




MANE-VU Technical Support Committee



**OTC/MANE-VU Annual Meeting
June 11, 2019**

Overview

1. Regional Haze Terminology and RH Rule
2. Regional Haze SIPs - 2nd Planning Period Update
3. Visibility Report - Monitoring Data Updated
4. Consultation/MANE-VU Ask
5. Modeling
6. SIP Writing & Tracking
7. TSC Charge and Future Activities

Source:

http://hazecam.net/mtwash_gallery.aspx



The Regional Haze Issue

► Clean Air Act Section 169A, Visibility Protection:

“...a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution”

The Regional Haze Issue

- ▶ Mandatory Class I Federal Areas
 - ▶ National Parks >6,000 acres
 - ▶ Wilderness areas and National Memorial Parks >5,000 acres
 - ▶ All international parks
 - ▶ In existence on Aug 7, 1977
 - ▶ Visibility an important value at 156 of these areas



Legend
 NP= National Park
 W = Wilderness
 IP = International Park

Map of 156 Mandatory Class I Federal Areas

See 40 CFR 81.401-437 for a listing of these areas by State.

Note: Map taken from Federal Register, Vol. 64, No. 126, 7/1/99

MANE-VU Class I Areas



Maine

- Acadia National Park
- Moosehorn Wilderness Area (Moosehorn National Wildlife Refuge)

New Hampshire

- Great Gulf Wilderness & Presidential Range - Dry River Wilderness Areas (White Mountain National Forest)

Vermont

- Lye Brook Wilderness (Green Mountain National Forest)

New Jersey

- Brigantine Wilderness Area (E.B. Forsythe National Wildlife Refuge)

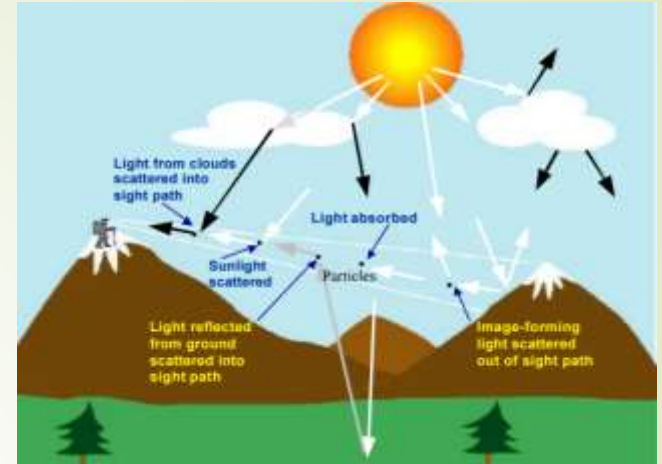
New Brunswick Canada

- Roosevelt Campobello International Park

Regional Haze Terminology

► Light Extinction

- The scattering and absorption of light in the atmosphere due to gases and particles
- Causes a reduction in the amount of light from a scene returned to an observer (i.e. hazy conditions)
- Units of inverse mega-meters (Mm^{-1})



Source: Adapted from Malm
<http://vista.cira.colostate.edu/Improve/visibility-basics/>

Regional Haze Terminology

- ▶ Deciview
 - ▶ An index for haze that expresses change in visibility
 - ▶ Logarithmic scale
 - ▶ Corresponds better with human perception
 - ▶ Roughly analogous to the decibel

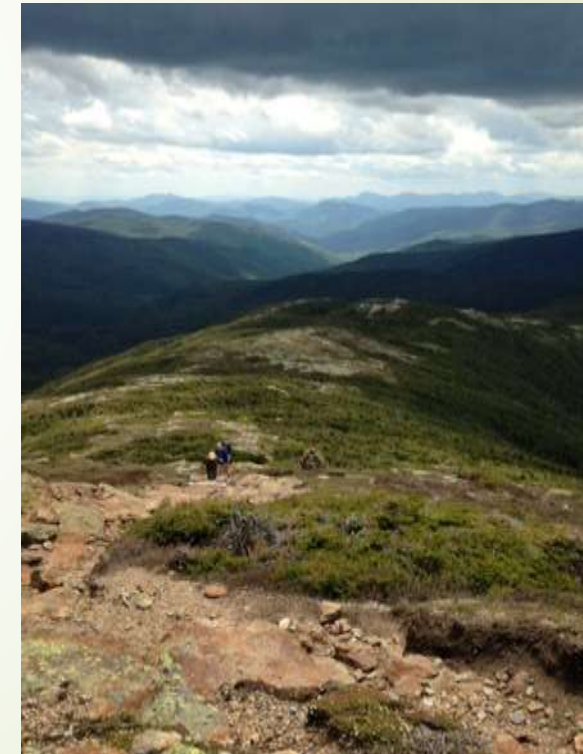


Photo of Great Gulf Wilderness taken by Felice Janelle, NHDES



Regional Haze Terminology

- ▶ 20% Most Impaired Days

- ▶ The 20% most impaired days for a given year/Class I area based on daily anthropogenic impairment

- ▶ 20% Clearest Days

- ▶ The 20% least impaired days for a given year/Class I area (whether there is anthropogenic contribution or not)

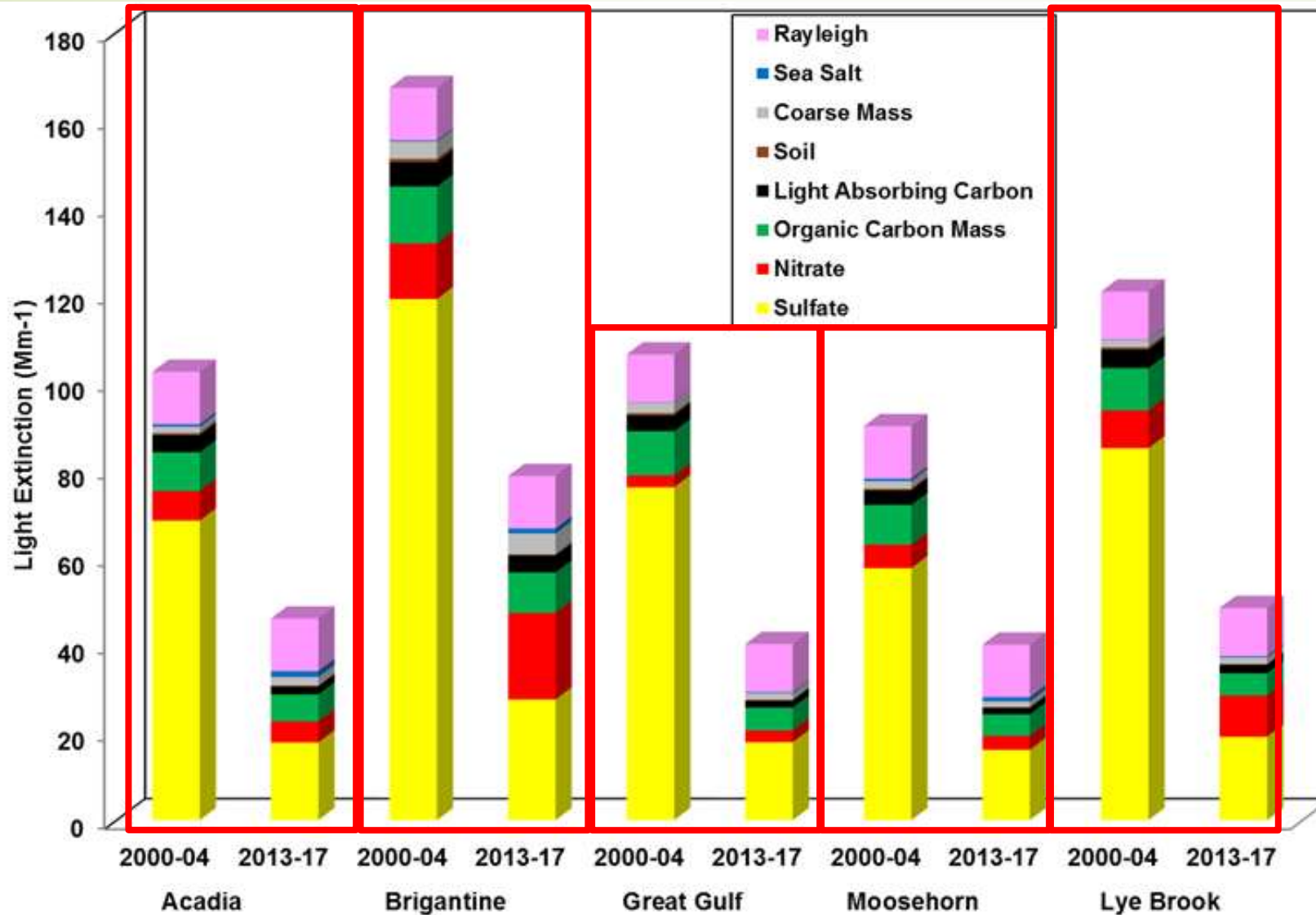
Regional Haze Rule

- ▶ Issued in 1999, amended in 2005 & 2017 (note: EPA has announced a decision to revisit aspects of the 2017 RHR)
- ▶ Overarching goal is to attain natural visibility conditions at Class I areas by 2064
- ▶ Every 10 years, states must submit State Implementation Plans (SIPs) describing how the goal will be/is being achieved
- ▶ Mid-course (5-yr) progress reports
- ▶ States are now in the 2nd SIP planning period covering 2018-2028

Regional Haze SIP 2nd Planning Period – Schedule

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

Light Extinction Improvements

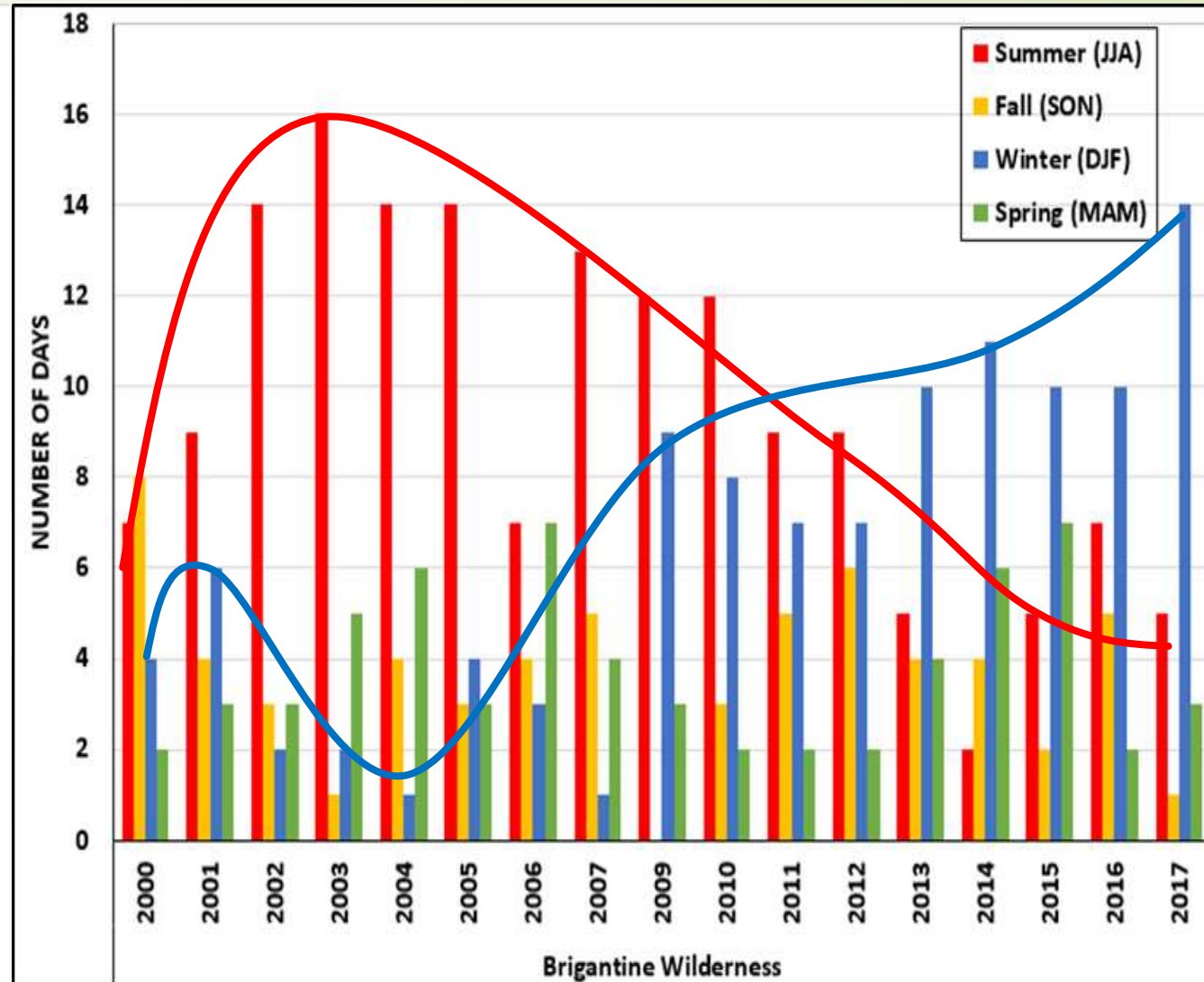
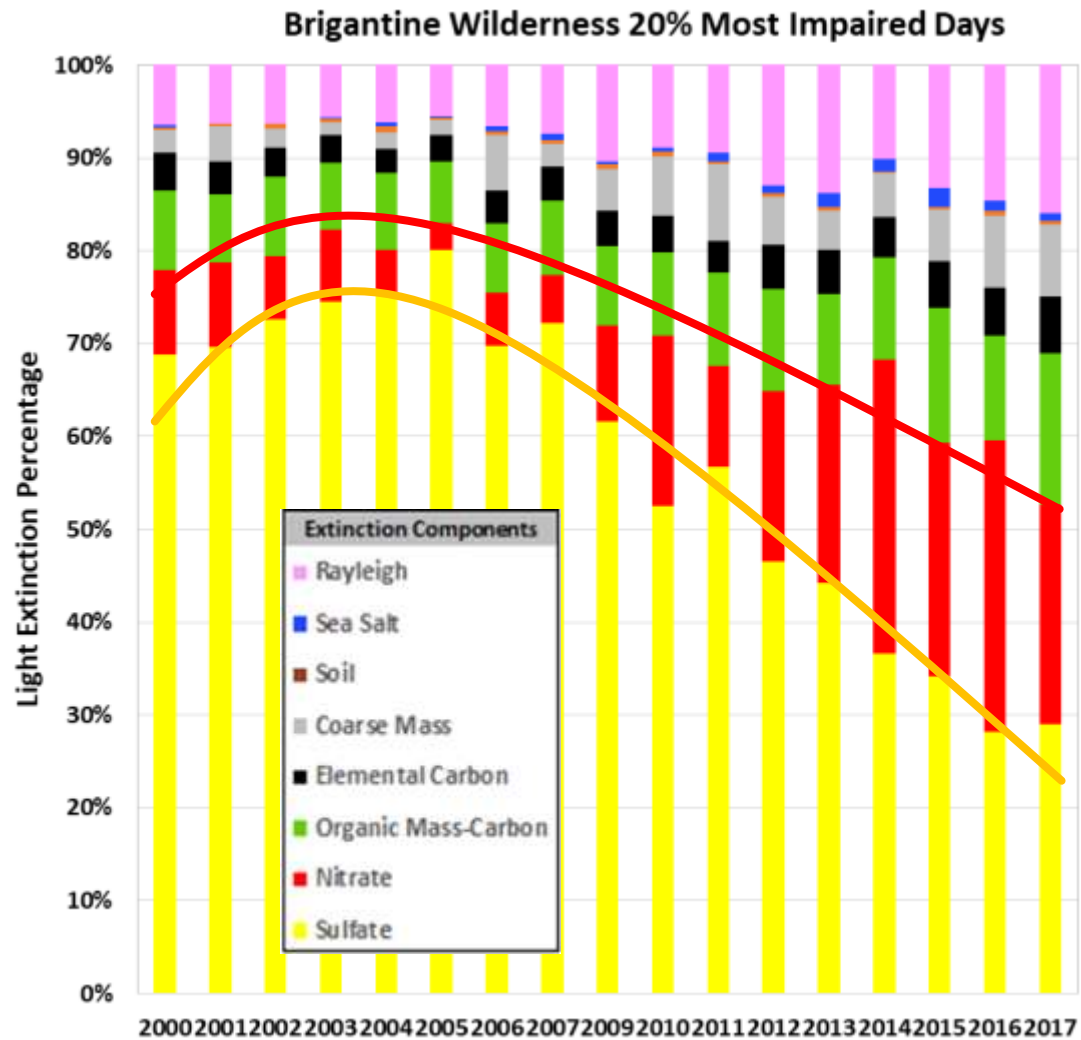


**Baseline Period
(2000-04)**

vs.

**2nd RH Planning Period
(2013-17)**

- Contrib. from sulfates decreasing
- Contrib. from nitrates increasing in some areas



The contribution of sulfates is decreasing;
the relative contribution of nitrates is increasing

In the past, more of the 20% MI days occurred in the summer months when sulfates dominate. Now, more of those days are occurring in the winter months when nitrates dominate.

MANE-VU “Ask” Review

MANE-VU States

- Ensure effective use of installed controls on EGUs (≥ 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 SO_2 , NO_x , and $\text{PM}_{2.5}$
- Strive to meet particular NO_x emissions standards or perform 4-factor analysis on HEDD units
- Increase energy efficiency and implement CHP or other DG

Upwind States

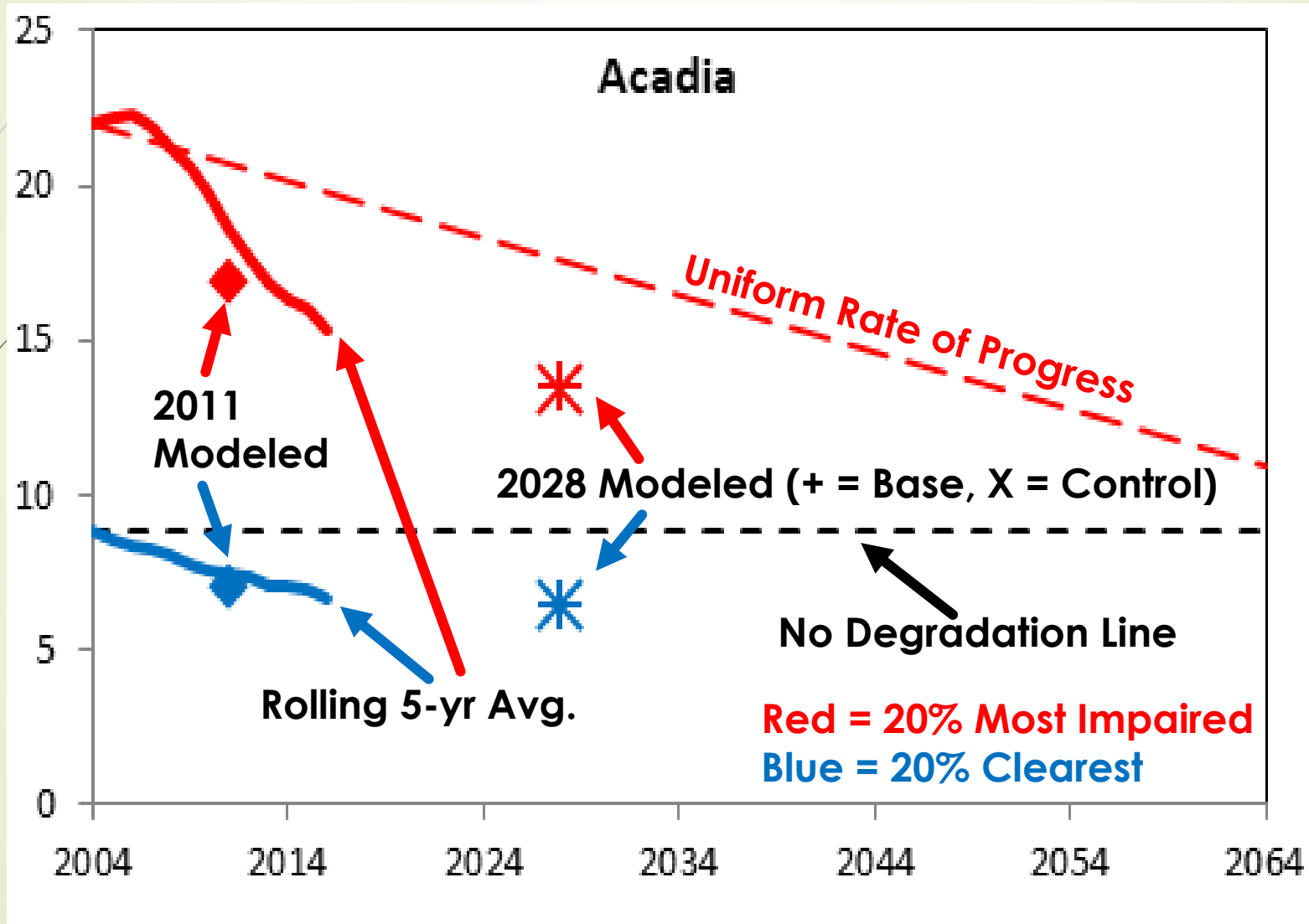
- Ensure effective use of installed controls on EGUs (≥ 25 MW) year-round
- 4-factor analysis for most important sources ($> 3 \text{Mm}^{-1}$ extinction)
- Complete 2007 low sulfur fuel oil rule
- Update permits and/or rules to reflect already achieved rates for SO_2 , NO_x , and $\text{PM}_{2.5}$
- Increase energy efficiency & implement CHP or other DG

FLMs / EPA

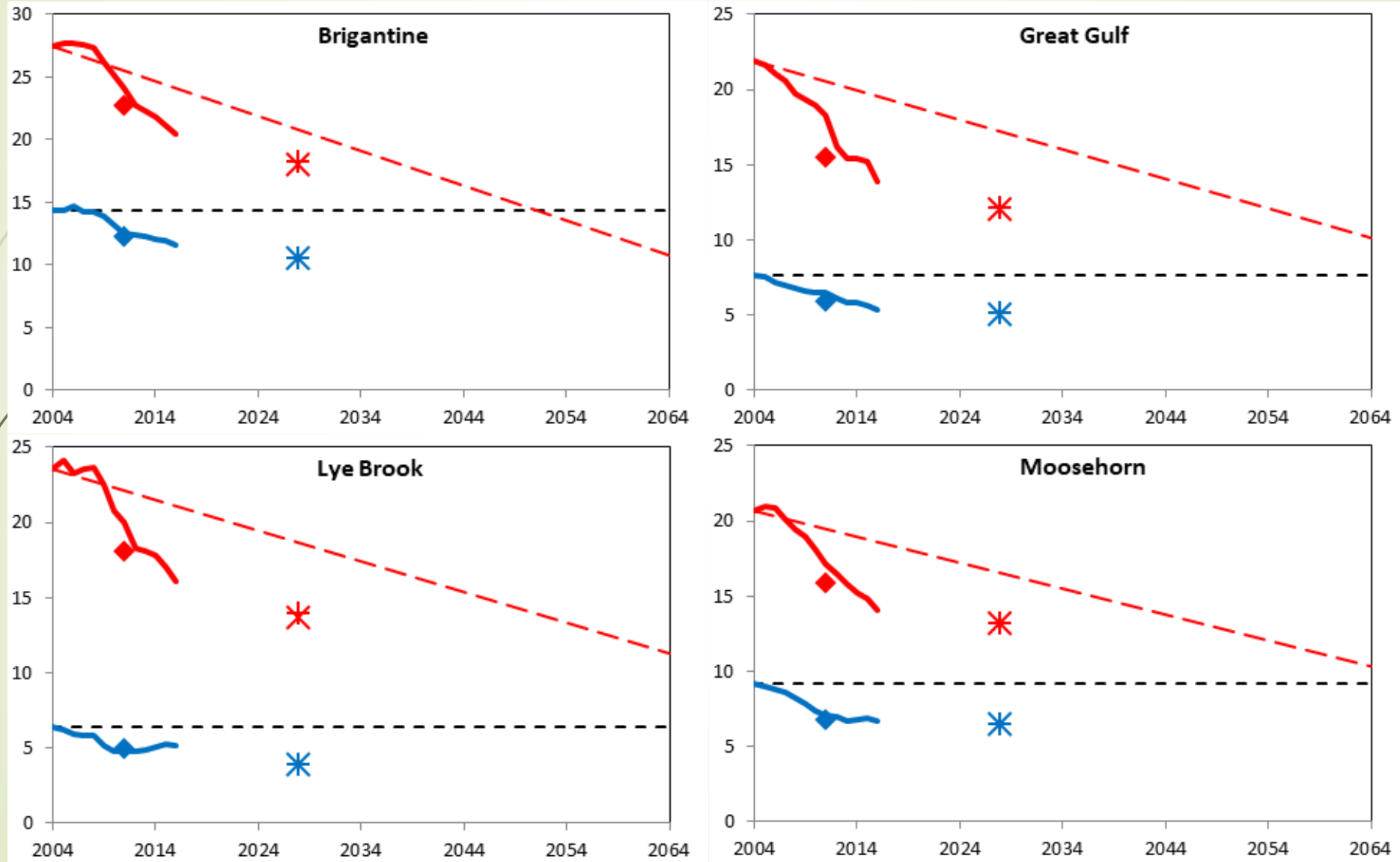
- FLMs consult with MANE-VU Class I States when scheduling prescribed burns
- EPA develop measures that will further reduce emissions from heavy-duty on-road vehicles
- EPA ensure that Class I Area state “Asks” are addressed in “contributing” state SIPs prior to approval

* Including the “Asks” in photochemical modeling is complete (see next slides)

Photochemical Modeling Results (Deciviews)



Photochemical Modeling Results (Deciviews)





TSC Workgroups

Ad Hoc SIP Planning Workgroup:

- Working together for SIP development
- Enhancing SIPs based on feedback from EPA & FLM preliminary reviews
- Addressing comments from our Federal partners

Upwind State SIP Tracking Workgroup:

- Will keep track of upwind state RH SIP submittals

TSC Charge and Future Activities

1. Coordinate among MANE-VU states & tribes and Federal partners
2. Monitor visibility trends for 5-year progress reports (due in 2025)
3. Track MANE-VU & upwind state SIP submittals and proposed EPA SIP actions & approvals
4. Coordinate with other Regional Planning Organizations as needed
5. Review & comment on EPA RH documents & guidance
6. Training

Questions? Thank You!

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