MANE-VU Technical Support Committee Update

OTC/MANE-VU Committee Meeting: April 11, 2017

Hall of the States, Washington, DC

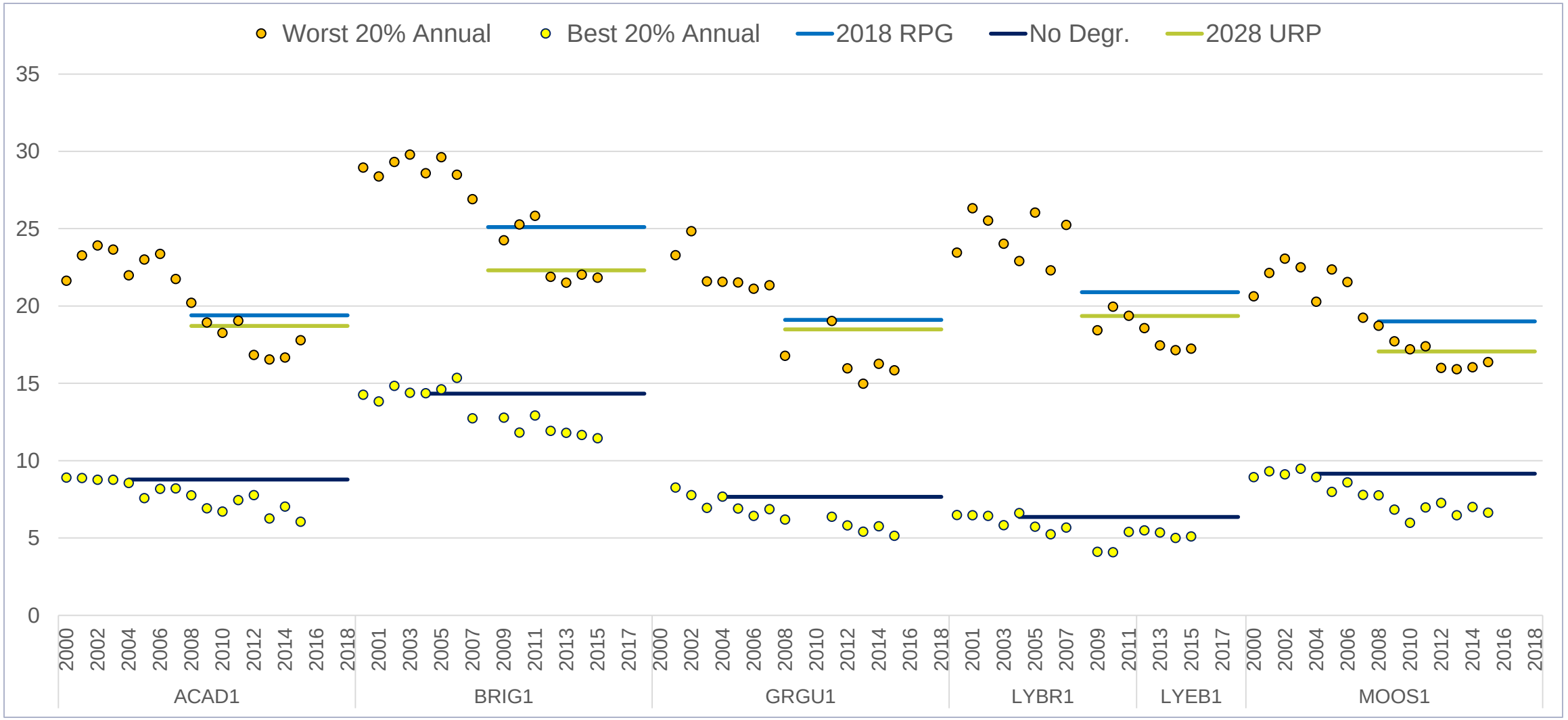
Overview

1. Action Plan & Schedule Updates
2. Monitoring Data
3. 4-Factor Analysis Data Collection
4. Contribution Analysis

Regional Haze SIP Planning Schedule

IMPROVE Data Analysis	• Decisions on Methods • Calculations, QA, and TSD	Complete Fall of 2016
Inventory Development & Analysis	• 2011/2028 Alpha 2 & TSD • Emissions Trends Analysis	Complete Fall 2017
Modeling	• 2011 Base Case Modeling • 2028 Base Case Modeling • Scenario Modeling • Document Modeling Platform and Results	Complete Complete If Requested Complete (Except Scenarios)
Four-Factor Analysis/Contribution Assessment	• Qc/d • CALPUFF Assessment • Back Trajectory • 4-Factor Data for Sectors • 4-Factor Data for Sources • Synethsize Assessments	Complete Complete Summer 2017 Complete Complete Summer 2017
Updating RPGs	• Draft RPGs and Document	Late 2017
Consultation	• Establish Consultation Process • Technical Consultation with FLMs, Contributing States, EPA • Policy Consultation	Winter 2017 Winter 2016-17 Mid-2017
SIP Submission	• Rule Adoption • SIP Submission	2017-2018 Summer 2018

Progress at Monitored Class I States in MANE-VU using Current IMPROVE Algorithm



Contribution Assessment

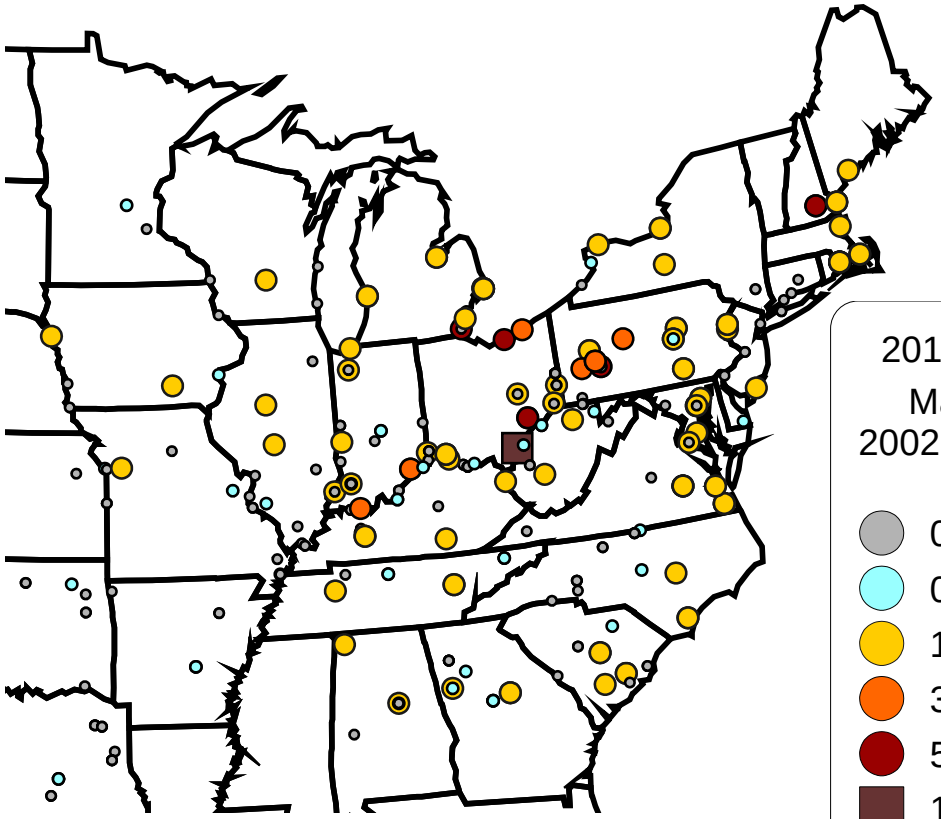
- Synthesizing Results in a Memo
- Steps to be Completed
  - ✓ Inventory Analysis
  - ✓ Met Adjusted Emissions/distance (Q*c/d)
  - ✓ 2002 SO_2 Ratio Scaling to 2011 & 2014
  - ✓ CALPUFF Modeling
  - Back trajectories during 20% worst days
  - IMPROVE Data Analysis

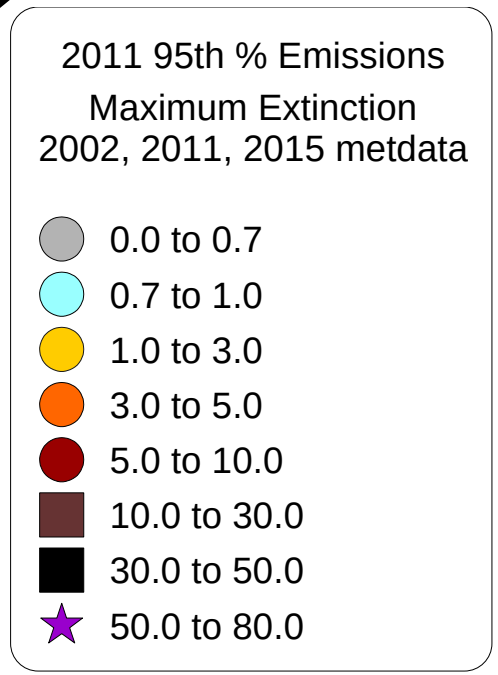
2016 CALPUFF

- Built from previous VT DEC and MDE platform development procedures
- Considered 2011 and 2015 SO_2 and NOx EGU emissions (CAMD and MARAMA)
  - CAMD 95th percentile SO_2 and NOx emissions
  - MARAMA annual emissions and stack parameters
- Considered 2011 typical industrial facility emissions (MARAMA)
- Modeled with 2002, 2011 and 2015 meteorology (CALMET)
- Finalized Paper is and available at http://otcair.org/manevu

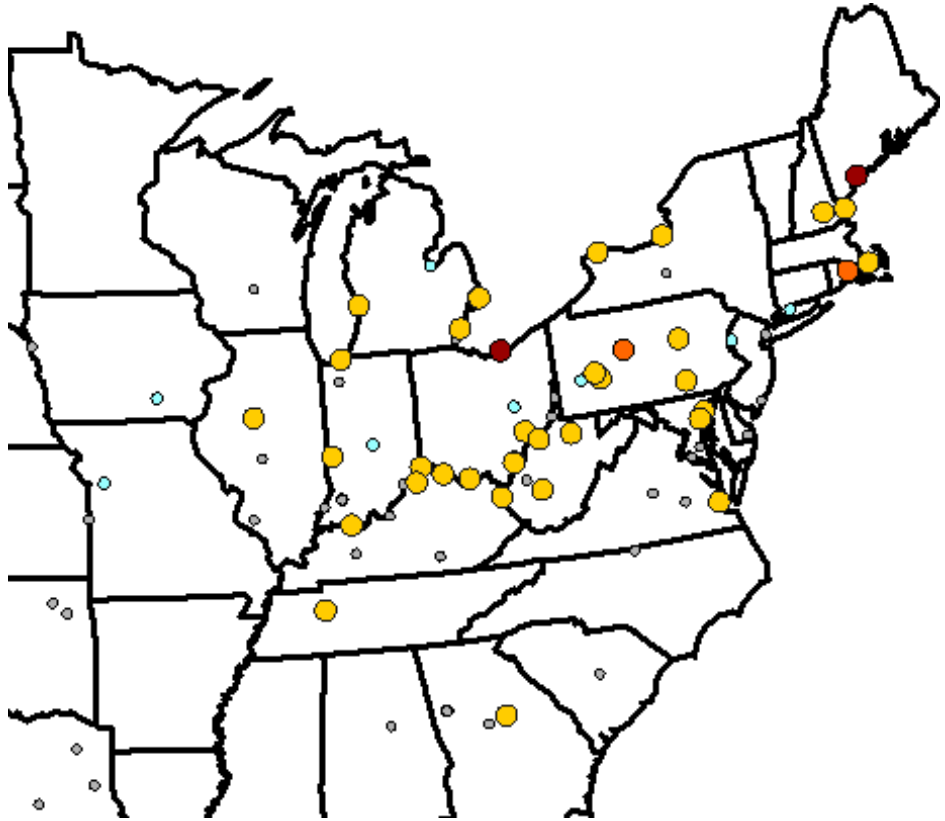
Acadia - EGU

2011 95th % Emissions

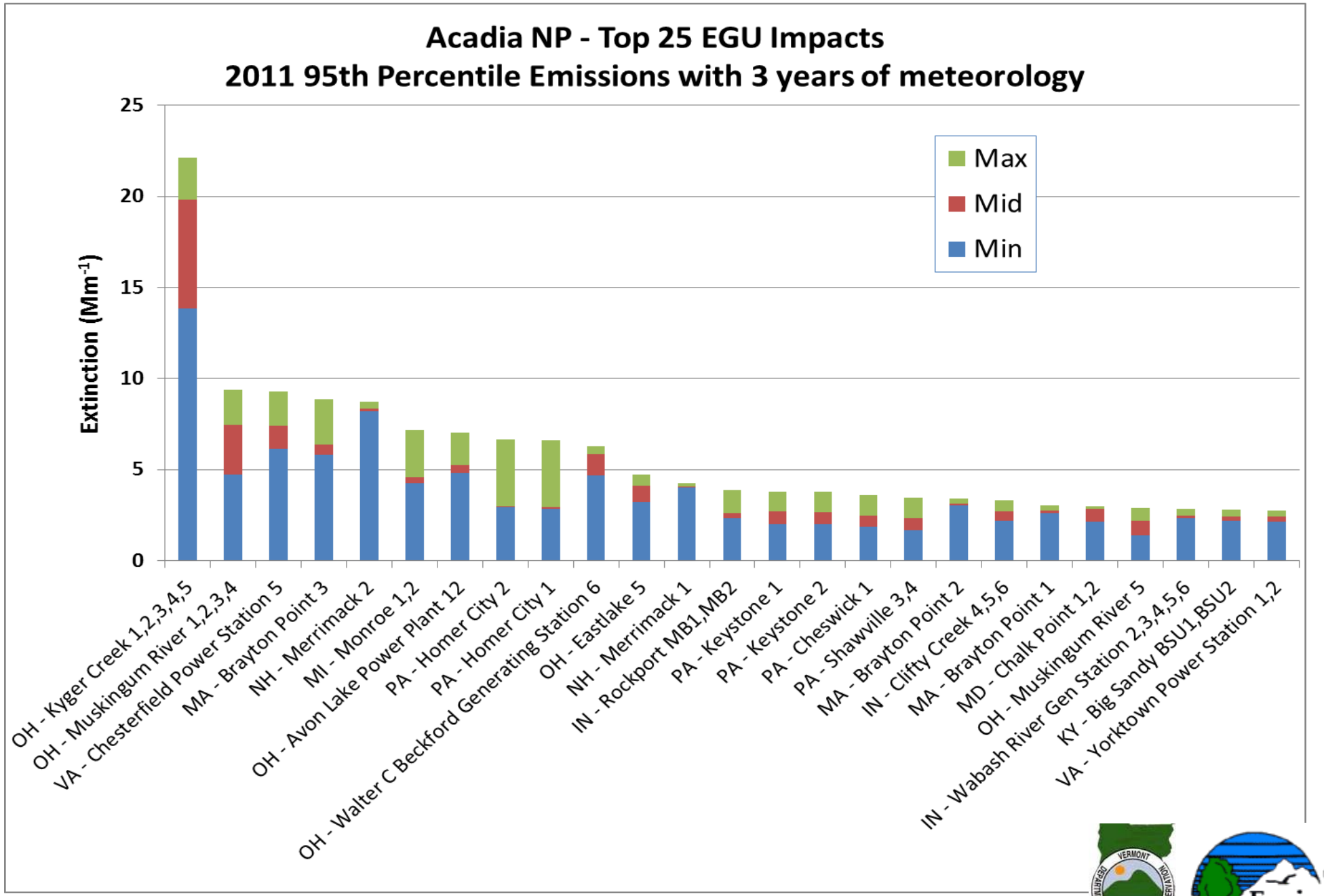




2015 95th % Emissions



NEW HAMPSHIRE DEPARTMENT OF Environmental Services



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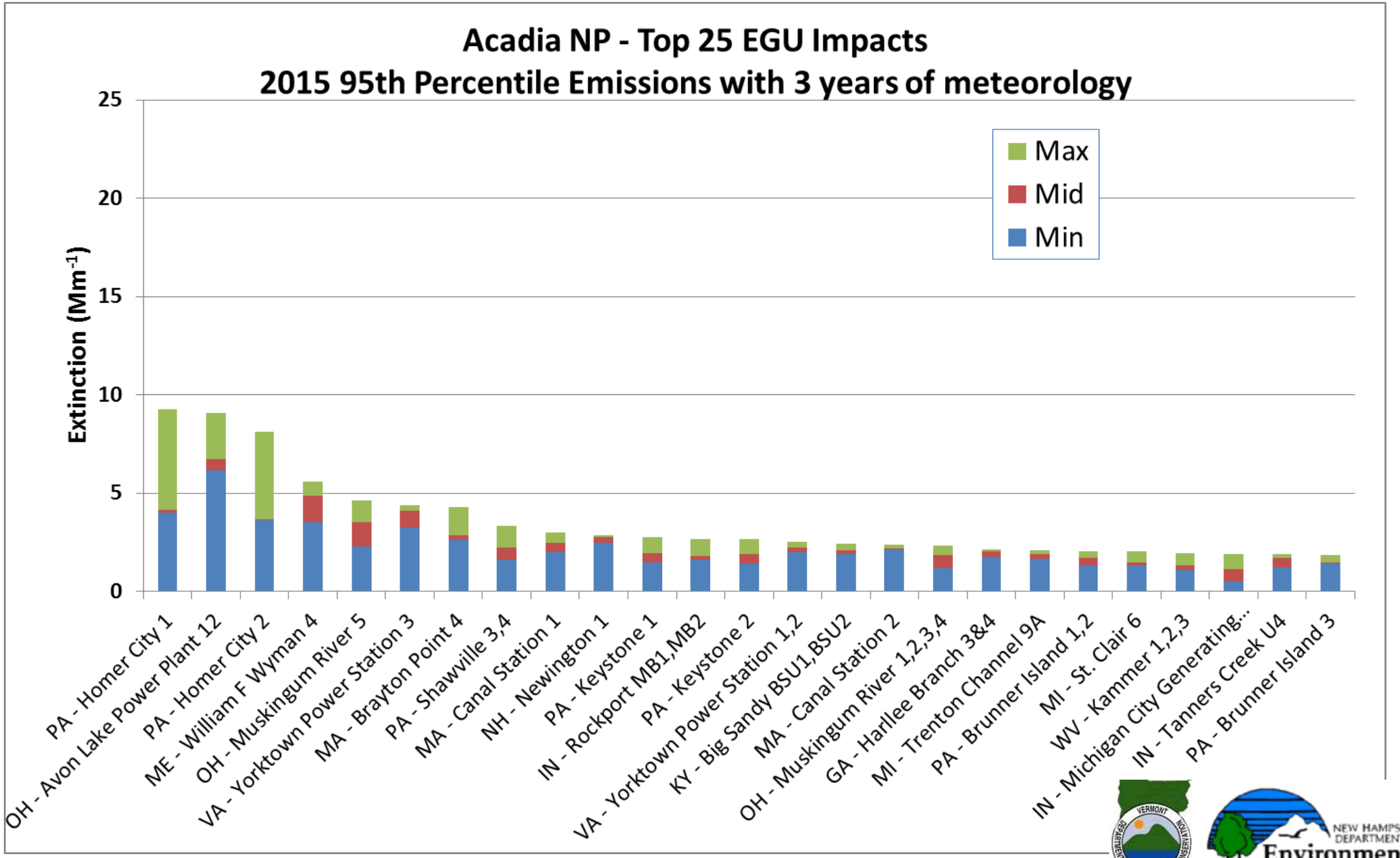
Acadia NP - Top 25 EGU Impacts
2015 95th Percentile Emissions with 3 years of meteorology
Extinction (Mm-1)
25
20
15
10
5
0
Max
Mid
Min
PA - Homer City 1
OH - Avon Lake Power Plant 12
PA - Homer City 2
ME - William F Wyman 4
OH - Muskingum River 5
VA - Yorktown Power Station 3
MA - Brayton Point 4
PA - Shawville 3,4
MA - Canal Station 1
NH - Newington 1
PA - Keystone 1
IN - Rockport MB1,MB2
PA - Keystone 2
VA - Yorktown Power Station 1,2
KY - Big Sandy BSU1,BSU2
MA - Canal Station 2
OH - Muskingum River 1,2,3,4
GA - Harllee Branch 3&4
MI - Trenton Channel 9A
PA - Brunner Island 1,2
MI - St. Clair 6
WV - Kammer 1,2,3
IN - Michigan City Generating...
IN - Tanners Creek U4
PA - Brunner Island 3

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Conclusions

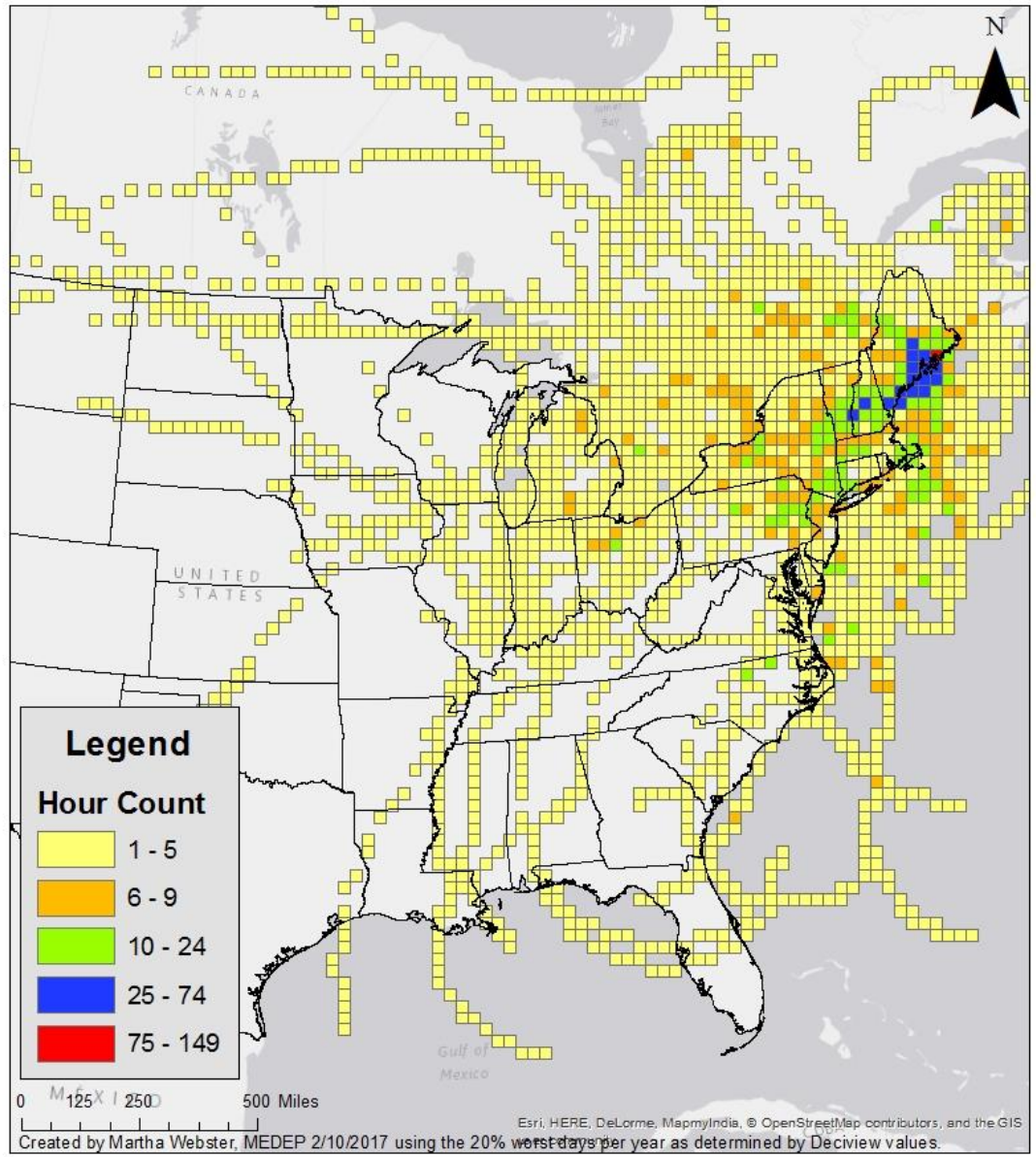
- Significant improvements in EGU visibility impacts have occurred since 2002
  - Even more have occurred since 2011
- 95th Percentile emission impacts demonstrate the potential for sources as far away as Texas to affect MANE-VU Class I areas by 1 Mm^{-1} or more
- Weather variability can play a large role in which facilities impact MANE-VU Class I areas
- Nearby stacks have a greater impact due to proximity, even when well controlled
  - Level of control and frequency of dispatch should be considered in further analyses

20% Most Impaired Day Back Trajectories

- Used HYSPLIT to analyze 500m, 72-hour back trajectories on the 20% most impaired days
- Analyzed all 5 monitored MANE-VU Class I Areas and 3 nearby SESARM Class I Areas
- Acadia's 2011 back trajectories will be shown as an example
  - Example 1: count of 20% most impaired day back trajectories throughout the year
  - Example 2: 20% most impaired day back trajectories for winter along with speciated data
- Comments are due on May 2 and can be sent to jjakuta@otcair.org

Acadia NP Maine BackTrajectory Hourly Endpoint Counts for 20% Most Impaired Days in 2011

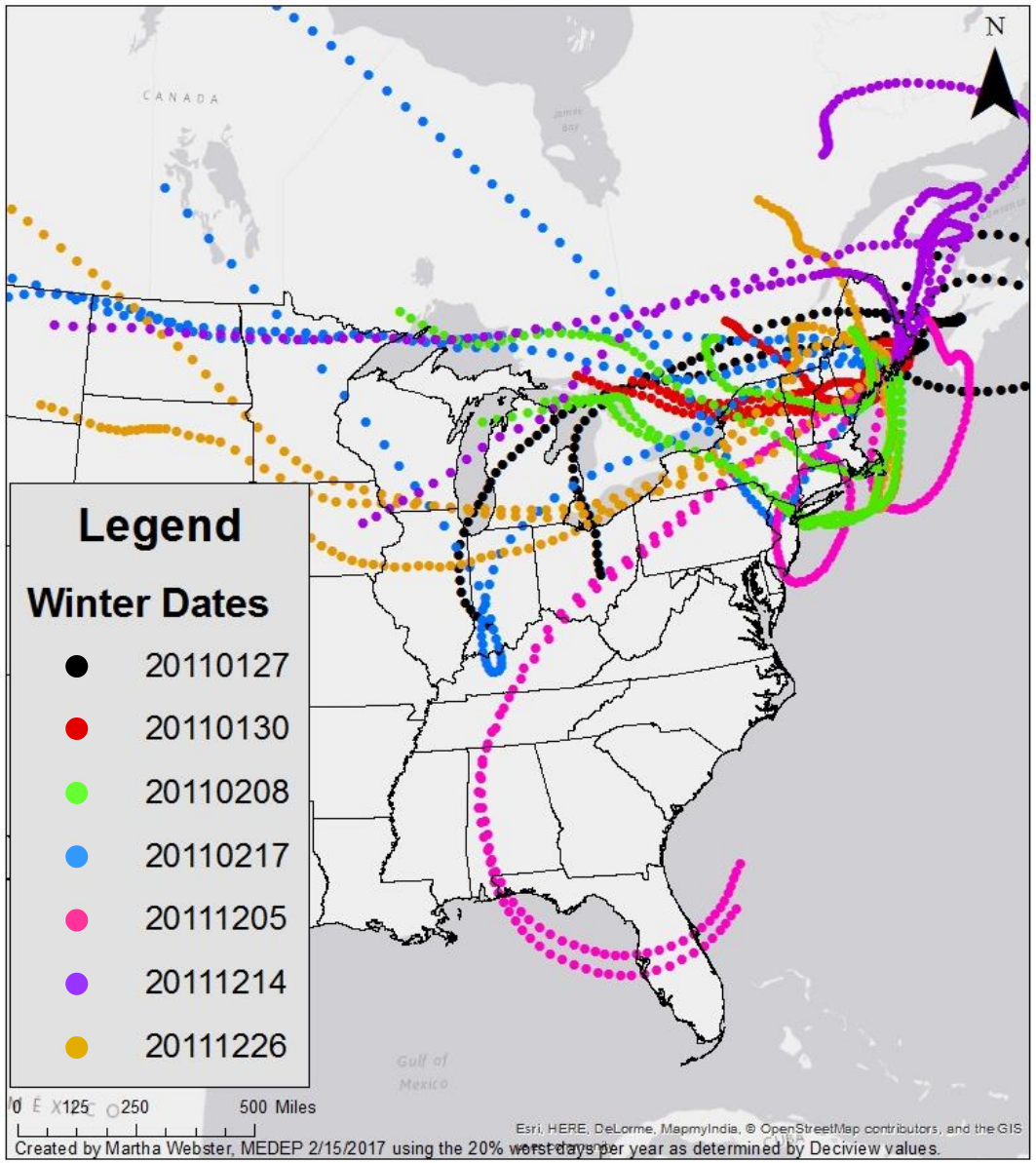
These 500m trajectories were modeled by NOAA's HYSPLIT model.
72 hour back trajectories were created 4 times per day at 3 AM & PM and 9 AM & PM.
2011 trajectories used EDAS 40km MET.
Grid cells are 25 X 25 Miles



Created by Martha Webster, MEDEP 2/10/2017 using the 20% worst days per year as determined by Deciview values.

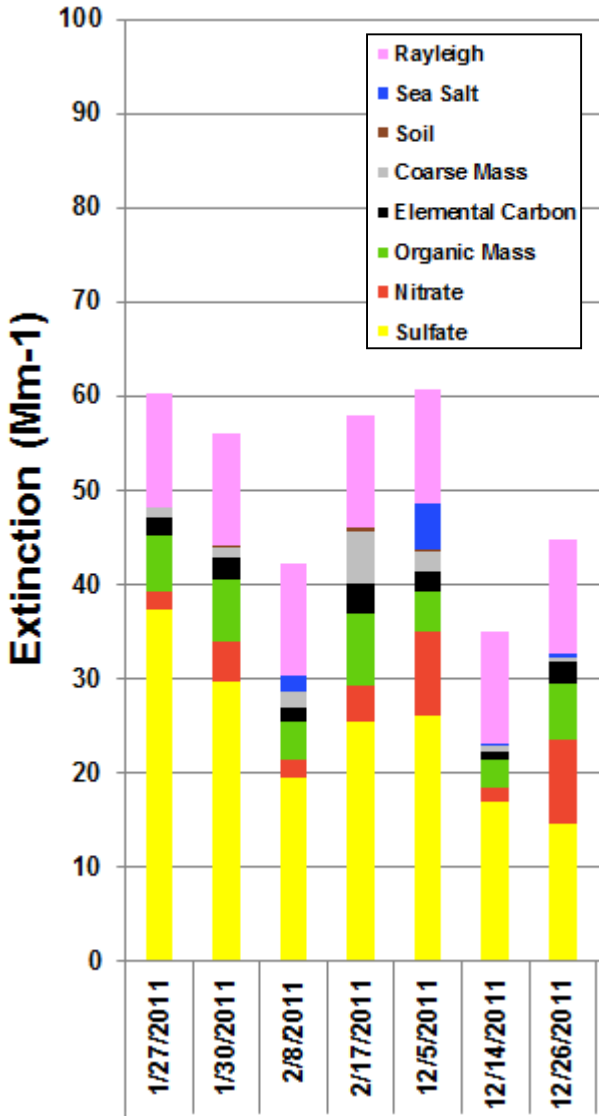
Acadia NP Maine Date Specific BackTrajectory Hourly Endpoints for 20% Most Impaired Days in 2011

These 500m trajectories were modeled by NOAA's HYSPLIT model.
72 hour back trajectories were created 4 times per day at
3 AM & PM and 9 AM & PM.
2011 trajectories used EDAS 40km MET.



Created by Martha Webster, MEDEP 2/15/2017 using the 20% worst days per year as determined by Deciview values.

Acadia – ME: Light extinction (Mm-1) for 20% most impaired days in Winter 2011



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Questions?