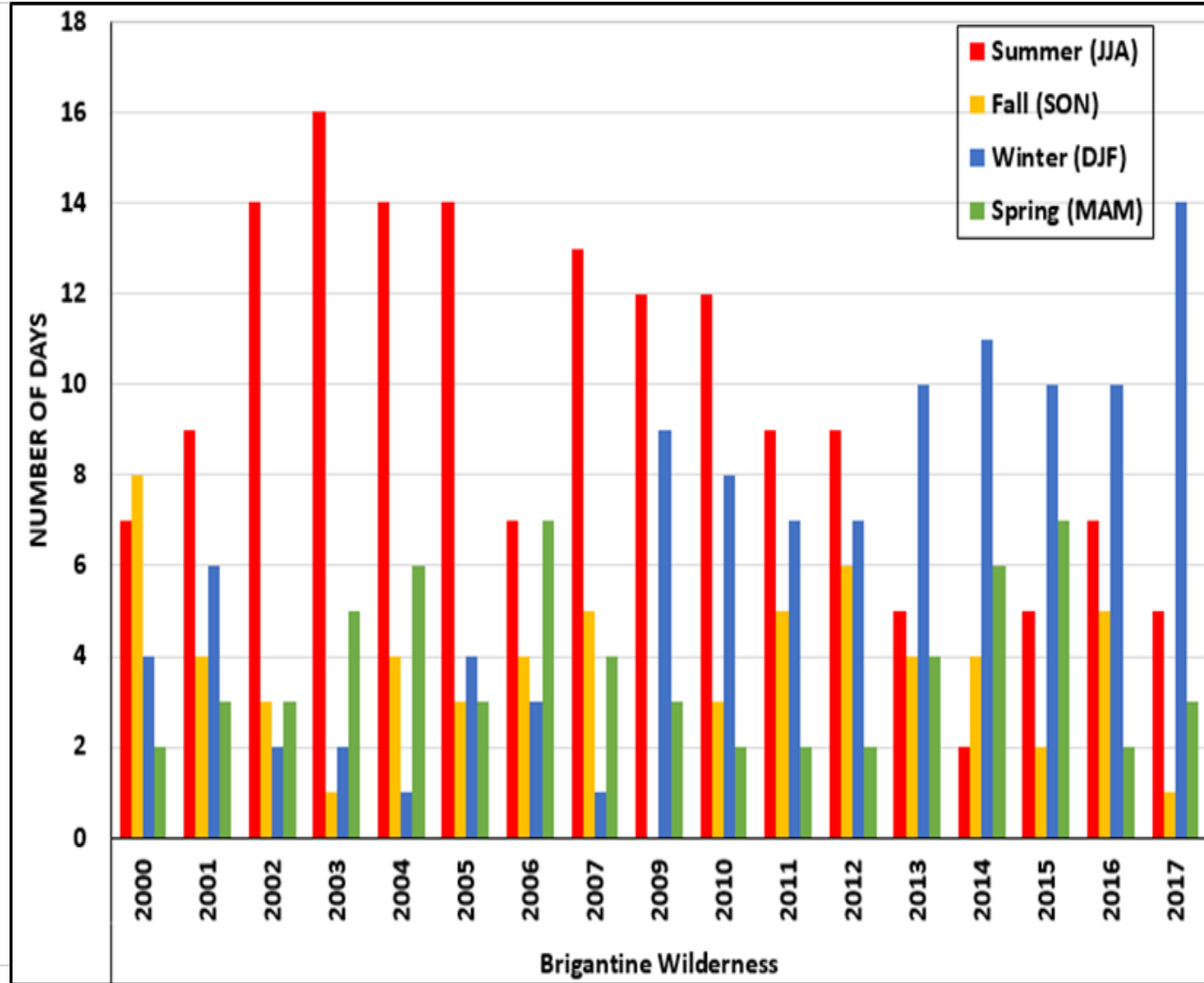
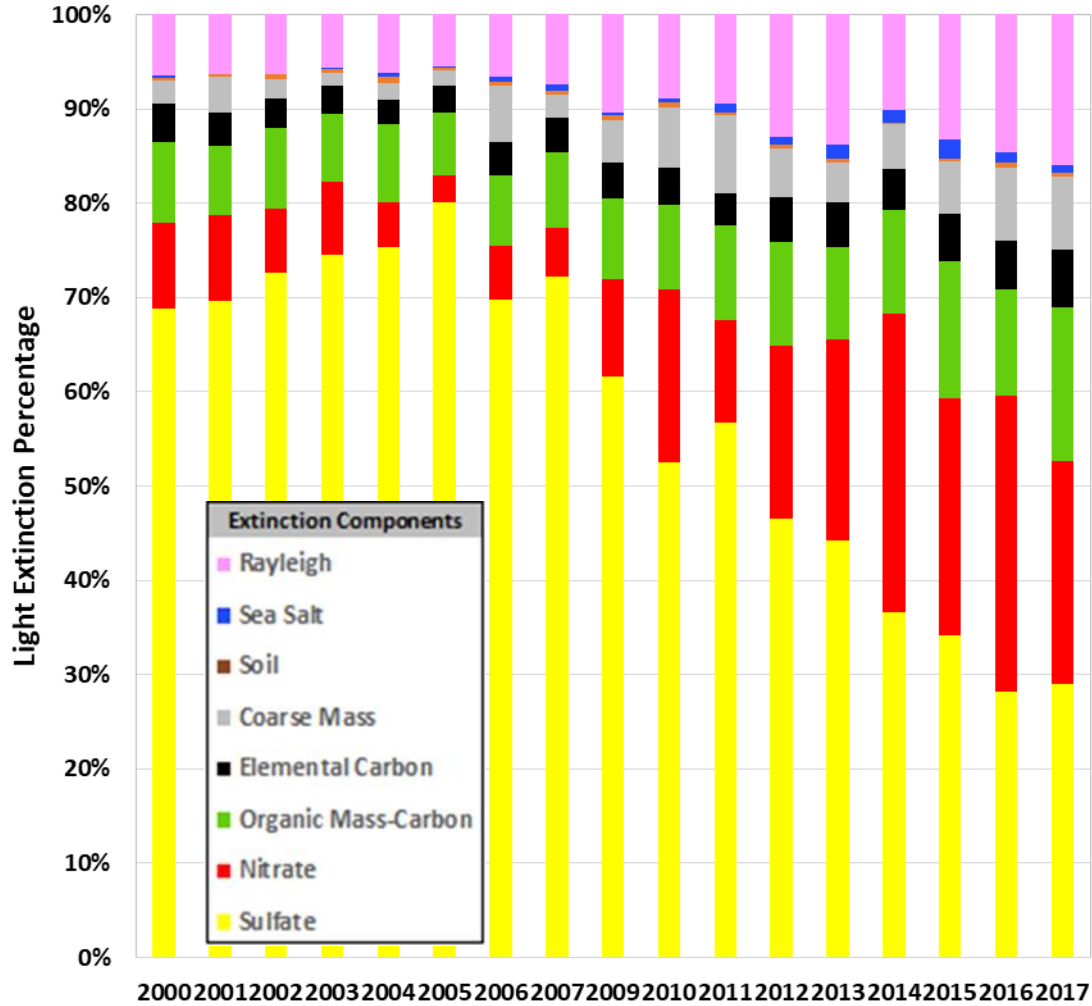
# Light Extinction Improvements ( $Mm^{-1}$ ):

Baseline vs. 2<sup>nd</sup> RH SIP Planning Period

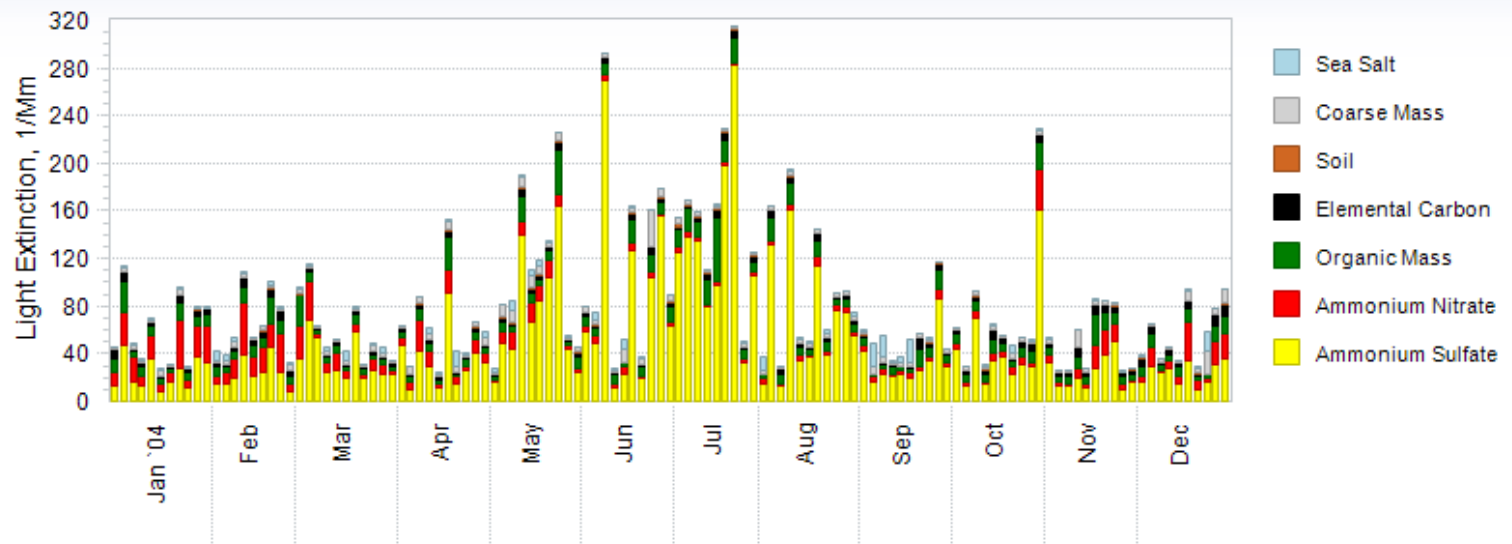


# Winter Nitrates Contribution Increasing: 20% Most Impaired Days - Brigantine Wilderness

Brigantine Wilderness 20% Most Impaired Days



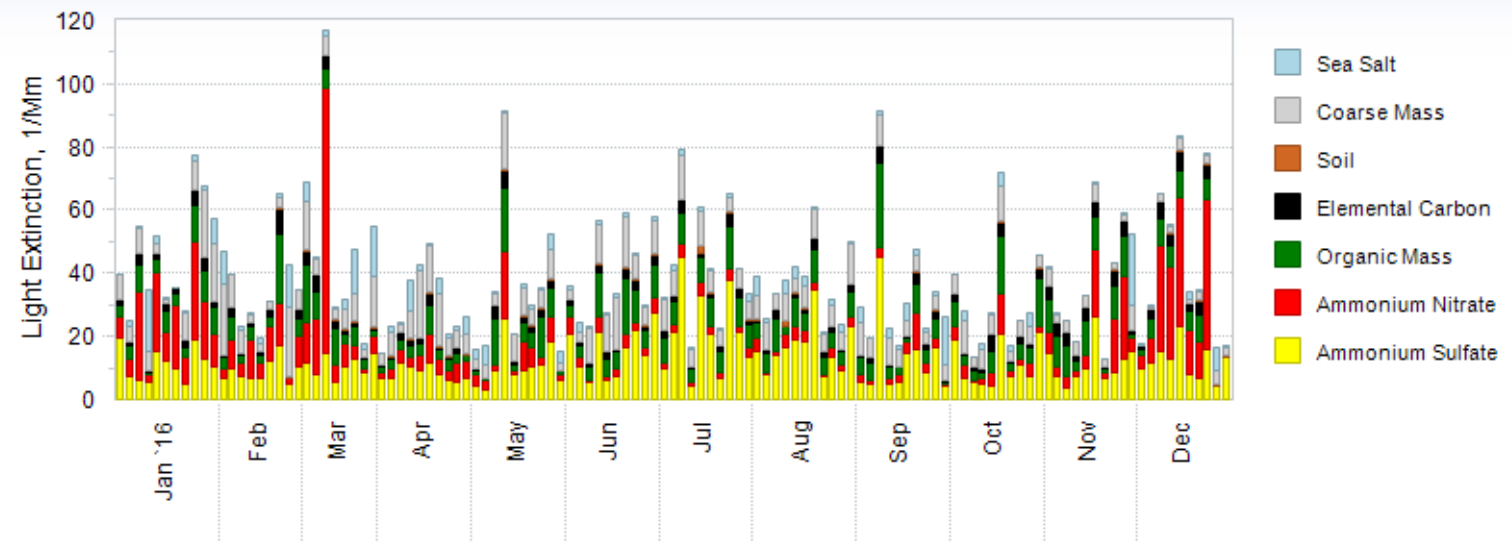
Brigantine NWR  
Daily Extinction Budgets, 2004



IMPROVE Monitor ID: BRIG1, NJ

Speciation Plots:  
Daily Extinction  
Budgets 2004 vs. 2016

Brigantine NWR  
Daily Extinction Budgets, 2016



IMPROVE Monitor ID: BRIG1, NJ

Light Extinction  
significantly decreased

Strong Nitrate signal  
in winter months



# MANE-VU “Ask” Review

Signed August 25, 2017

## MANE-VU States

- Ensure effective use of installed controls on EGUs ( $\geq 25$  MW) year-round
- 4-factor analysis for most important sources ( $> 3 \text{Mm}^{-1}$  extinction)
- Complete 2007 low sulfur fuel oil rule
- Update permits and/or rules to reflect already achieved rates for  $\text{SO}_2$ ,  $\text{NO}_x$ , and  $\text{PM}_{2.5}$
- Strive to meet particular  $\text{NO}_x$  emissions standards or perform 4-factor analysis on HEDD units
- Increase energy efficiency and implement CHP or other DG

## Upwind States

- Ensure effective use of installed controls on EGUs ( $\geq 25$  MW) year-round
- 4-factor analysis for most important sources ( $> 3 \text{Mm}^{-1}$  extinction)
- Complete 2007 low sulfur fuel oil rule
- Update permits and/or rules to reflect already achieved rates for  $\text{SO}_2$ ,  $\text{NO}_x$ , and  $\text{PM}_{2.5}$
- Increase energy efficiency & implement CHP or other DG

## FLMs / EPA

- FLMs consult with MANE-VU Class I States when scheduling prescribed burns
- EPA develop measures that will further reduce emissions from heavy-duty onroad vehicles
- EPA ensure that Class I Area state “Asks” are addressed in “contributing” state SIPs prior to approval

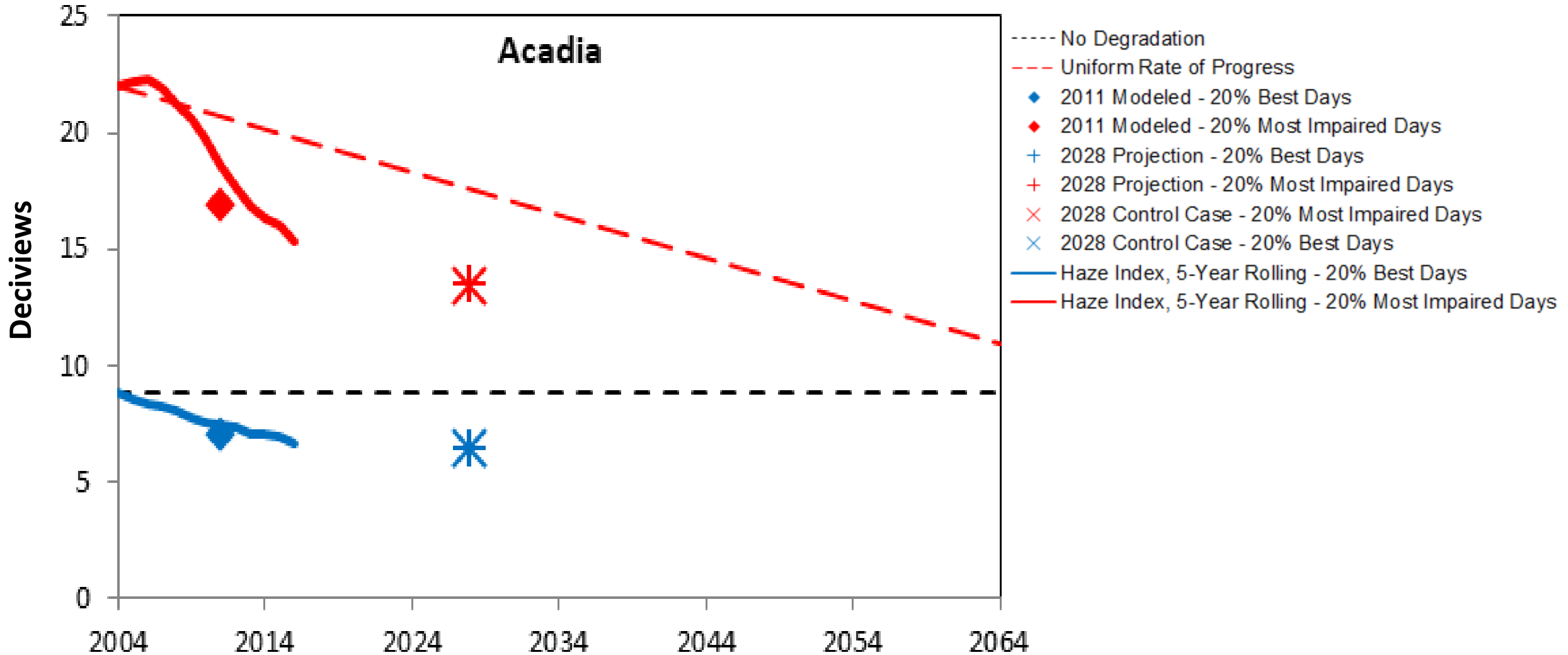
\* Including the Ask in photochemical modeling is complete (see next slides)

# Visibility impairment on 20% most impaired (MI) & clearest (Best) days at MANE-VU Class I areas

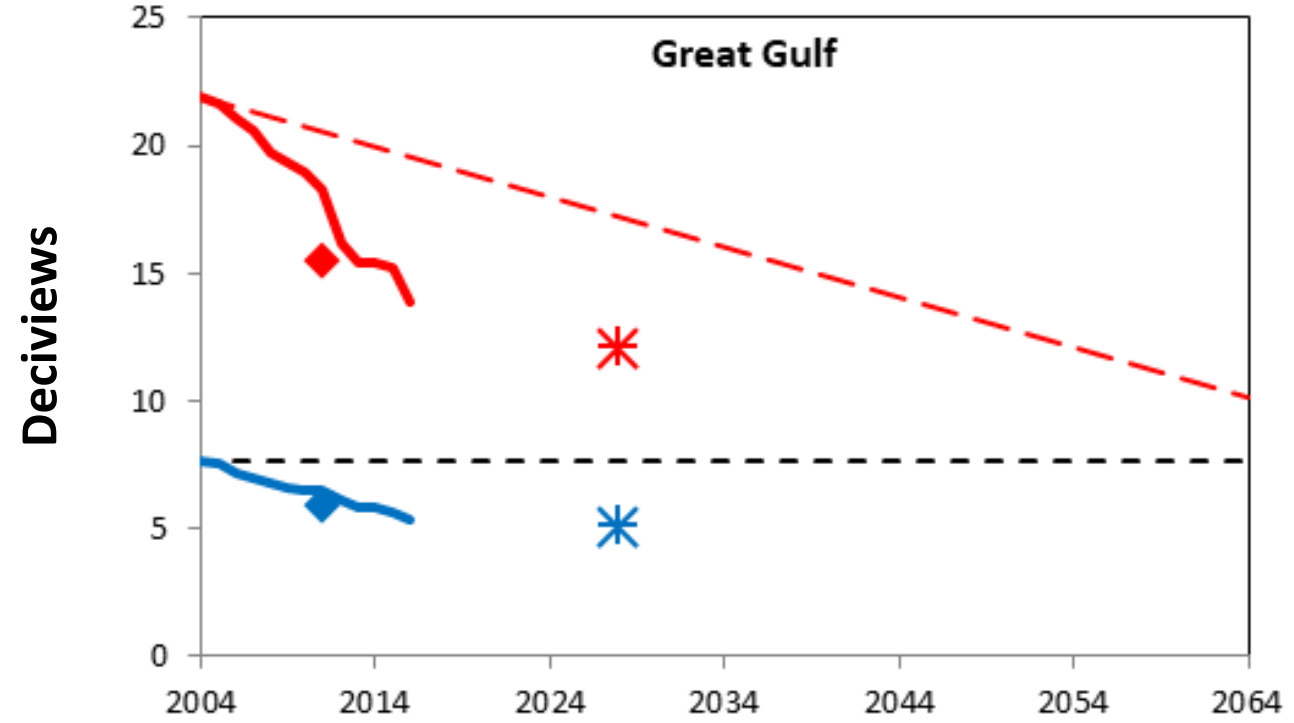
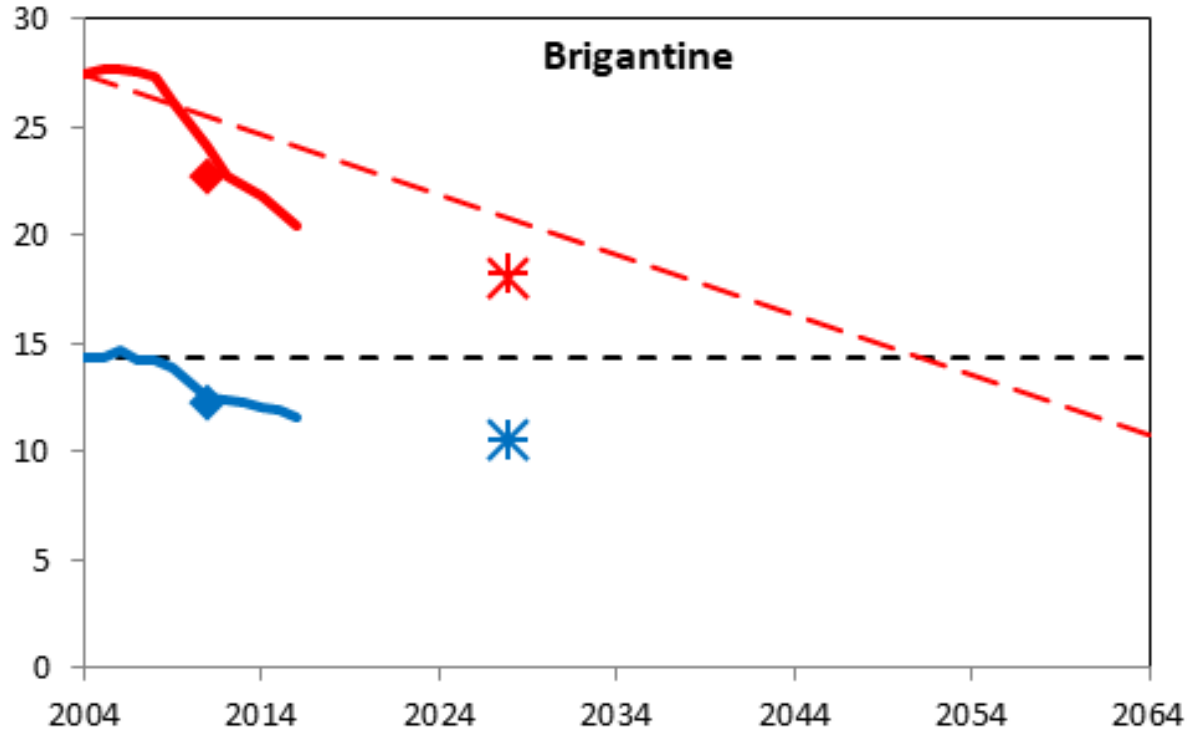
ID	State	2011 (Monitored)		(Modeled)			
		MI 20%	Best 20%	2028 Base Projection		2028 Control Projection	
		MI 20%	Best 20%	MI 20%	Best 20%	MI 20%	Best 20%
ACAD	ME	16.84	7.02	13.44	6.33	13.35	6.33
BRIG	NJ	22.26	12.25	18.16	10.55	17.97	10.47
GRGU	NH	15.43	5.87	12.13	5.11	12	5.06
LYBR	VT	18.06	4.89	13.89	3.9	13.68	3.86
MOOS	ME	15.8	6.71	13.2	6.46	13.12	6.45
PRRA	NH	15.43	5.87	12.13	5.11	12	5.06
ROCA	ME	15.8	6.71	13.2	6.46	13.12	6.45

All values in deciviews

# MANE-VU Modeling Results: 2011/2028

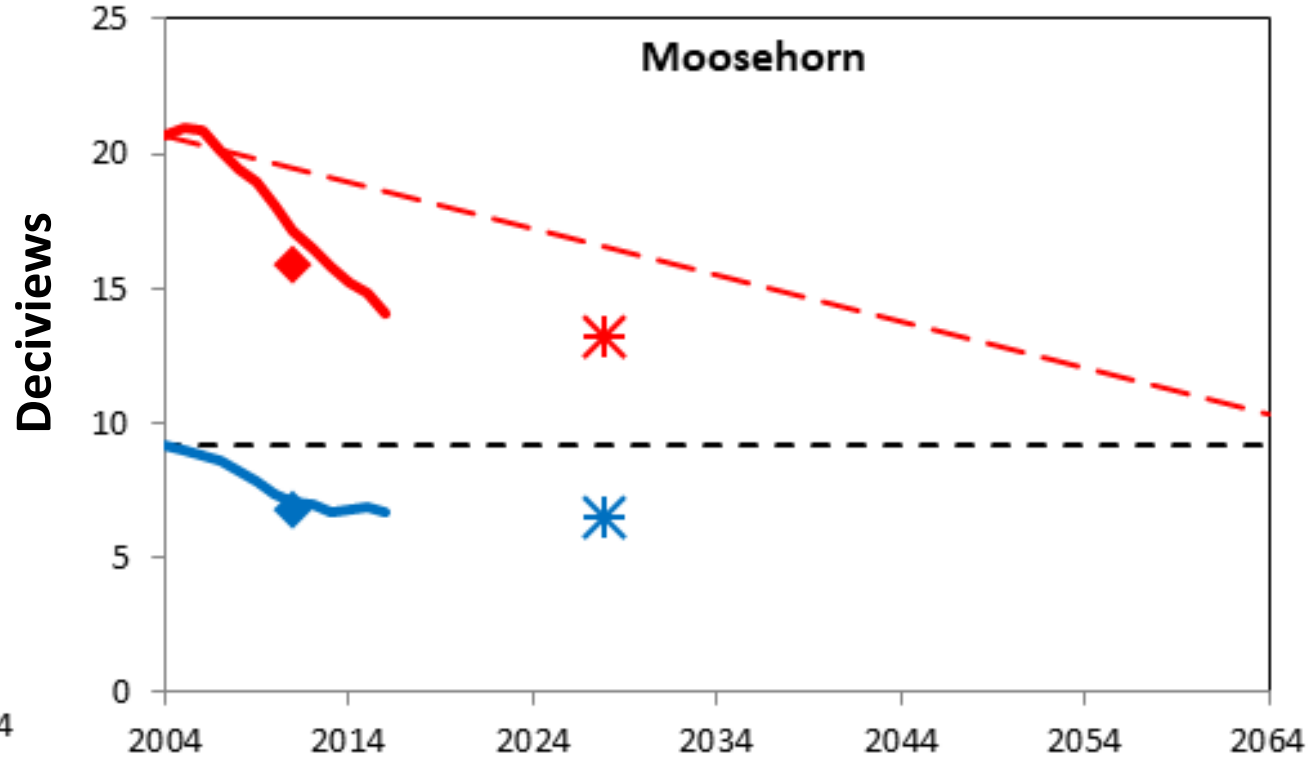
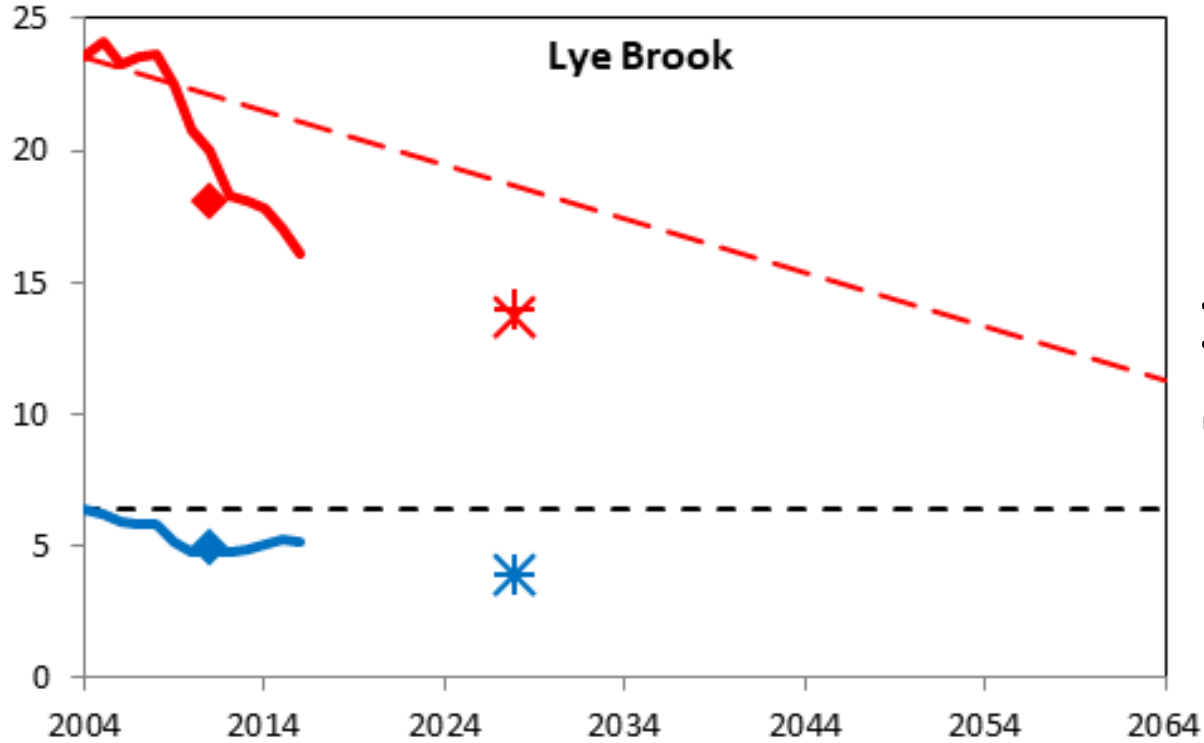


# MANE-VU Modeling Results: 2011/2028



- No Degradation
- - - - Uniform Rate of Progress
- ◆ 2011 Modeled - 20% Best Days
- ◆ 2011 Modeled - 20% Most Impaired Days
- + 2028 Projection - 20% Best Days
- + 2028 Projection - 20% Most Impaired Days
- × 2028 Control Case - 20% Most Impaired Days
- × 2028 Control Case - 20% Best Days
- Haze Index, 5-Year Rolling - 20% Best Days
- Haze Index, 5-Year Rolling - 20% Most Impaired Days

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- Haze Index, 5-Year Rolling - 20% Best Days
- Haze Index, 5-Year Rolling - 20% Most Impaired Days

# Ad Hoc SIP Planning & Tracking Workgroups

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- States in various stages of SIP writing/4-factor analysis
- States with robust SIP drafts sharing them with others as templates
- Enhancing SIPs based on feedback from EPA ROs, OAQPS, & FLM reviews
- Upwind SIP submittal tracking workgroup formed
- A list of MANE-VU haze planning documents has been provided as a resource

[https://www.dropbox.com/s/f6txdekijbyvc1/MV\\_Haze\\_Planning\\_Documents\\_List\\_03182019.xlsx?dl=0](https://www.dropbox.com/s/f6txdekijbyvc1/MV_Haze_Planning_Documents_List_03182019.xlsx?dl=0)

# RH Planning Documents – Available on MANE-VU Website

(snapshot of the spreadsheet)

Selection of States for MANE-VU Regional Haze Consultation (2018)	<a href="http://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU%20Contributing%20State%20Analysis%20Final.pdf">http://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU%20Contributing%20State%20Analysis%20Final.pdf</a>
MANE-VU RH Consultation Documentation	<a href="https://otcair.org/MANEVU/Upload/Publication/Correspondence/MANE-VU_RH_ConsultationReport_Appendices_ThankYouLetters_08302018.pdf">https://otcair.org/MANEVU/Upload/Publication/Correspondence/MANE-VU_RH_ConsultationReport_Appendices_ThankYouLetters_08302018.pdf</a>
MANE-VU Emissions Inventory Data and Report Template	<a href="https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU_EI_NEI_NH3_09112018.zip">https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU_EI_NEI_NH3_09112018.zip</a>
MANE-VU Emissions Inventory Regulation List	<a href="https://otcair.org/MANEVU/Upload/Publication/Reports/List%20of%20Major%20Regulations_2018_0425.xlsx">https://otcair.org/MANEVU/Upload/Publication/Reports/List%20of%20Major%20Regulations_2018_0425.xlsx</a>
2011/2020/2013 Gamma Emissions Inventory, Projections, TSD	<a href="http://www.marama.org/technical-center/emissions-inventory/2011-gamma-inventory-and-projections">http://www.marama.org/technical-center/emissions-inventory/2011-gamma-inventory-and-projections</a>
2011-Based Modeling Platform Support Document	<a href="https://otcair.org/MANEVU/Upload/Publication/Reports/OTC%20MANE-VU%202011%20Based%20Modeling%20Platform%20Support%20Document%20October%202018%20-%20Final.pdf">https://otcair.org/MANEVU/Upload/Publication/Reports/OTC%20MANE-VU%202011%20Based%20Modeling%20Platform%20Support%20Document%20October%202018%20-%20Final.pdf</a>
MANE-VU Visibility Trends 2004-17 Report and Plots (1st RH SIP Metrics)	<a href="https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU_Trends_2004-2017_Report_Plots_1st_SIP_11112018.zip">https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU_Trends_2004-2017_Report_Plots_1st_SIP_11112018.zip</a>
MANE-VU sites and constituents analyses 2000-17 summary (1st RH SIP)	<a href="https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU_sites_constituents_analysis_2000-17_summary_1st_SIP_11112018.zip">https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU_sites_constituents_analysis_2000-17_summary_1st_SIP_11112018.zip</a>
MANE-VU Visibility Trends 2004-17 Report and Plots (2nd RH SIP Metrics)	<a href="https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU_Trends_2004-2017_Report_Plots_2nd_SIP_11112018.zip">https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU_Trends_2004-2017_Report_Plots_2nd_SIP_11112018.zip</a>
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MANE-VU 2000-17 RH METRICS COMPARISON PLOTS	<a href="https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU%202000-17%20RH%20METRICS%20COMPARISON%20PLOTS%2011-11-2018.xlsx">https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU%202000-17%20RH%20METRICS%20COMPARISON%20PLOTS%2011-11-2018.xlsx</a>
MANE-VU 2000-17 RHII & III Metrics Trends Plots	<a href="https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU%202000-17%20RHII%20&amp;%20III%20Metrics%20Trends%20Plots%2011-11-18.xlsx">https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU%202000-17%20RHII%20&amp;%20III%20Metrics%20Trends%20Plots%2011-11-18.xlsx</a>
MANE-VU 2000-17 RHII & III Metrics Speciation Plots	<a href="https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU%202000-17%20RHII%20&amp;%20III%20Speciation%20plots%2011-11-2018.xlsx">https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU%202000-17%20RHII%20&amp;%20III%20Speciation%20plots%2011-11-2018.xlsx</a>
MANE-VU 2000-17 Parameter and Extinction Data Analysis	<a href="https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU%202000-17%20Parameter%20and%20Extinction%20Data%20Analysis%2011-5-18.xlsx">https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU%202000-17%20Parameter%20and%20Extinction%20Data%20Analysis%2011-5-18.xlsx</a>
MANE-VU 2000-17 IMPROVE DATA DOWNLOAD	<a href="https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU%202000-17%20IMPROVE%20DATA%20DOWNLOAD%2011-3-18.xlsx">https://otcair.org/MANEVU/Upload/Publication/Reports/MANE-VU%202000-17%20IMPROVE%20DATA%20DOWNLOAD%2011-3-18.xlsx</a>
High Electric Demand Days and Visibility Impairment in MANE-VU	<a href="https://otcair.org/MANEVU/Upload/Publication/Reports/High%20Electric%20Demand%20Days%20and%20Visibility%20Impairment%20in%20MANE%20-%20Final.pdf">https://otcair.org/MANEVU/Upload/Publication/Reports/High%20Electric%20Demand%20Days%20and%20Visibility%20Impairment%20in%20MANE%20-%20Final.pdf</a>

# EPA Roadmap – Actions Moving Forward

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- ▶ EPA Regional Haze Reform Roadmap Memo (September 11, 2018)
  - ▶ [https://www.epa.gov/sites/production/files/2018-09/documents/regional\\_haze\\_reform\\_roadmap\\_memo\\_09-11-2018.pdf](https://www.epa.gov/sites/production/files/2018-09/documents/regional_haze_reform_roadmap_memo_09-11-2018.pdf)
  - ▶ Lays out path to improve program moving forward
- ▶ Actions include:
  - ▶ Allow states to lead implementation of program
  - ▶ Reduce burdens and support states planning efforts
  - ▶ Leverage emission reduction measures achieved through other CAA Programs
- ▶ Future Products
  - ▶ Replace existing FIPs from 1<sup>st</sup> Planning period with state SIPs
  - ▶ Provide tools and guidance documents for 2<sup>nd</sup> Planning period



# In Summary

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1. 2<sup>nd</sup> Planning Period Regional Haze SIP work almost complete
2. Have documented visibility & inventory trends
3. The “Ask” is final for the 2<sup>nd</sup> Planning Period
4. Both Intra- & Inter-RPO consultations are done & documentation finished
5. Inventory development for base case & control case modeling, & the modeling itself are all completed (incl. BenMAP analysis)
6. States in various stages of SIP writing/SIP submission