

AAPCA 2020
VIRTUAL FALL
MEETING SERIES
SEPTEMBER 24,
2020

Regional Haze in MANE-VU Region

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MANE-VU Class I Areas



MANE-VU – OTC, NESCAUM, MARAMA

Maine

- Acadia National Park
- Moosehorn Wilderness Area

New Hampshire

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

Vermont

- Lye Brook Wilderness Area

New Jersey

- Brigantine Wilderness Area

New Brunswick Canada

- Roosevelt Campobello International Park

MANE-VU Outlook

2nd Planning Period

- Sulfates coming down, seeing great progress
- Changing atmospheric chemistry with greater fraction of SO₂ and NO_x going to particles, especially in winter
- More urban influenced Brigantine vs. other Class 1 areas with relatively greater nitrate influence
- Carbonaceous aerosols – may be woodsmoke in winter
- Points to multi-pollutant approach

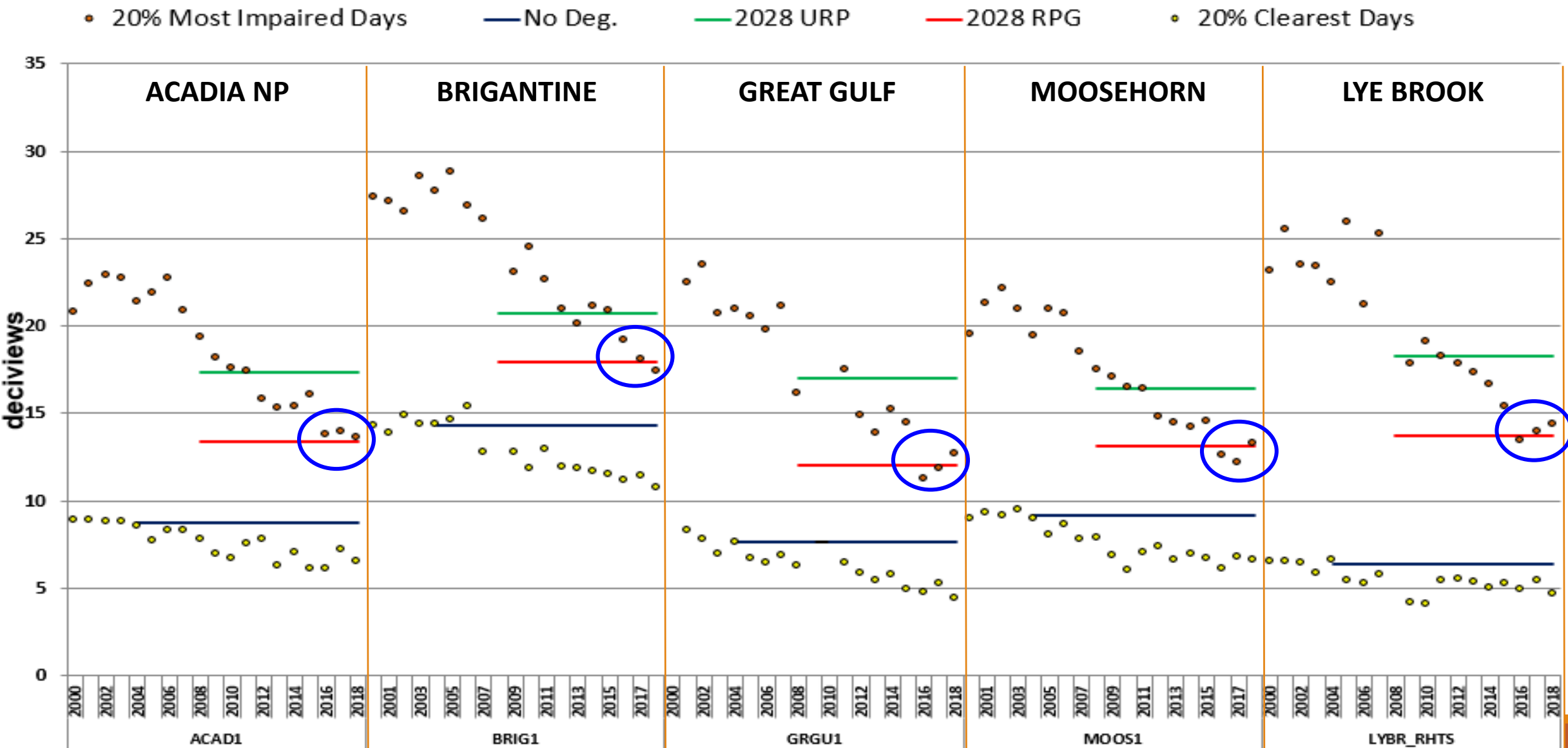
MANE-VU RH SIP Tracker

Complete
In-Progress
Waiting

	IMPROVE Data Analysis	Inventory Development & Analysis	Modeling	Consultation with contributing states	State 4-factor analyses completed	Response to MANE-VU Ask Developed	Long-term strategy developed	Initial draft of SIP developed	State rules drafted (as appropriate)	FLM/EPA consultation	Draft SIP Submittal 60-day Clock Started	Public Hearing/Comment	Final SIP Submittal	At EPA	SIP Approved
CT	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	In-Progress	In-Progress	Complete	Complete	Complete	Complete
DC	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Waiting	Complete
DE	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete
MA	Complete	Complete	Complete	Complete	Complete	Complete	Complete	In-Progress	Complete	Complete	Complete	Complete	Complete	Complete	Complete
MD	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete
ME	Complete	Complete	Complete	Complete	In-Progress	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete
NH	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	In-Progress	In-Progress	Complete	Complete	Complete	Complete	Complete
NJ	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Waiting	Complete
NY	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Waiting	Complete
PA	Complete	Complete	Complete	Complete	In-Progress	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete
RI	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete
VT	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete

Visibility is Improving – Current Levels are Near 2028 RPGs

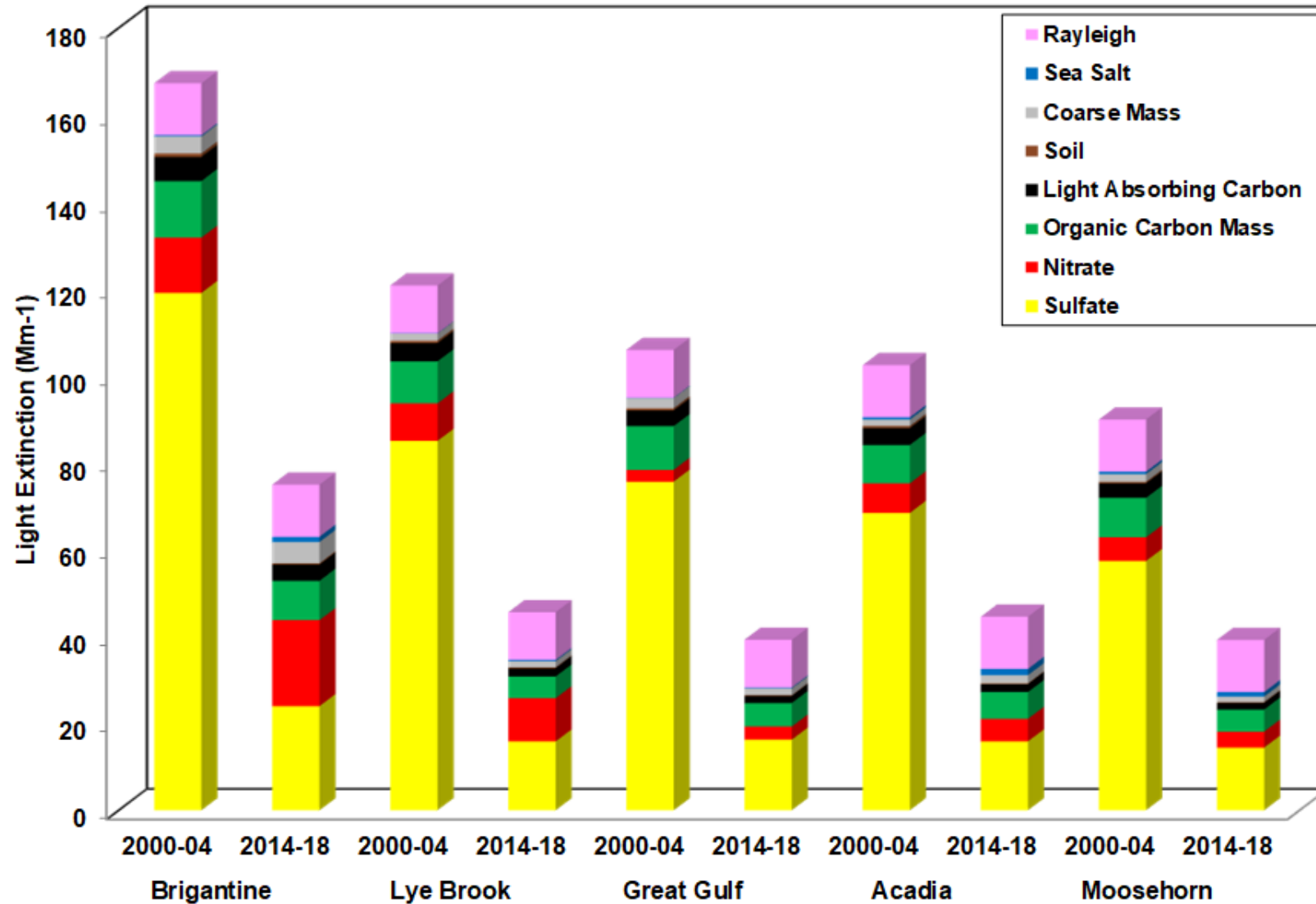
20% MOST IMPAIRED DAYS METRICS / 20% CLEAREST DAYS METRICS



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

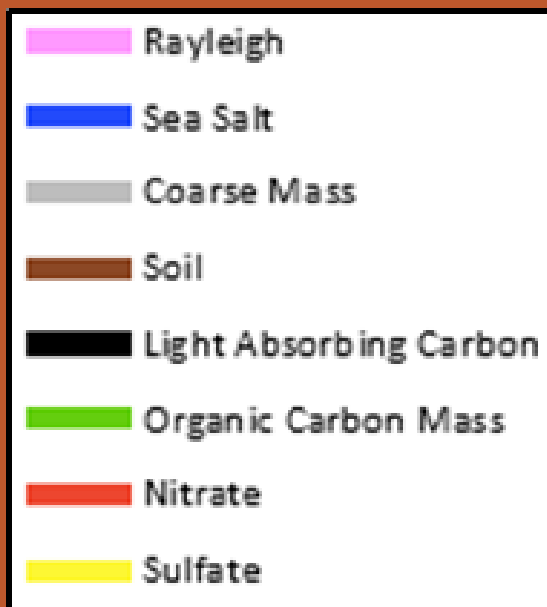
Baseline vs. 2nd RH SIP Planning Goal

**20% Most
Impaired
Visibility Days**

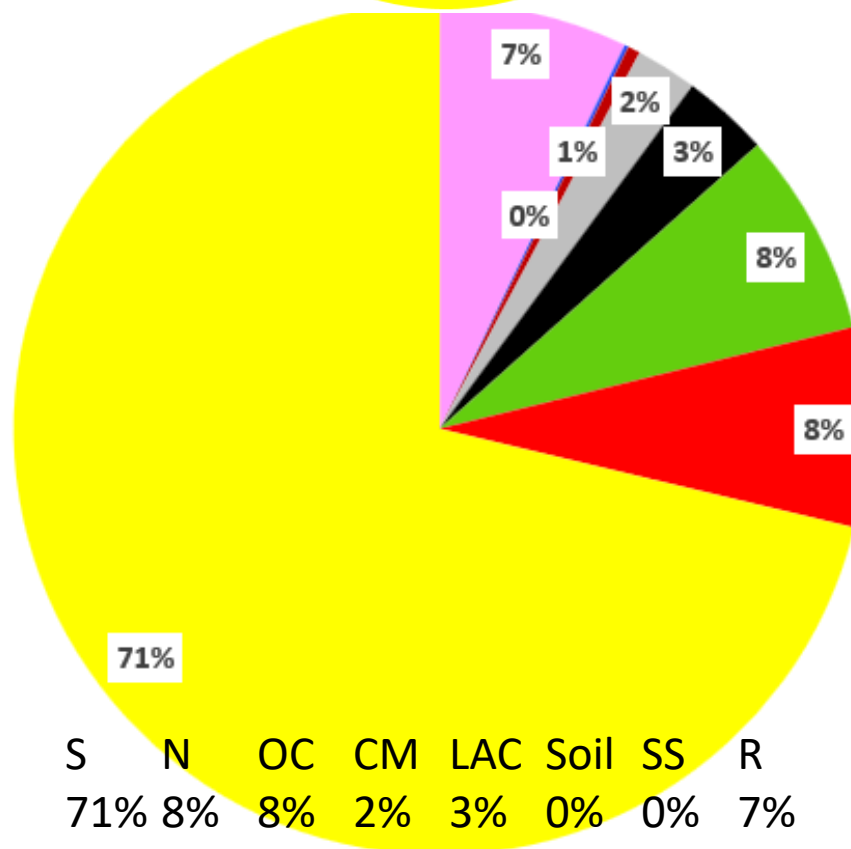
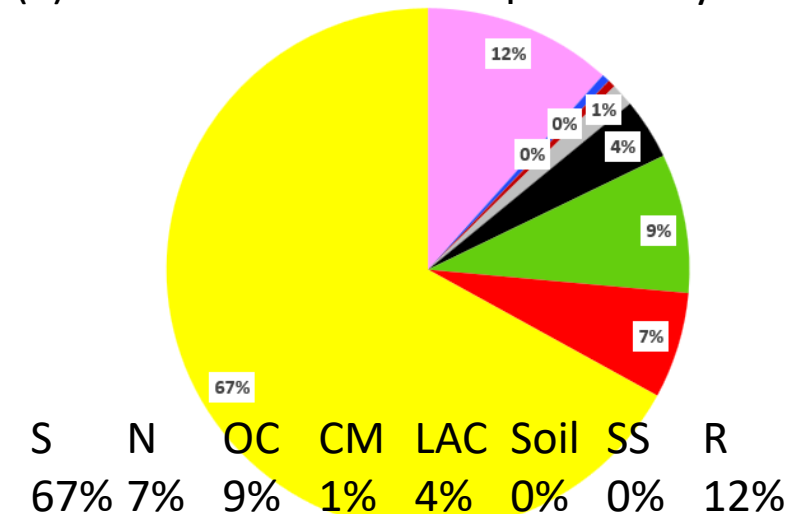


Speciation Changes From Baseline to 2nd RH SIP Planning Goal

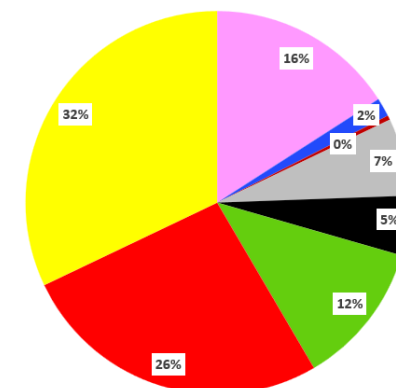
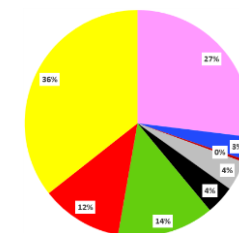
(% of Total Light
Extinction)



(a) 2000-04 20% Most Impaired Days

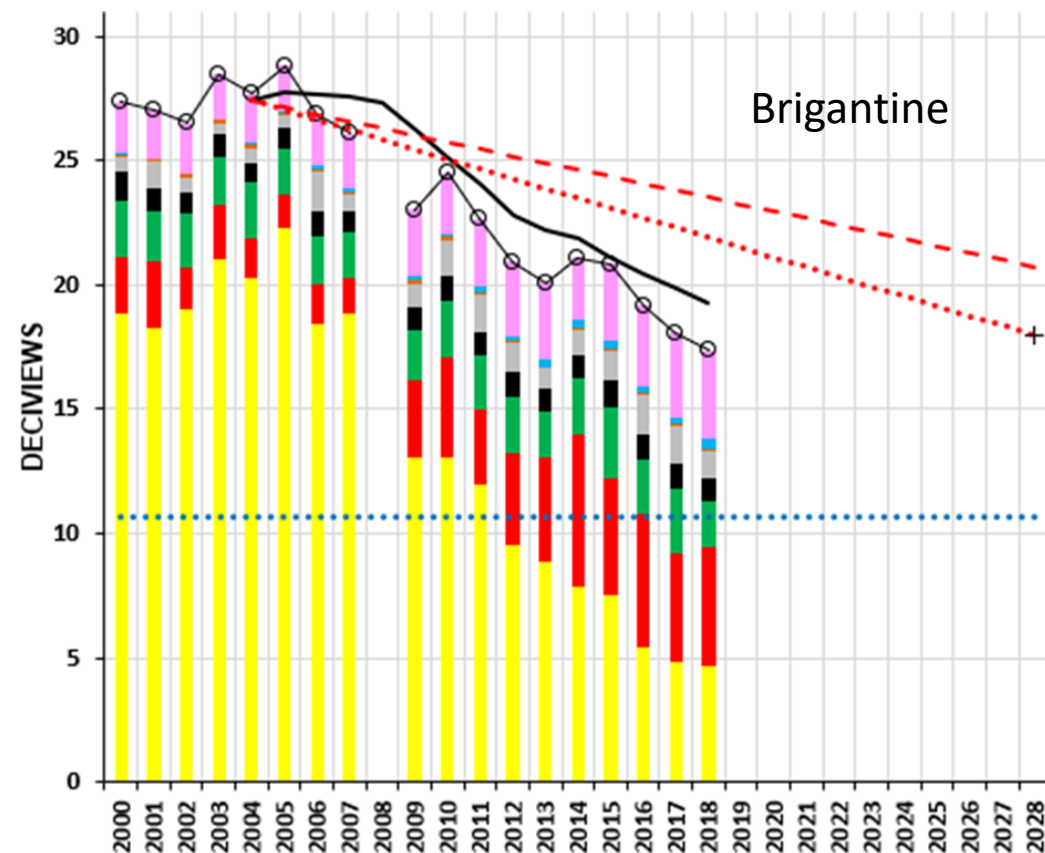
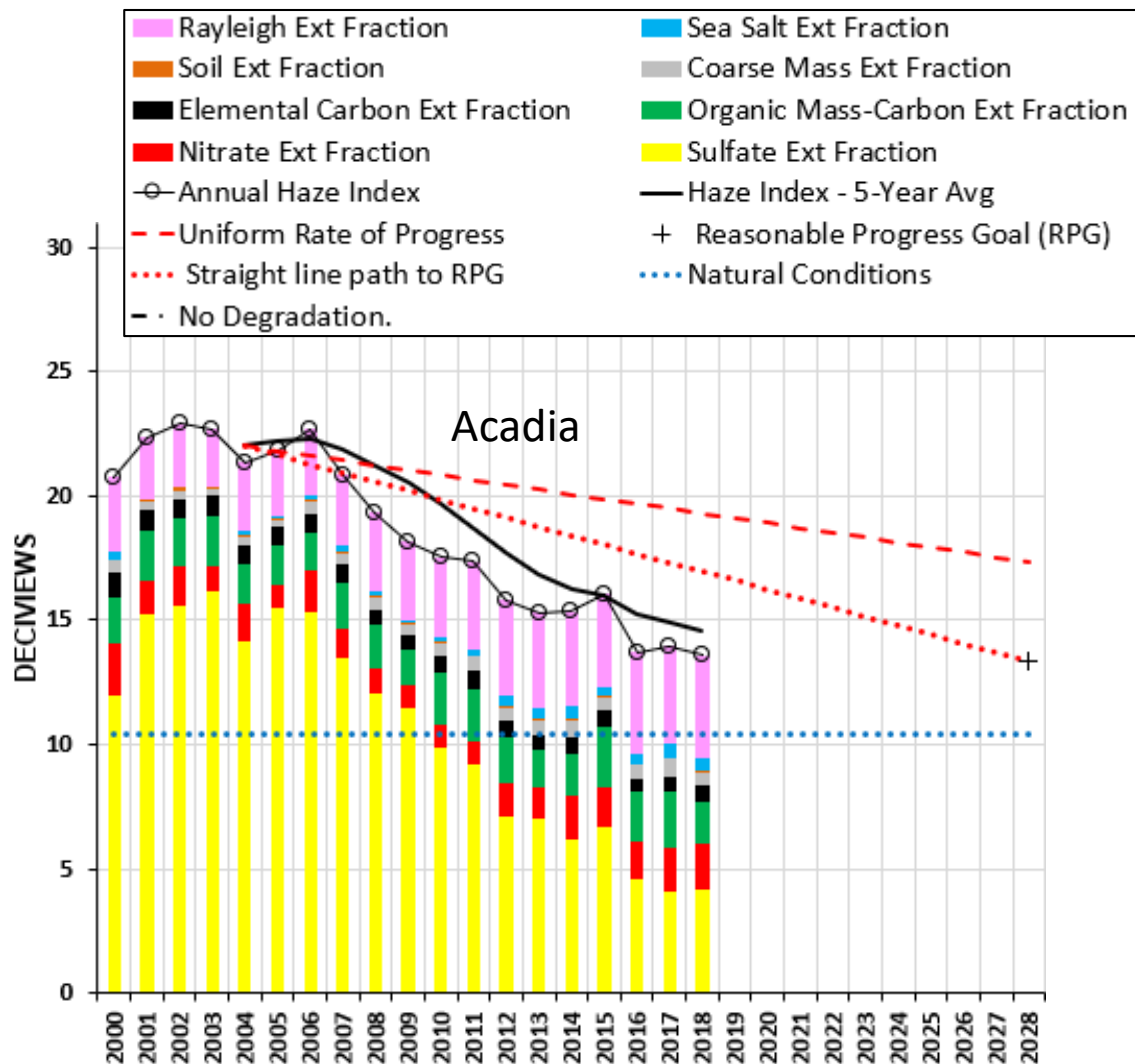


(b) 2014-18 20% Most Impaired Days



Visibility Metrics Trends

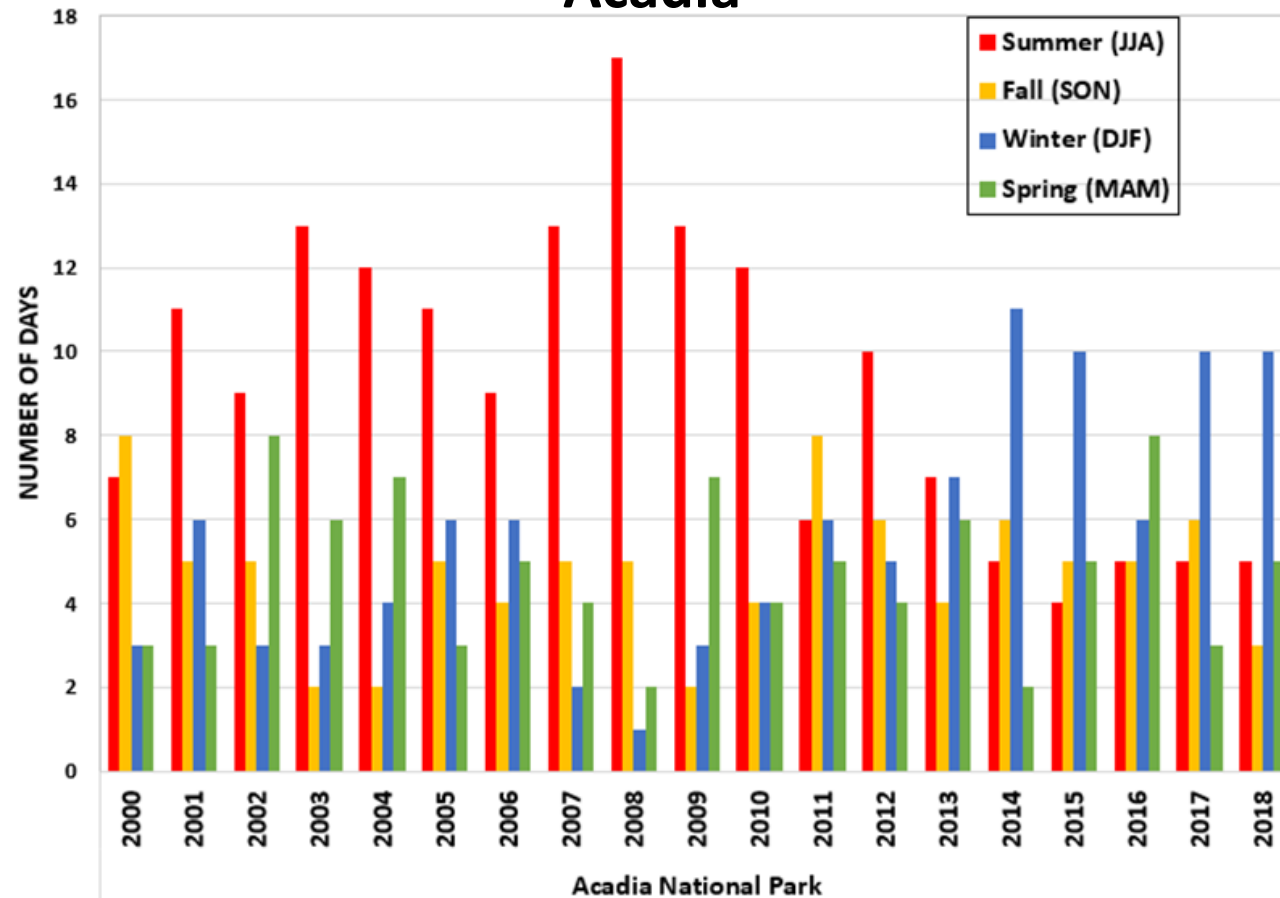
20% Most Impaired Days



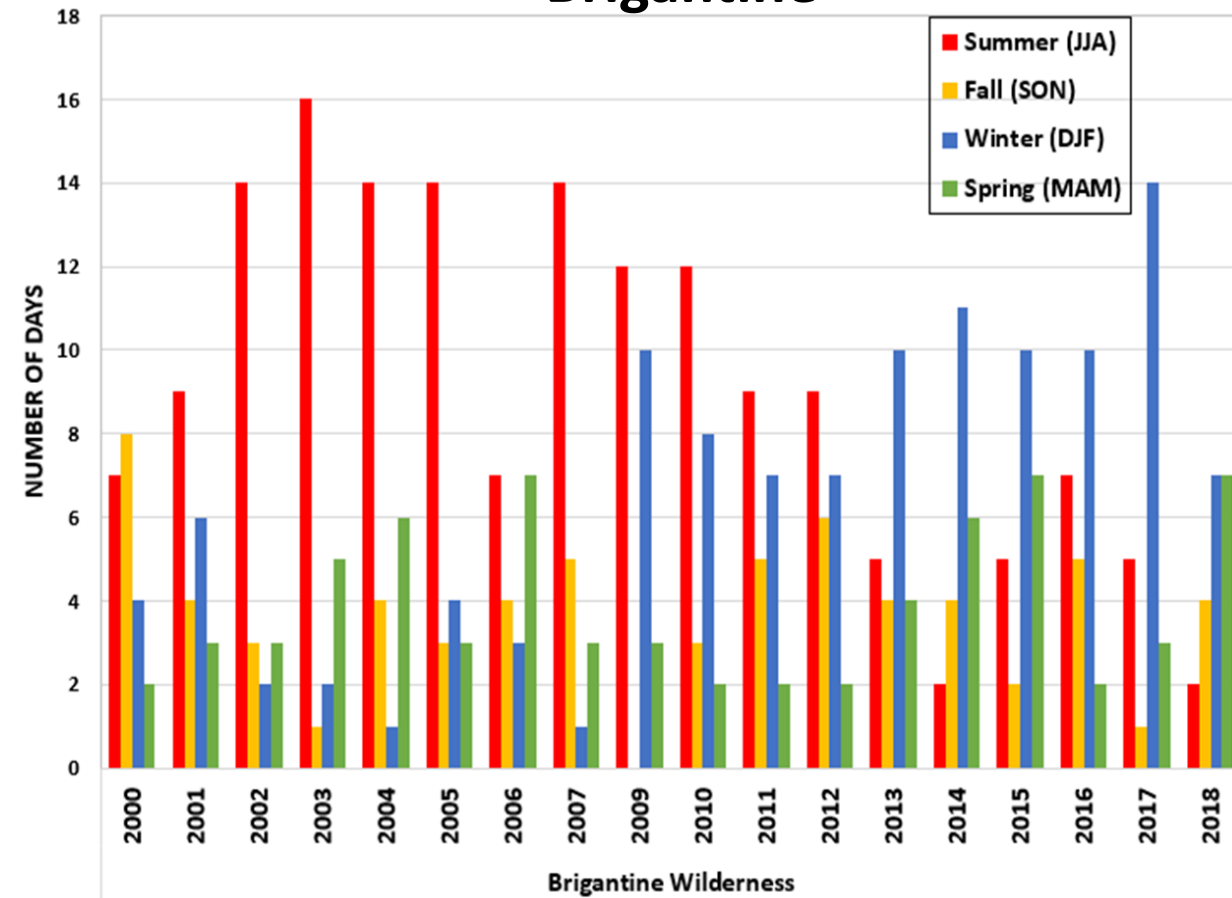
Seasonal Changes to Most Impaired Days

Baseline vs. 2nd RH SIP Planning Goal

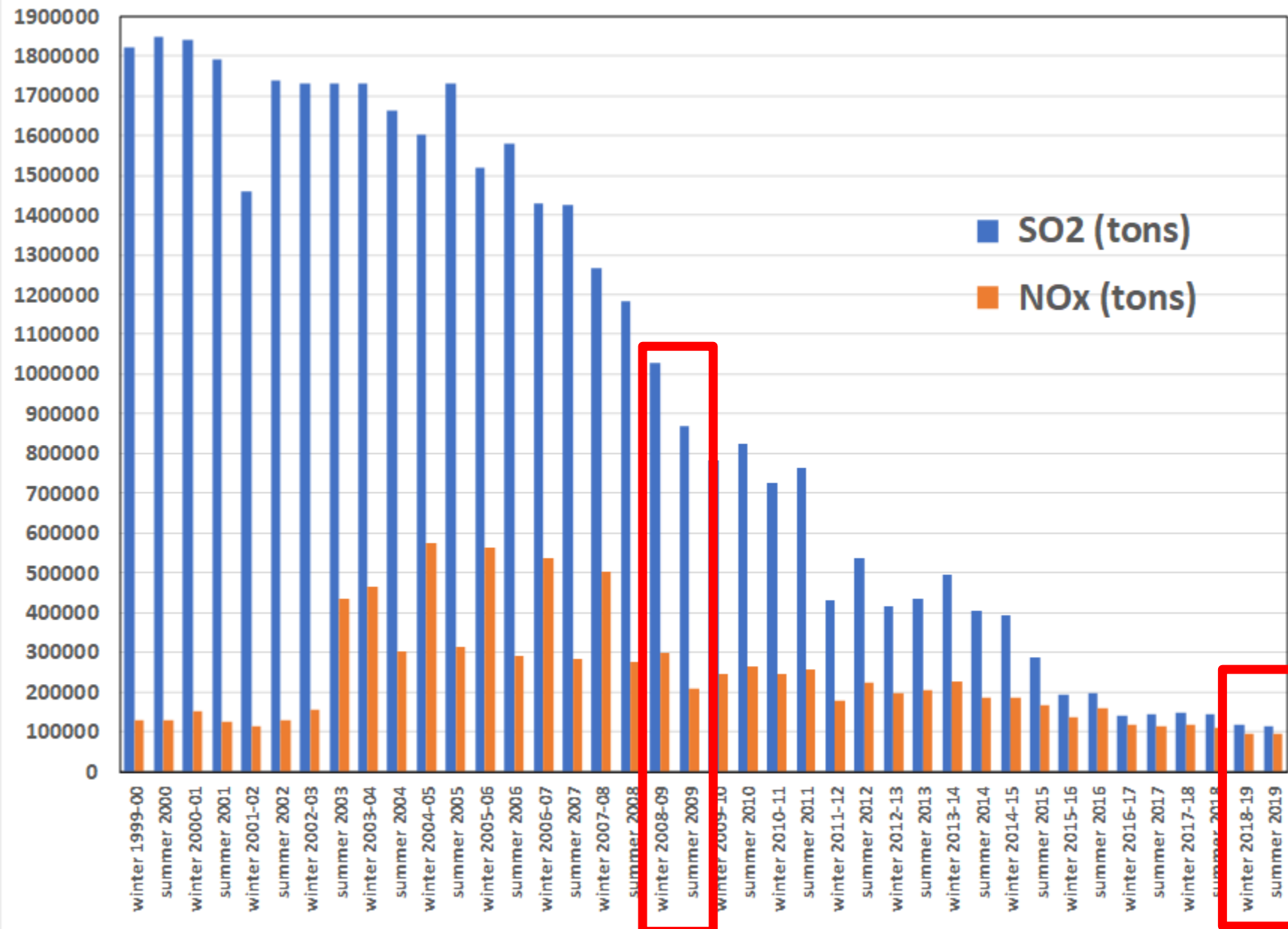
Acadia



Brigantine

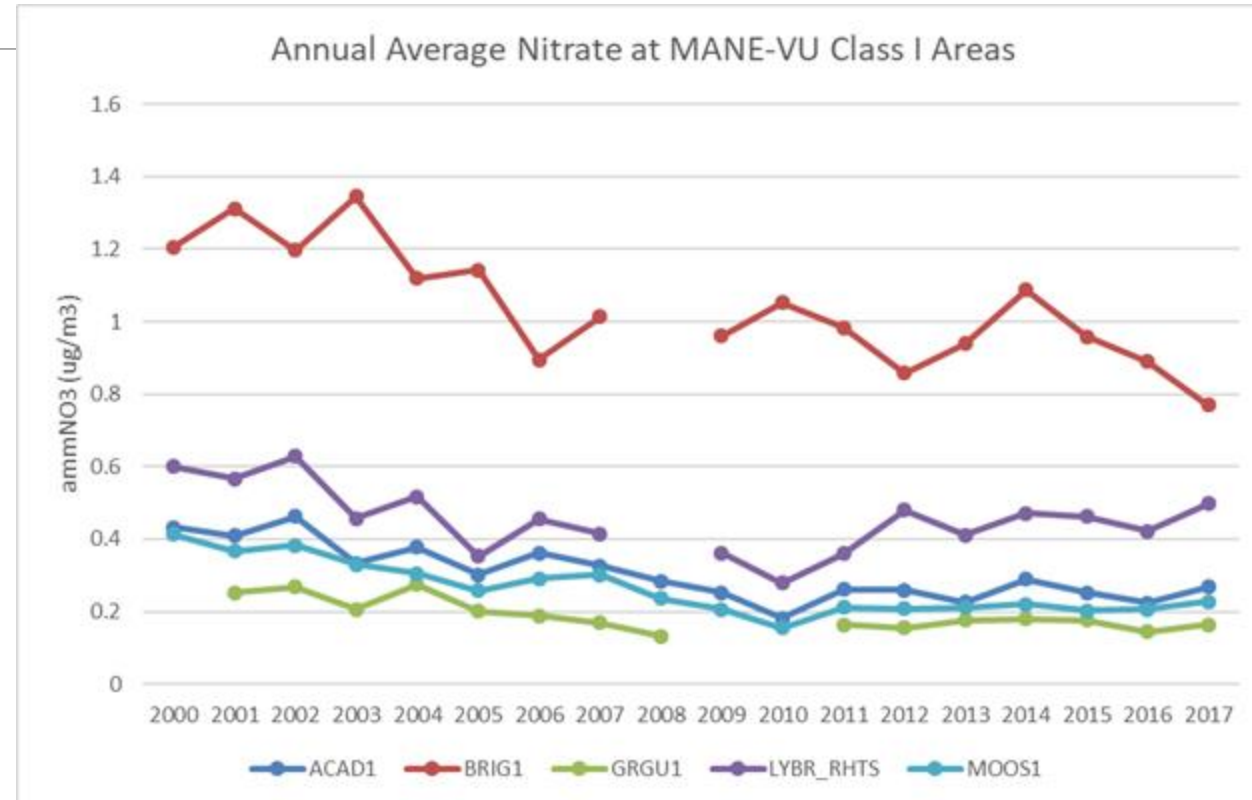
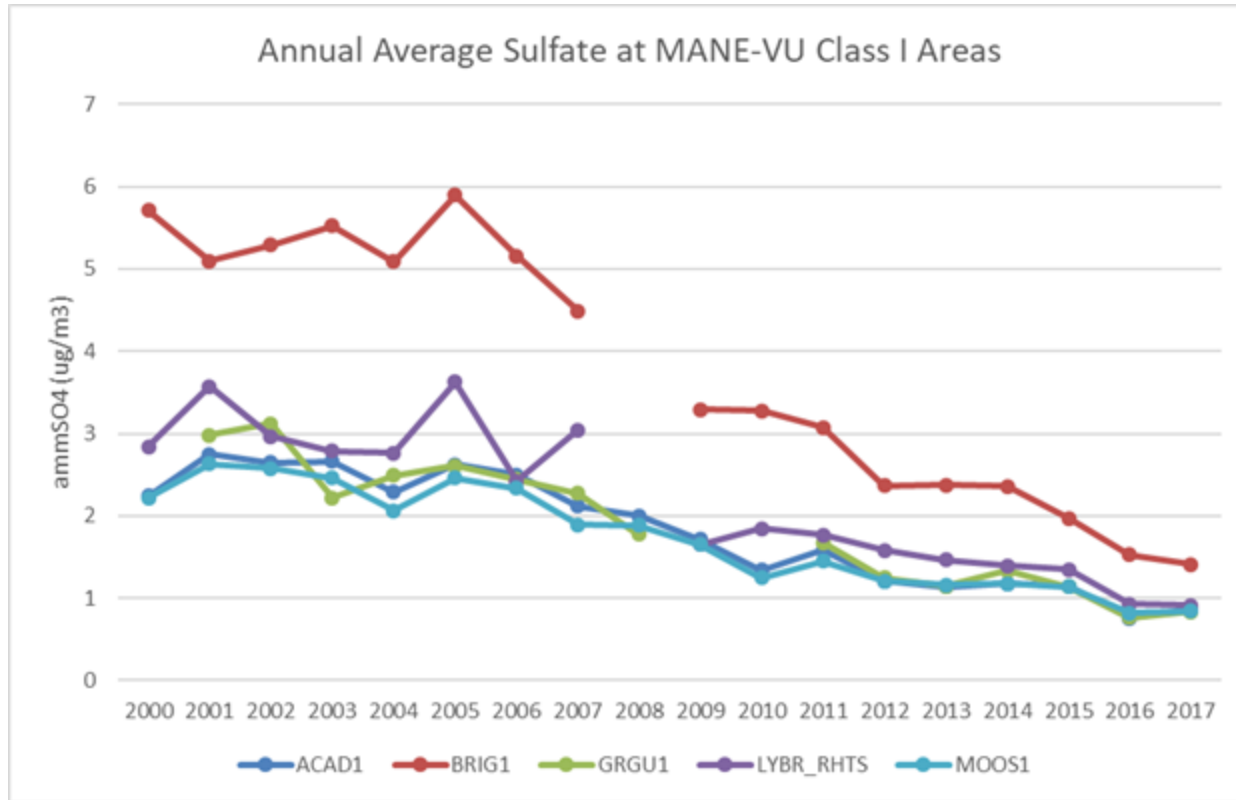


OTC + IN IL OH MI TN KY WV and NC SO₂ and NO_x AMPD EGU Emissions (tons)



EGU Emissions:
Summer vs.
Winter

Annual Average Sulfate and Nitrate MANE-VU Class I Areas (2000 – 2017)



Putting It All Together

- SO₂ and NO_x emissions have dramatically decreased since 1990 CAA, but...
- Particulate sulfates and nitrates have not decreased as much as their precursor emissions
- This is because of changes in atmospheric chemistry
- With lower emissions, a greater fraction of SO₂ and NO_x gets converted to sulfate and nitrate particulate matter in the air, particularly in winter
- These processes are inter-related, and indicate both SO₂ and NO_x emissions must be reduced in tandem and to a greater extent

In Summary

- Overall Class 1 areas seeing visibility improvements
- 20% Most Impaired Days
 - Significant decreases in Sulfate contribution to visibility impairment
 - Nitrate, Black Carbon (light absorbing), Organic Carbon Mass collectively larger factor in visibility impairment
 - Winter months are becoming increasingly common
- New multi-pollutant focus (no longer just an EGU-SO₂ issue)
- Additional Areas to address may include:
 - Support heavy-duty on-road NO_x reductions
 - Winter wood combustion activities (organic carbon, black carbon)

Moosehorn, ME



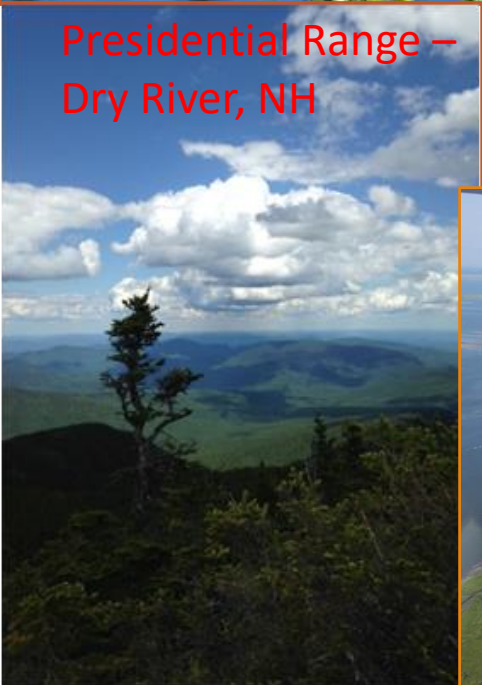
Roosevelt Campobello International
Park, NB



Acadia, ME



Presidential Range –
Dry River, NH



Brigantine NJ



Lye Brook
Wilderness, VT



Questions? Thank You!

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