MANE-VU Technical Support Committee Update

OTC/MANE-VU Annual Meeting: June 3, 2016

Philadelphia, PA

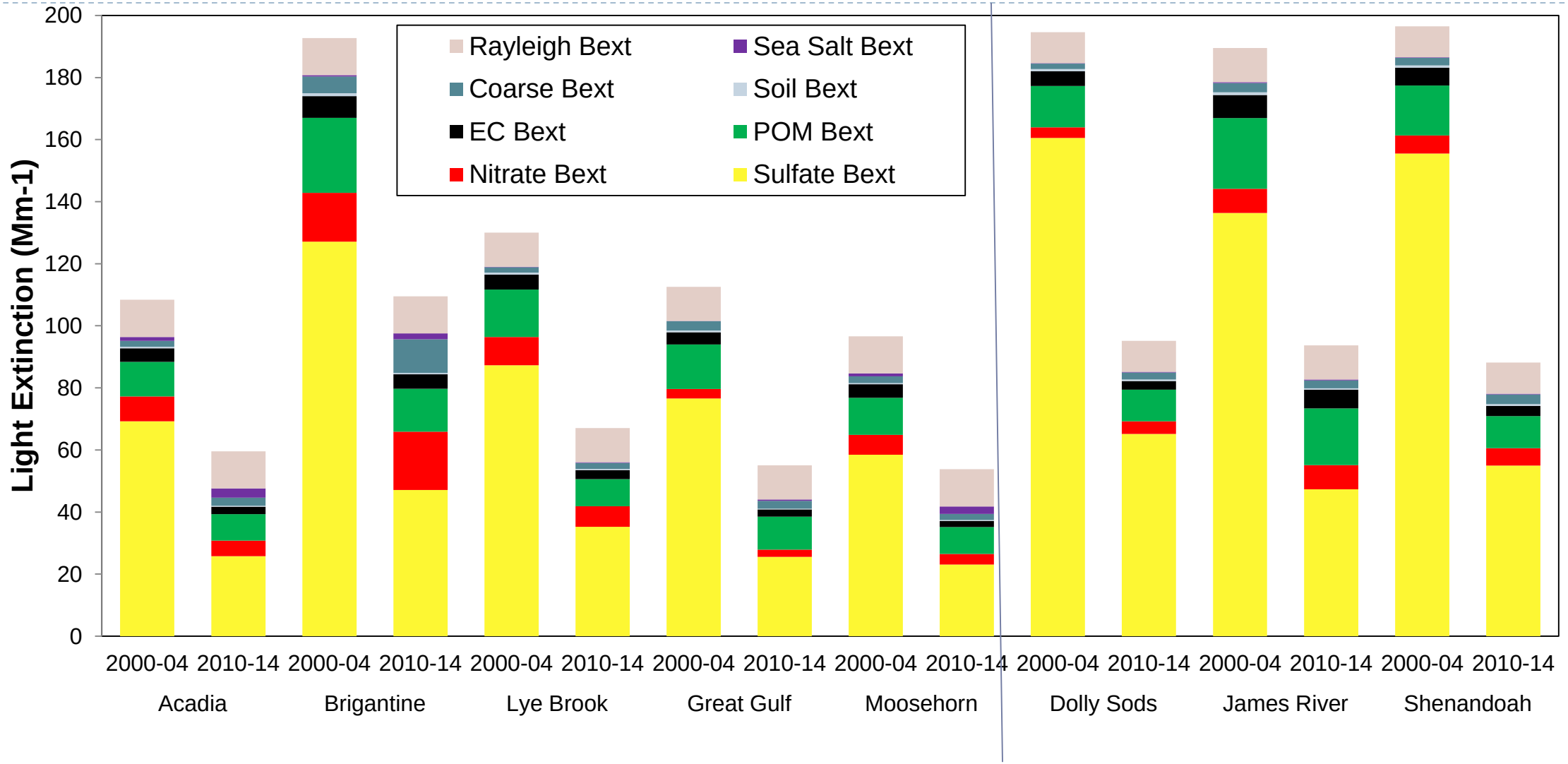
Overview

1. Current 2018 Haze SIP Work
    a. Schedule
    b. IMPROVE Data
    c. Inventory/Modeling
    d. Contribution Analysis
    e. 4-Factor Analysis
2. Other Updates

Regional Haze SIP Planning Schedule

IMPROVE Data Analysis	• Decisions on Methods • Calculations, QA, and TSD	Complete Fall of 2015
Inventory Development & Analysis	• 2028 ERTAC EGU • 2011 Alpha 2 • 2028 Alpha 2 except mobile • 2025 mobile • Emissions Trends Analysis & TSD	Depends on version Complete Complete Summer 2016 Depends on Changes
Modeling	• 2011 Base Case Modeling • 2028 Base Case Modeling • Scenario Modeling • Document Modeling Platform and Results	Complete Summer & Fall 2016 Fall 2016 Fall 2016
Four-Factor Analysis/Contribution Assessment	• Qc/d • 2002 Scaling • CALPUFF Assessment • 4-Factors for Sectors • 4-Factors for Sources • Calculate Emissions Reductions	Summer 2016 Complete TBD Complete Fall 2016 Winter 2016
Updating RPGs	• Draft RPGs and Document	Early 2017
Consultation	• Establish Consultation Process • Technical Consultation with FLMs, Contributing States, EPA • Policy Consultation	Summer 2016 Fall 2016 Winter 2016-17
SIP Submission	• Rule Adoption • SIP Submission	2017-2018 Summer 2018

IMPROVE Data 20% Worst Days: 5-Year Average



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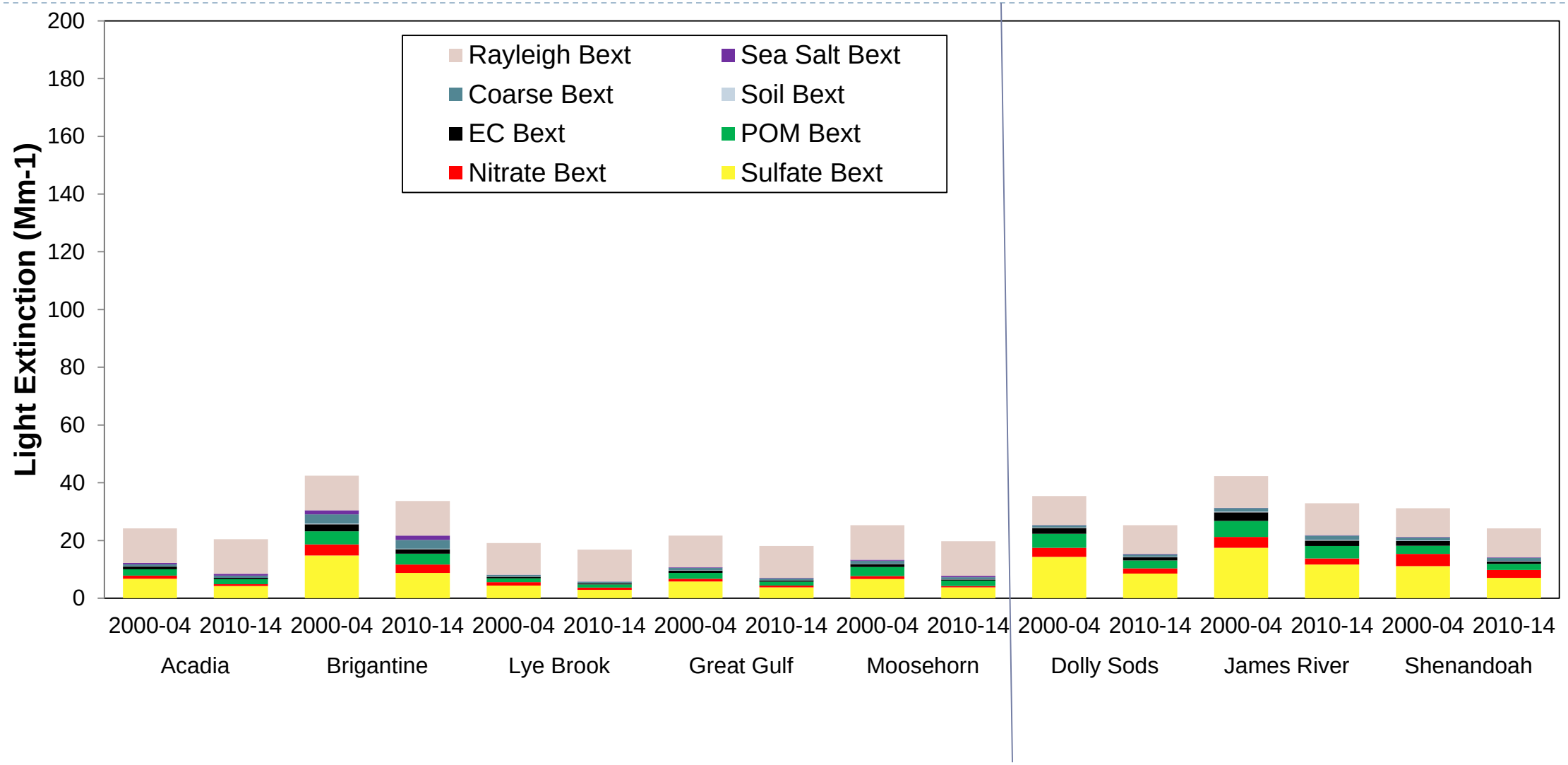
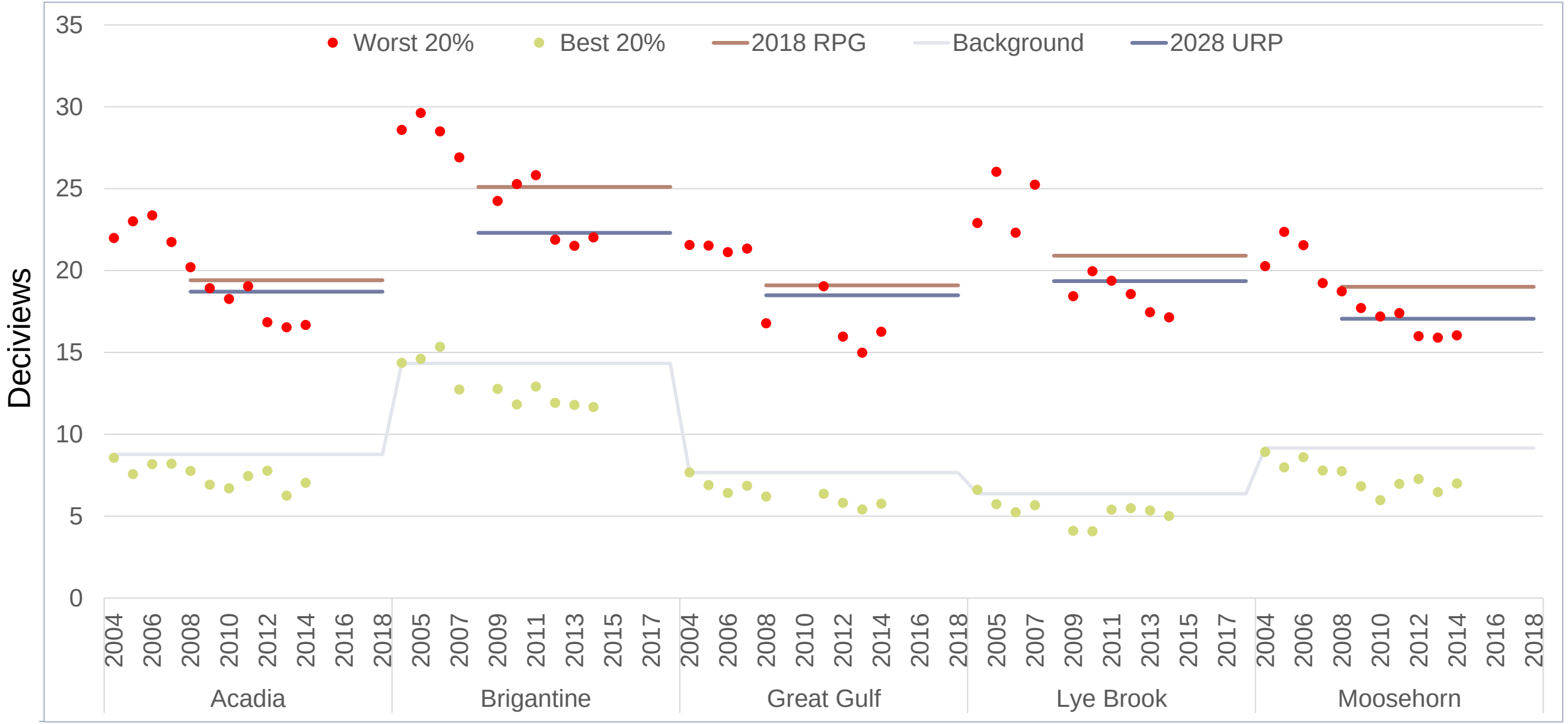


IMPROVE Data: 2018 RPG/2028 URP Comparison



Inventories/Modeling

- Regional Haze Inventories
  - ✓ 2011 Alpha 2
  - ✓ 2018 Alpha 2 w/2018 EPA Mobile
  - 2028 MARAMA Alpha 2 w/2025 EPA mobile
    - ✓ Projections to 2028
    - ✓ 2025 onroad processed through SMOKE-MOVES
    - ✓ 2028 ERTAC EGU v2.4
- 2028 Base Case CMAQ Modeling
  - Expected to begin in June
- Documentation
  - ✓ 2011 Alpha 2 Inventory
  - × OTC Modeling Committee currently writing 2011 platform TSD

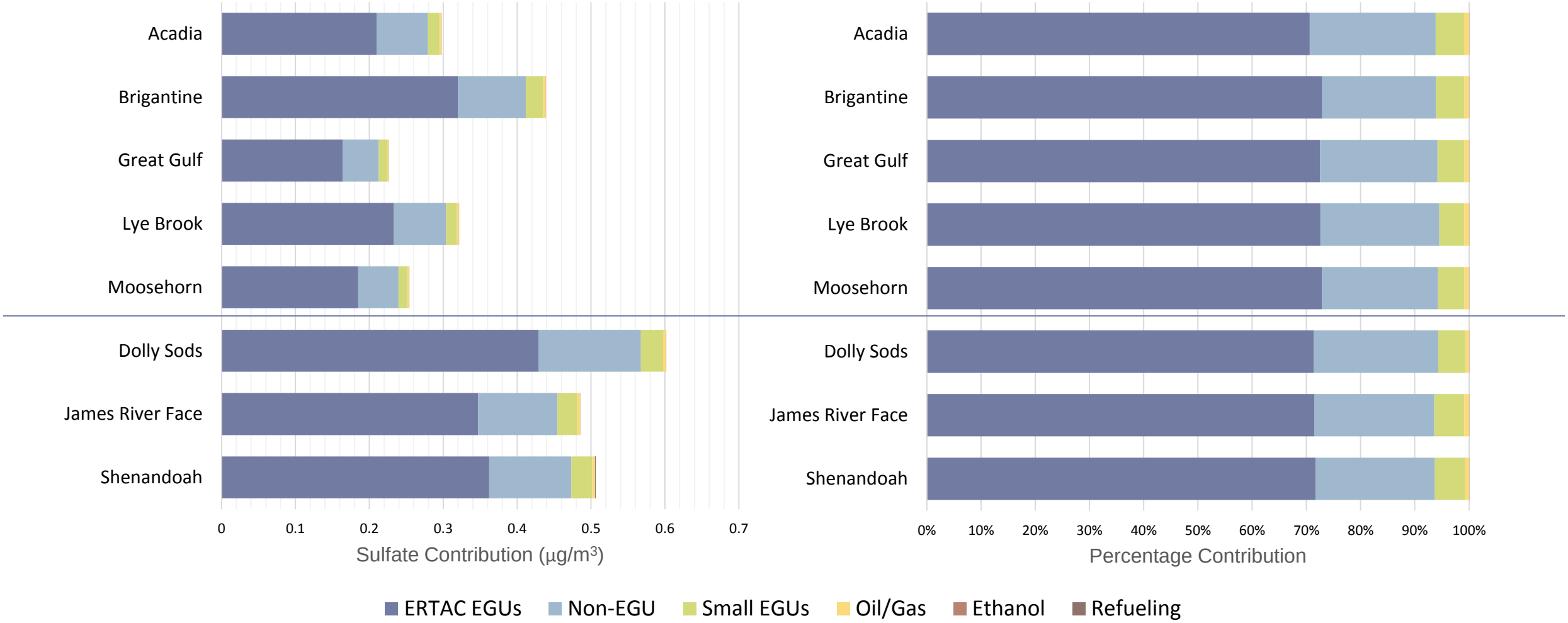
Contribution Assessment Workplan

- Analyses to be Completed
  - Met Adjusted SO_2 Emissions/distance (Q*c/d)
    - ✓ 2011 All Sectors using State Centroid
    - ✓ 2011 Point Source Location
    - ✓ 2018 Point Source Location
  - ✓ 2002 SO_2 Ratio Scaling to 2011 & 2014
  - × CALPUFF Modeling SO_2 and NO_X

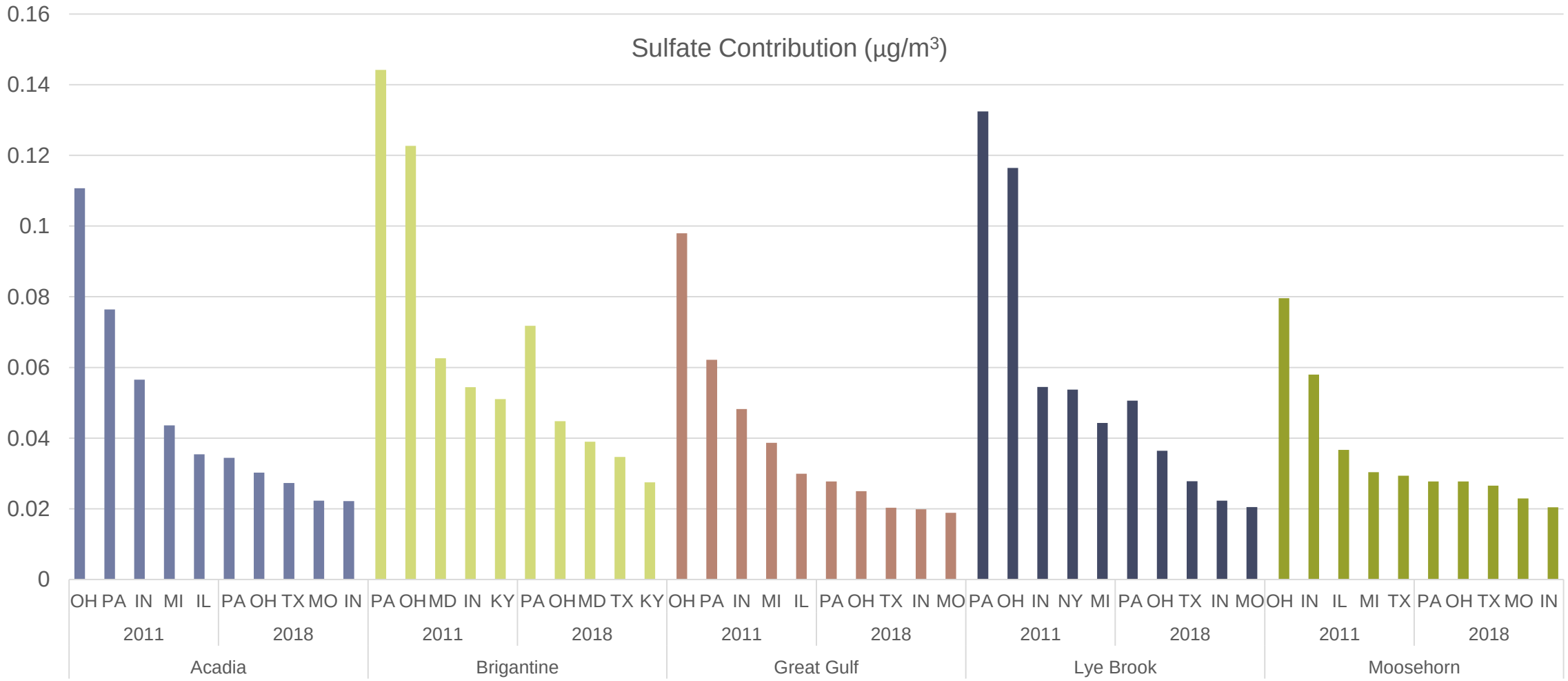
Q*c/d

- Workgroup conducted a Q/d analysis, adjusted by a meteorological factor (c) for Monitored Class I Areas
- Used the 2011 NEI v2 and 2018 Alpha 2 SO_2 Inventories
- Relied on similar methodologies to the NESCAUM reports that looked at the 2002 & 2007 inventories
- Received feedback from National Park Conservation Association:
  - Recommended looking at NO_X as well

Q*c/d: 2018 SO_2 Point Source Sector Impact



Q*c/d: SO_2 Point Source Sector Impact from Top 5 States in 2011/18 at each Monitored Class I Area



CALPUFF

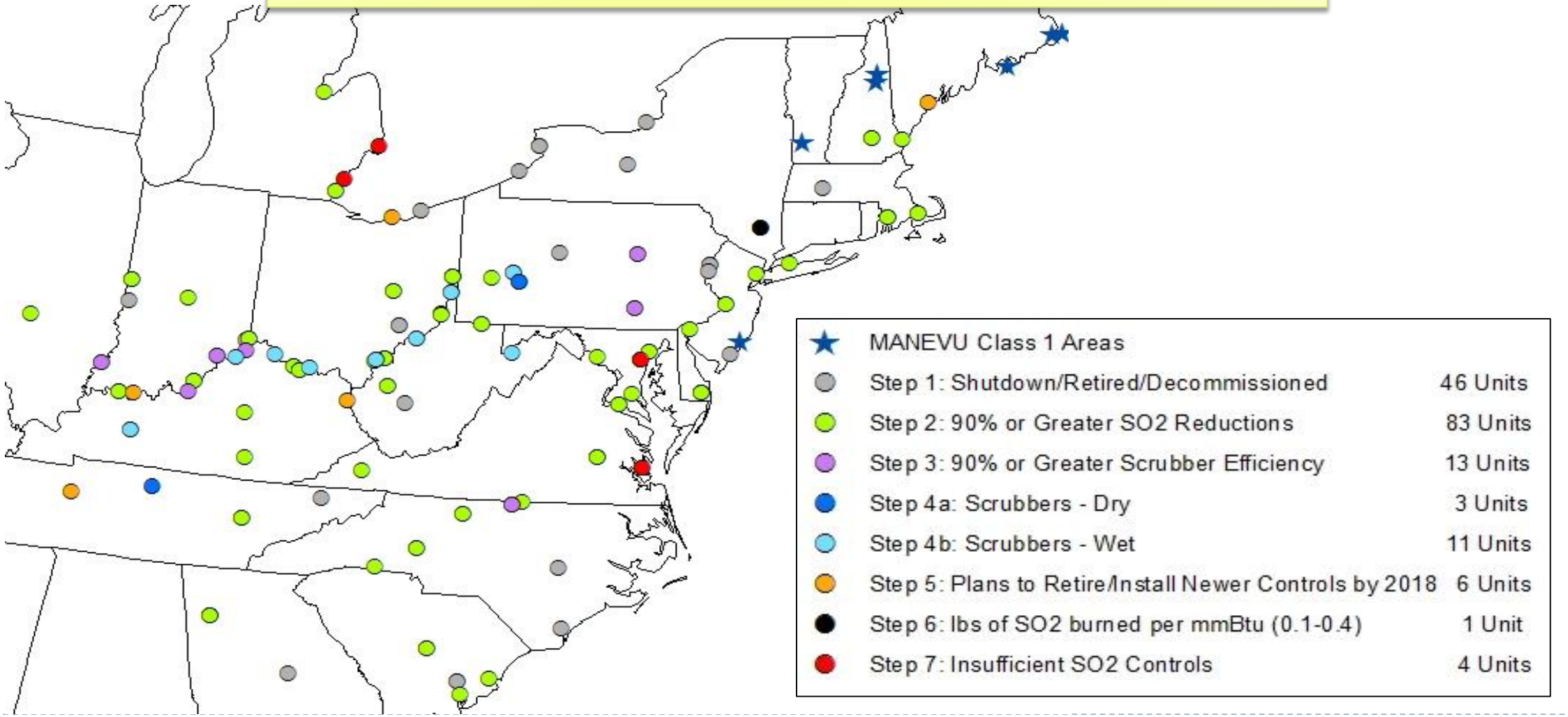
- CALPUFF modeling options under consideration
  1. 2011 emissions (95th percentile daily CAMD) with existing met fields
  2. 2011 emissions (95th percentile daily CAMD) with 2011 met fields in development
  3. Additional options:
     - 2011 emissions with additional met fields (e.g., 2012, 2013, etc.) to better understand year to year variability
     - 3-year (2013-2015) average 95th percentile daily emissions with 2002, 2011, or 2015 met fields (removes inter-annual emissions variability)
     - 2011 annual emissions with 2011 met fields to examine difference between annual vs. 95th percentile daily emissions
     - 2015 emissions (95th percentile daily CAMD) with 2002, 2011, or 2015 met fields to assess most recent emissions patterns
  - Current Status
    - VT on track to develop 2011 met fields, possibly for other years
    - NH is expected to run the CALGRID model

167 Stack Retrospective

- 2008 Contribution Assessment found the 100 EGU stacks that most affected Monitored Class I Areas
- Resulted in 167 stacks, including duplicates
- The MANE-VU "Ask" was to reduce SO_2 from the stacks by 90%
- Reviewed the status of the stacks using 6 criteria
- Received feedback from National Park Conservation Association:
  - Need to determine the enforceability of limits in steps 2-6
  - Consider looking at upgrades to existing scrubbers

“167 Stack” Retrospective

The MANE-VU “Ask” was to reduce SO_2 from the 167 stacks by 90%



4-Factor Source Sector

- Collected data needed to conduct 4-factor analyses for the following sectors:
  - EGUs
  - ICI Boilers
  - Heating Oil
  - Residential Wood Combustion
  - Outdoor Wood Fired Boilers
- SO_2 and NO_X controls were considered

4-Factor Industrial Sources

- Used facility data from 2011 Q*c/d point sources
- 2011 aligns with base year inventory though there are retirements and fuel switches that have occurred
- Collecting data on sources that impact each Monitored Class I Area
- Data collected:
  - 2011 & 2014 SO2 Emissions
  - Installed/Planned Controls
  - Permit Limits/Consent Decrees
  - Number and Size of Boilers
- Still need information on a few sources

4-Factor: Status of Industrial Source Data Collection

State	Total 2011 SO_2	Avg. # of Class I Sites Affected	# of Facilities	# w/ Data Collected
MANE-VU				
MA	629.75	3.000	1	1
MD	24,040.44	2.333	3	2
ME	3,241.30	1.714	7	7
NH	435.94	1.000	2	2
NJ	124.41	1.000	2	2
NY	20,051.38	3.375	8	8
PA	16,609.24	3.385	13	13
LADCO				
IL	16,192.83	5.000	2	2
IN	43,920.93	3.667	12	
MI	9,742.48	3.000	3	3
OH	40,272.23	3.909	11	1
SESARM				
KY	7,688.43	2.333	3	
NC	11,420.96	2.333	3	3
TN	27,431.84	2.667	3	1
VA	8,343.09	2.167	6	6
WV	5,647.92	4.333	3	
Grand Total	**235,793.17**	**3.061**	**82**	**49**

Combined Heat & Power Paper

- Stakeholders provided no comments during public review period
- TSC reviewed in early 2016 and requested no significant changes
- Report has been finalized
- Paper Conclusions
  - CHP installations beneficial for SO_2 reductions
  - CHP installations can be beneficial for NO_X reductions
    - OTC Stationary Generator Model Rule must be in place for small units
    - BACT must be implemented for large units

Status of Low Sulfur Fuel Oil Rules

Low Sulfur Distillate Rules/Statutes (ppm)												
	CT	DC	DE	MA	MD	ME	NJ	NH	NY	z	RI	VT
500	2014	2016		7/14	2016		2014			7/16	2014	7/14
15	2018	2018	2017	7/18		7/18	2016		7/16	Philly: 7/15	2016	7/18
Low Sulfur Residual Rules/Statutes (percentage)												
1.00				7/14								
0.50			7/17	7/14 (EGUs), 7/18		7/18	2014 (depends on county)		7/16	7/16 (#5/#6)	date?	7/18 (#5/#6)
0.30	7/18						2014 (depends on county)		7/16 NYC - 0.3% Nassau / Westchester -0.37%			
0.25										7/16 (#4)		7/18 (#4)
Ban		2016 (#5/#6)							NYC #6 Ban 7/15 #4 0.15% 10/12 Ban 2030			

Questions?