MANE-VU Technical Support Committee Update

OTC/MANE-VU Fall Meeting: November 17, 2016

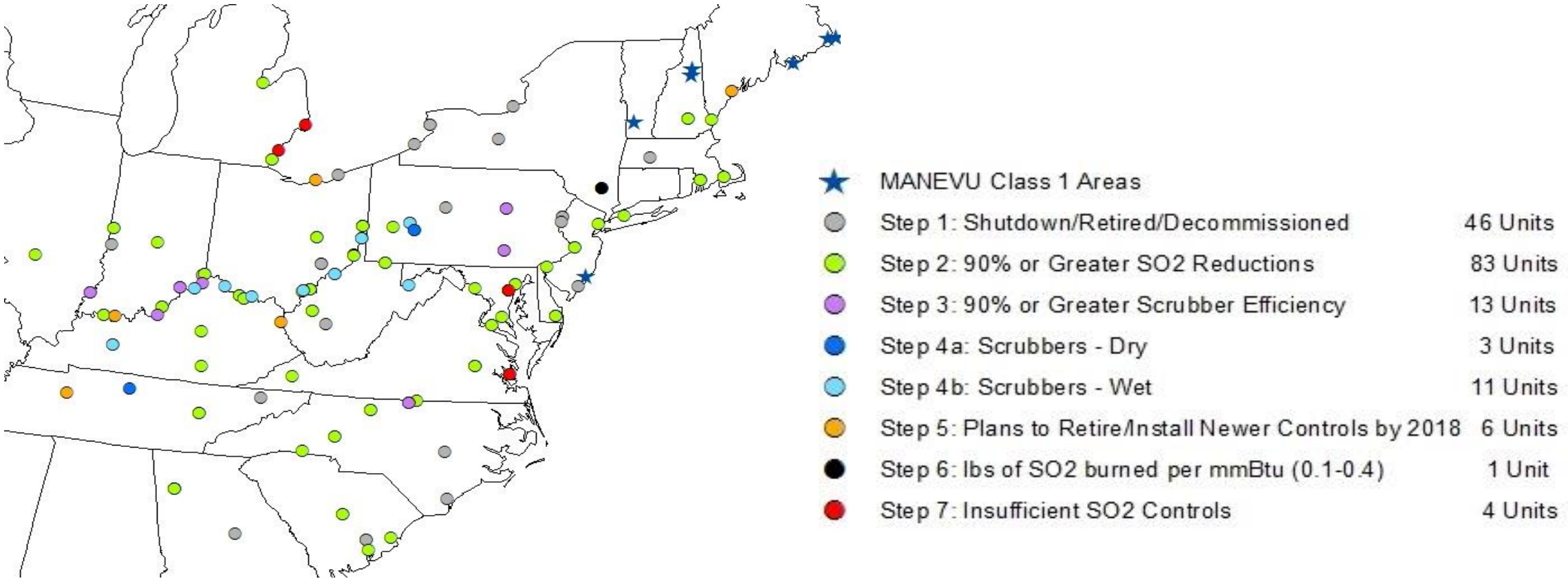
Washington, DC

Overview

1. 2008 Planning Retrospective
2. Action Plan & Schedule Updates
3. 4-Factor Data Collection
4. RPG Modeling
5. Monitoring Data
6. Contribution Analysis

Retrospective: 167 Stacks

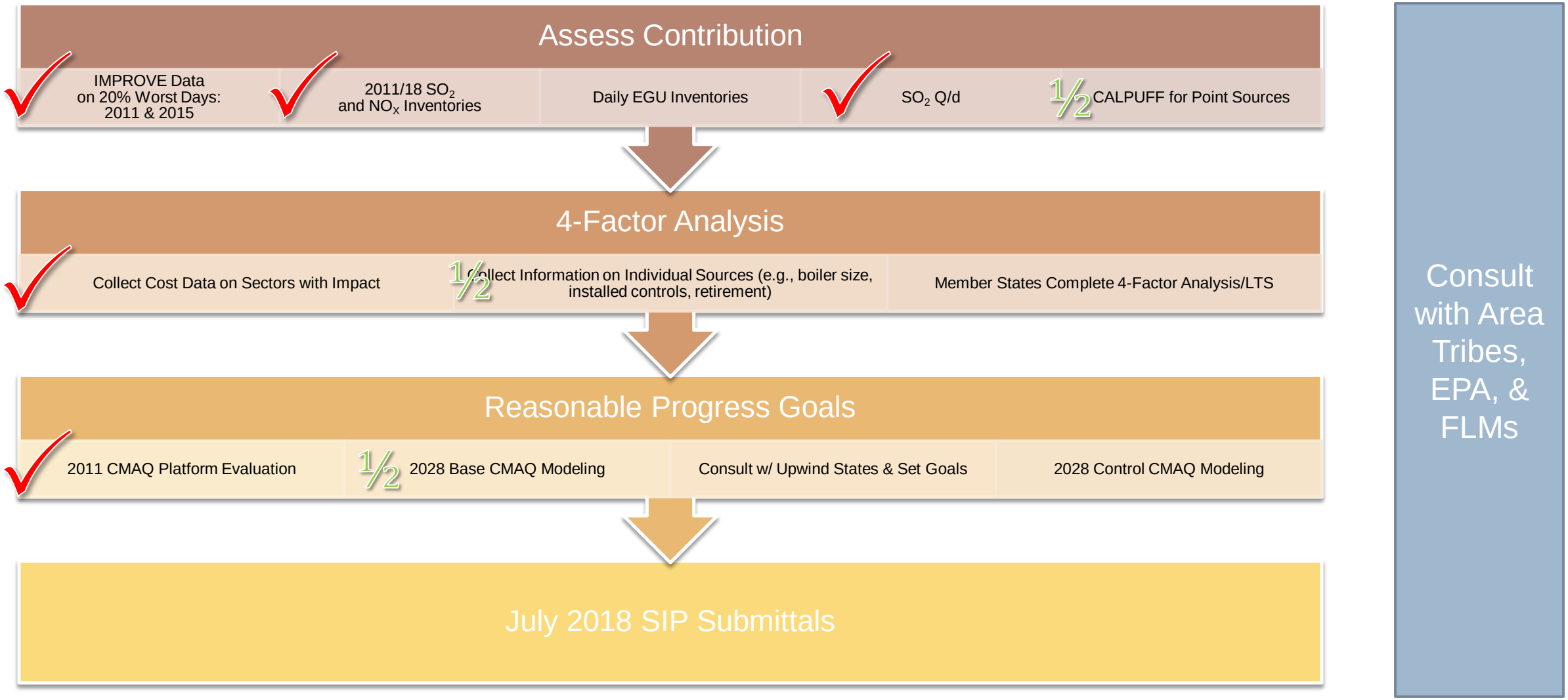
- Reviewed the status of the 167 stacks using 6 criteria
- Included changes based on stakeholder comments from Spring Meetings
- Final document posted on MANE-VU website



Retrospective: Low Sulfur Fuel Rule (as of 9/2016)

Low Sulfur Distillate Rules/Statutes (ppm)												
	CT	**DC**	**DE**	**MA**	**MD**	**ME**	**NJ**	**NH**	**NY**	**PA**	**RI**	**VT**
500	2014	2016		7/14	2016		2014			7/16	2014	7/14
15	2018	2018	2017	7/18		7/18	2016	7/18	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)	7/18 (#5/#6)	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								7/18 (#4)		7/16 (#4)		7/18 (#4)
Ban		2016 (#5/#6)							NYC #6 Ban 7/15 #4 0.15% 10/12 Ban 2030			

MANE-VU: Regional SIP Approach (simplified)



Data Collection Needed for Conducting 4-Factor Analyses

- Sectors
  - Updated SO_2 and NO_X technology and cost data for the following sectors:

EGUs	ICI Boilers	Heating Oil	Residential Wood Combustion	Outdoor Wood Fired Boilers

- High Impact EGUs/Industrial Sources
  - Data Collected:

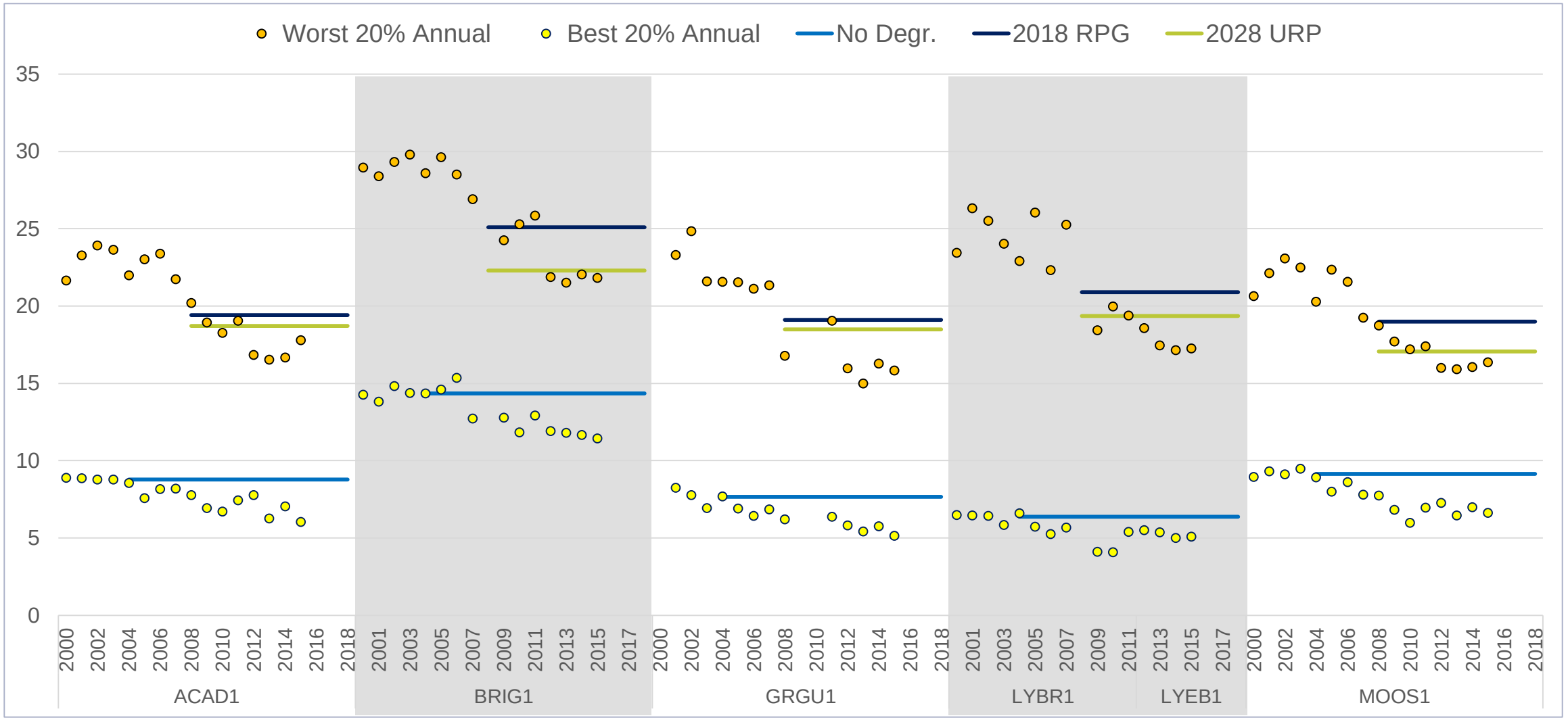
2011, 2014, & 2015 SO_2 Emissions	Installed/ Planned Controls	Permit Limits/Consent Decrees	Number and Size of Boilers

  - Industrial Sources were out for comment until 10/21 and no feedback received on the second round
  - EGUs under state review

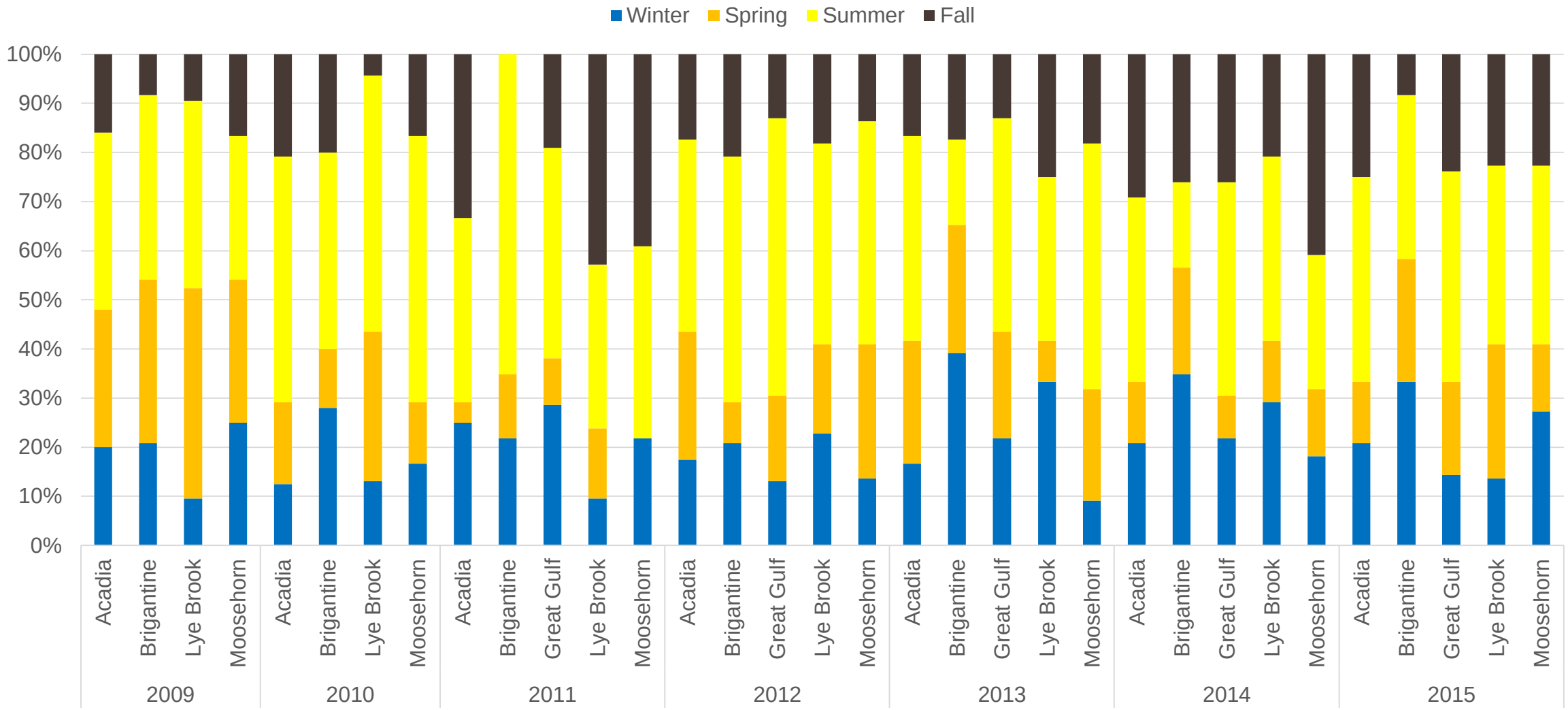
RPG Modeling 2028

- Inventories complete and processed through SMOKE
- Annual 2028 base case modeling began in September and is being reviewed
- Modeling Platform TSD was written through the OTC Modeling Committee
  - Regional Haze 2028 results will be added as an addendum or an update
- One more run might be necessary! A 2028 Control Case
  - Cannot run Control Case modeling until after Consultation

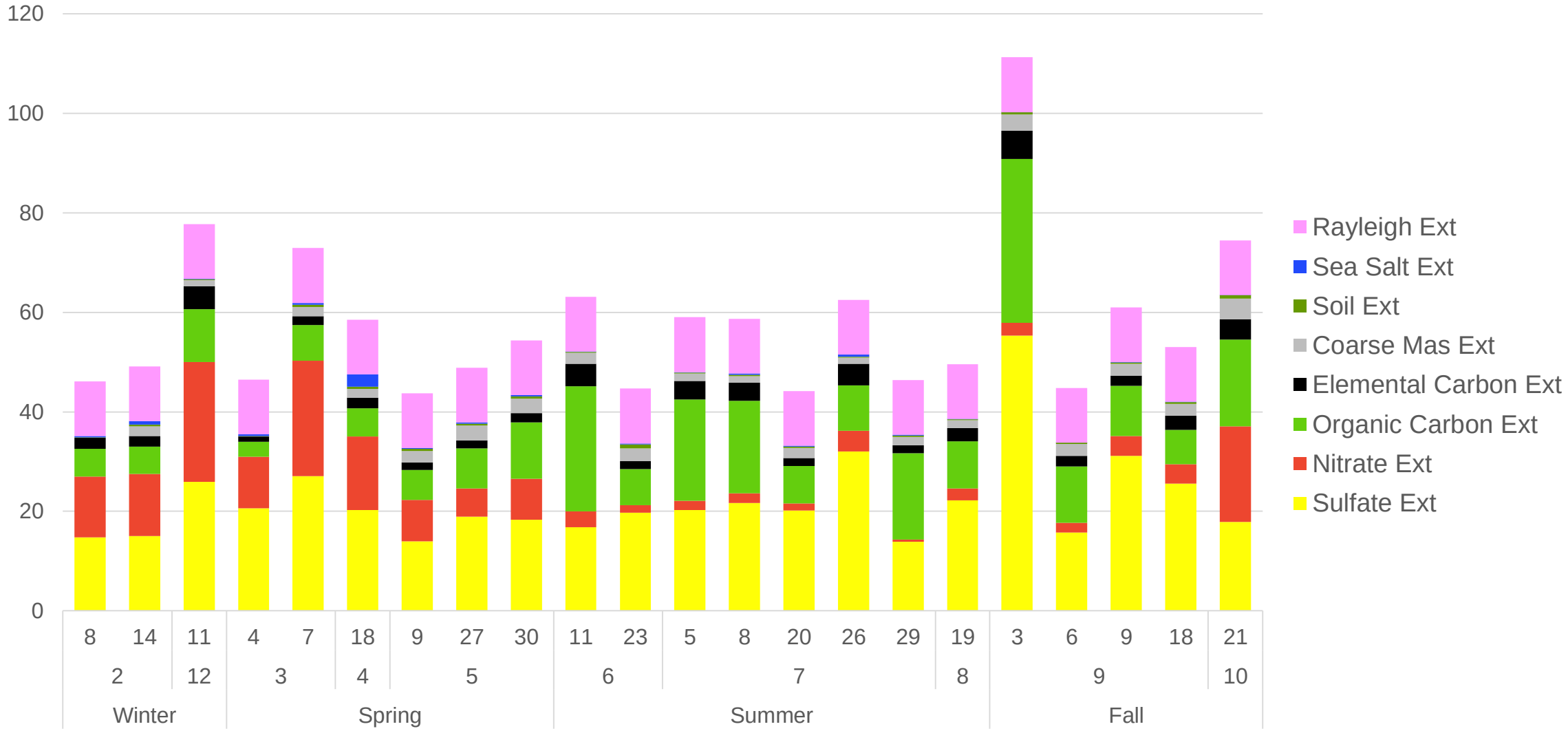
Progress at Monitored Class I States in MANE-VU using Current IMPROVE Algorithm



Percentage of 20% Most Impaired Days by Season (current method)



Example: Light Extinction (Mm^{-1}) on 20% Worst Days in 2015 from a Lye Brook



IMPROVE Data Lessons

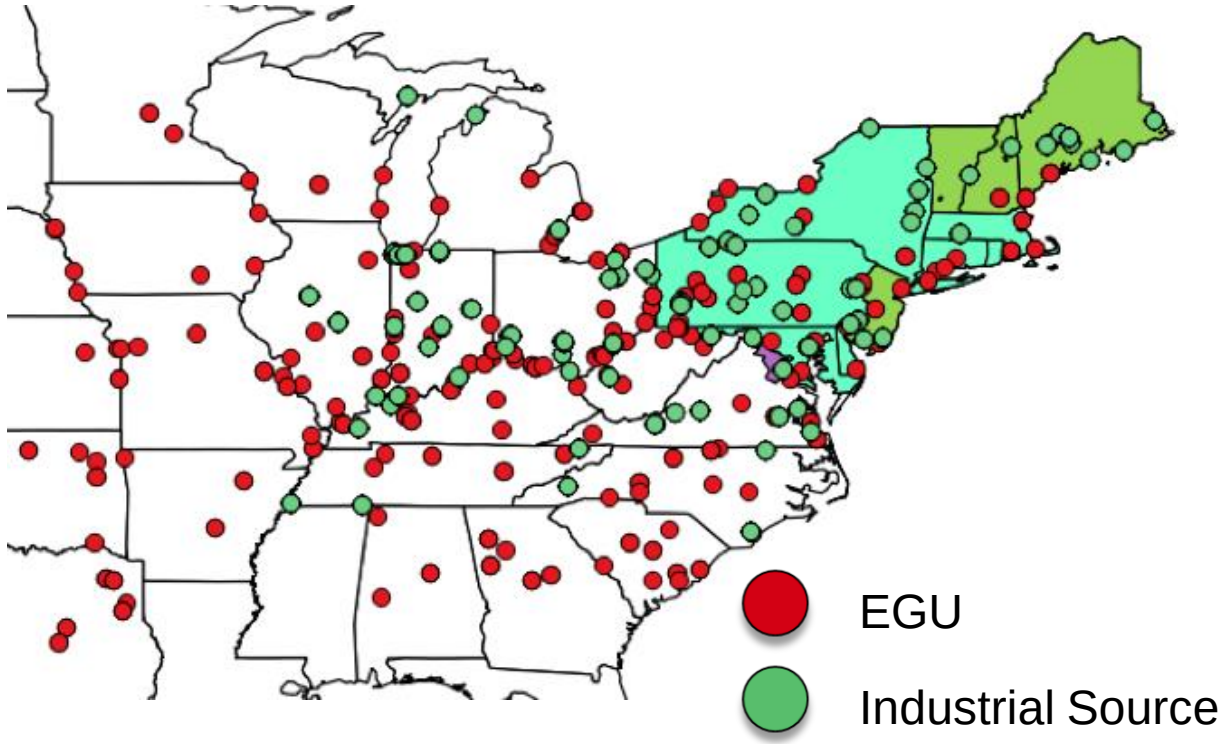
- Meeting 2018 RPGs
- Great Progress to 2028 URP
- Visibility Impairment not just a Summer Problem
- Sulfates important, but Nitrates and Organic Carbon are having impact
- Sulfates impact year round, Nitrates and Organic Carbon seasonally

Contribution Assessment

- Compiling the Results in a TSD
- Draft expected in Winter 2017
- Steps to be Completed
  - ✓ Met Adjusted Emissions/distance (Q*c/d)
  - ✓ 2002 SO_2 Ratio Scaling to 2011 & 2014
  - CALPUFF Modeling
  - Back Trajectories on Worst 20% Days
  - IMPROVE Data Analysis
  - In light of Draft Guidance: TSC is Considering Adding
    - Looking at daily inventories during visibility “events”

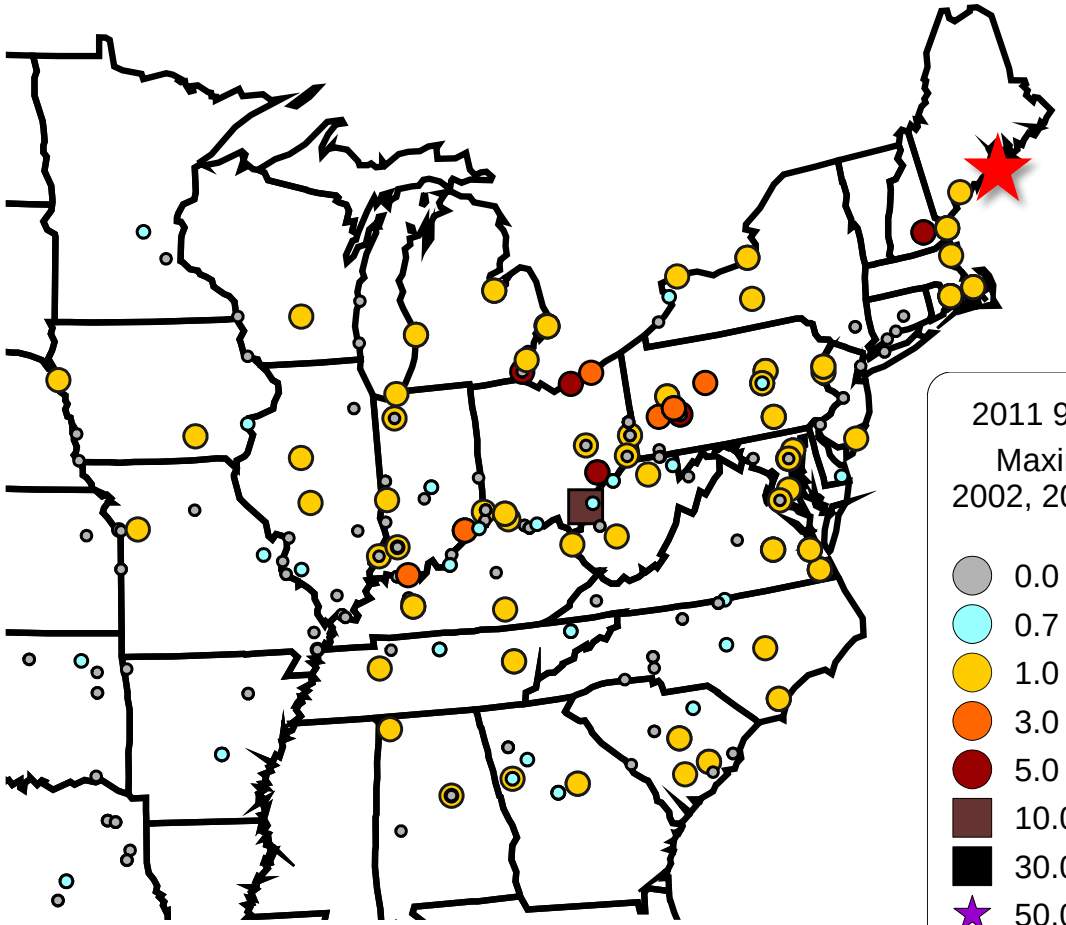
2016 CALPUFF

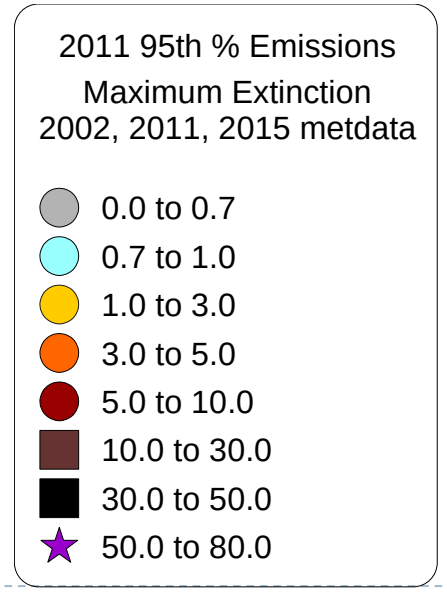
- Built from previous VT DEC and MDE platform development procedures
- Considered 2011 and 2015 SO_2 and NOx EGU emissions (CAMD and MARAMA)
  - CAMD 95th percentile SO_2 and NOx emissions
  - MARAMA annual emissions and stack parameters
- Considered 2011 typical day ICI facility emissions (MARAMA)
- Modeled with 2002, 2011 and 2015 meteorology (CALMET)



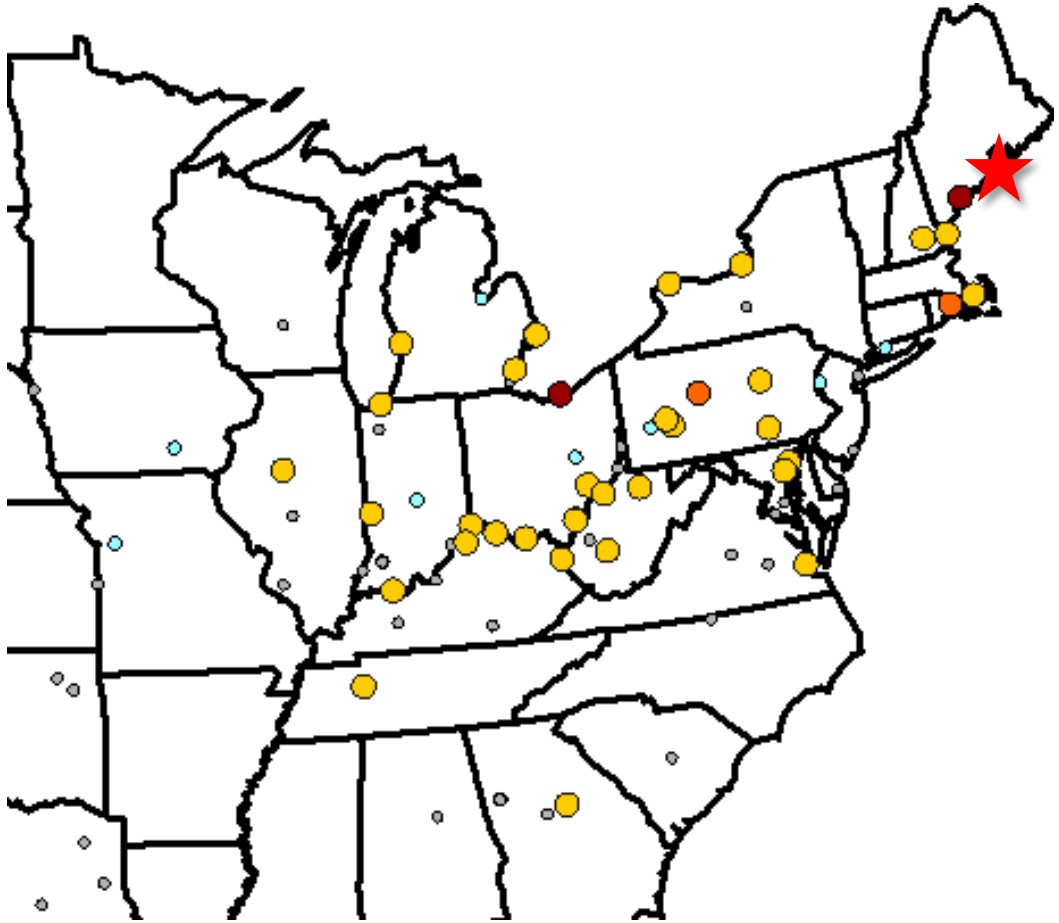
Acadia – Draft Max EGU Extinction over 3 Meteorology Years

2011 95th % Emissions

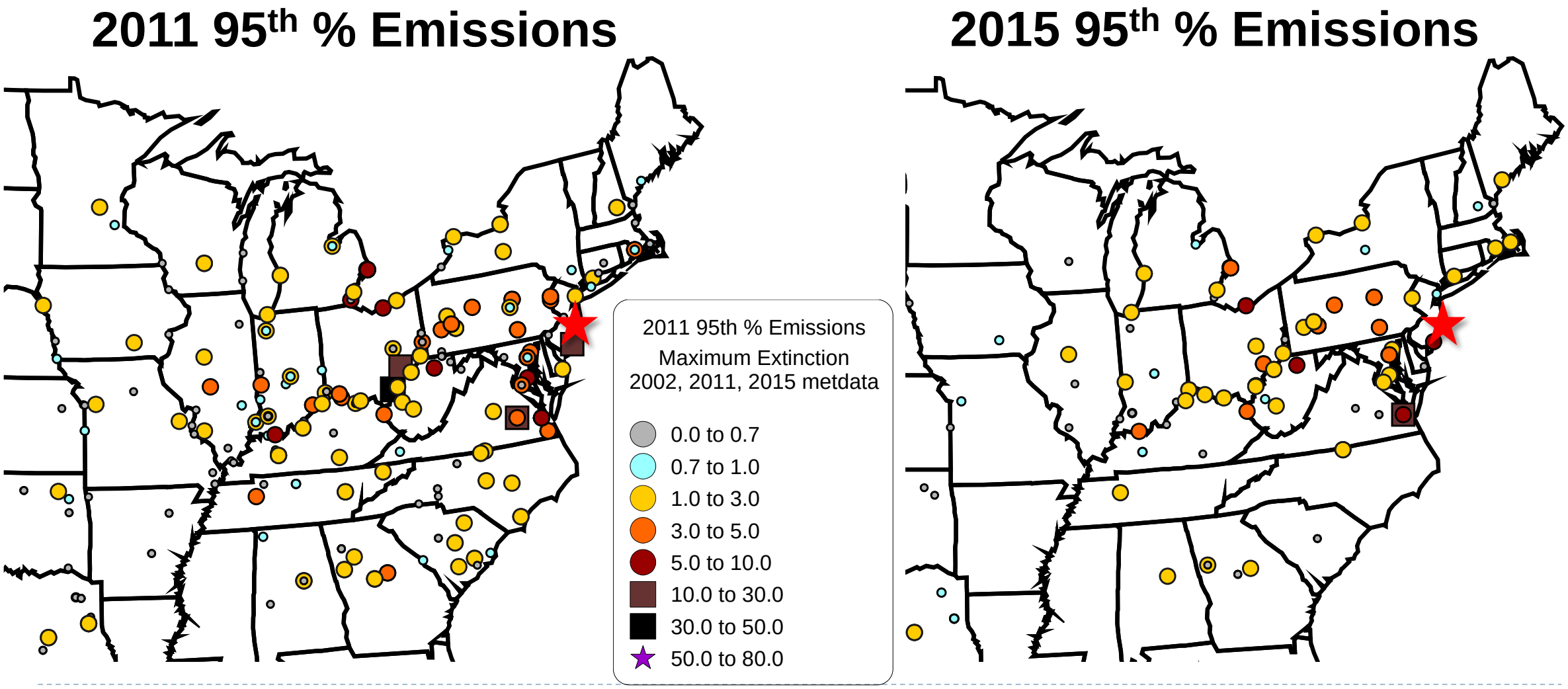




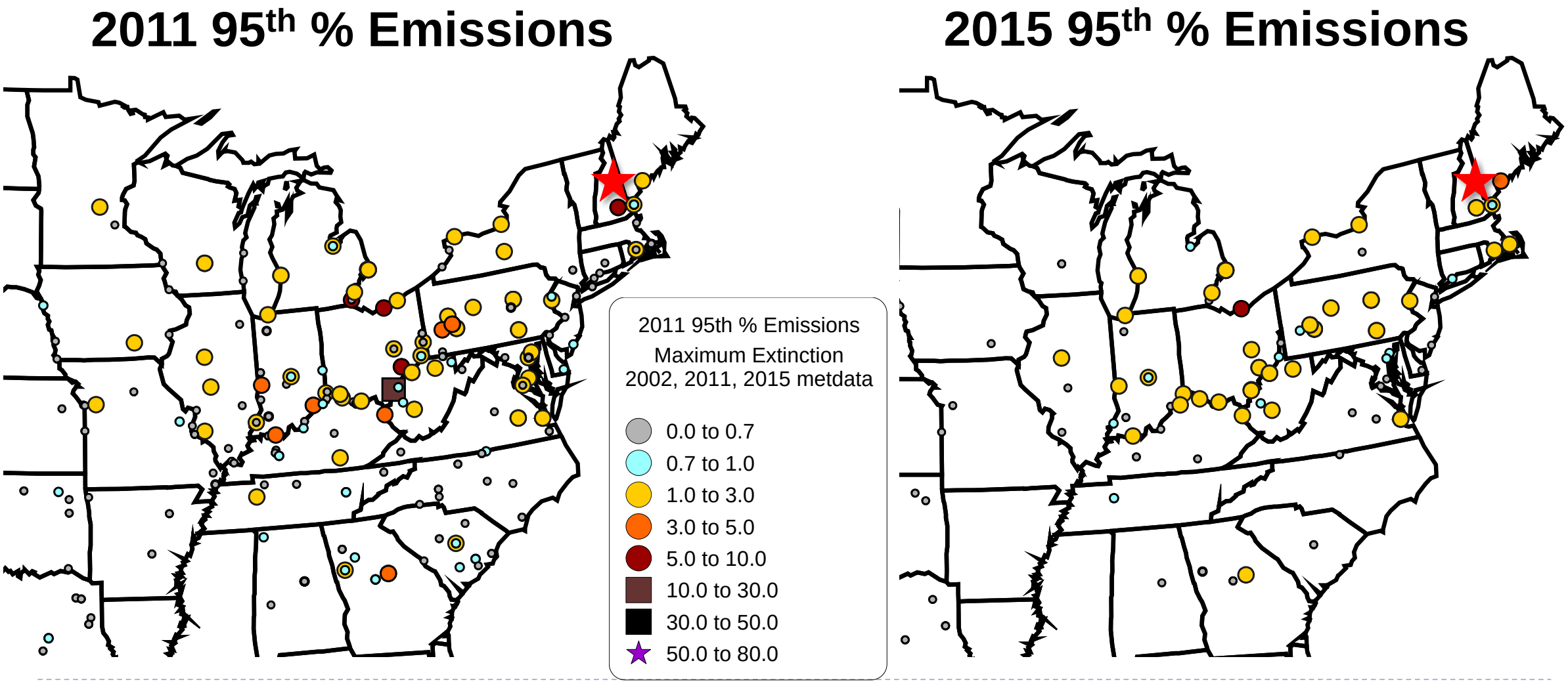
2015 95th % Emissions



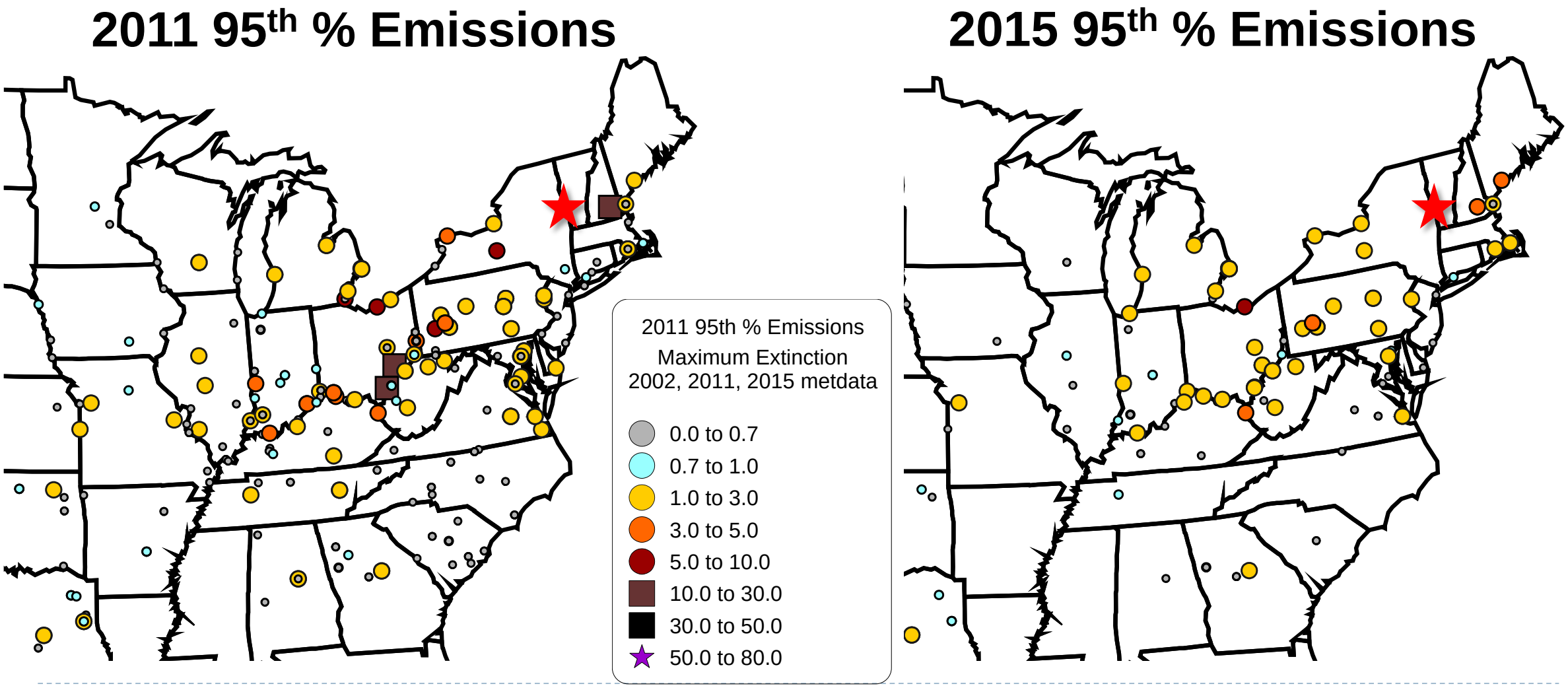
Brigantine - Draft Max EGU Extinction over 3 Meteorology Years



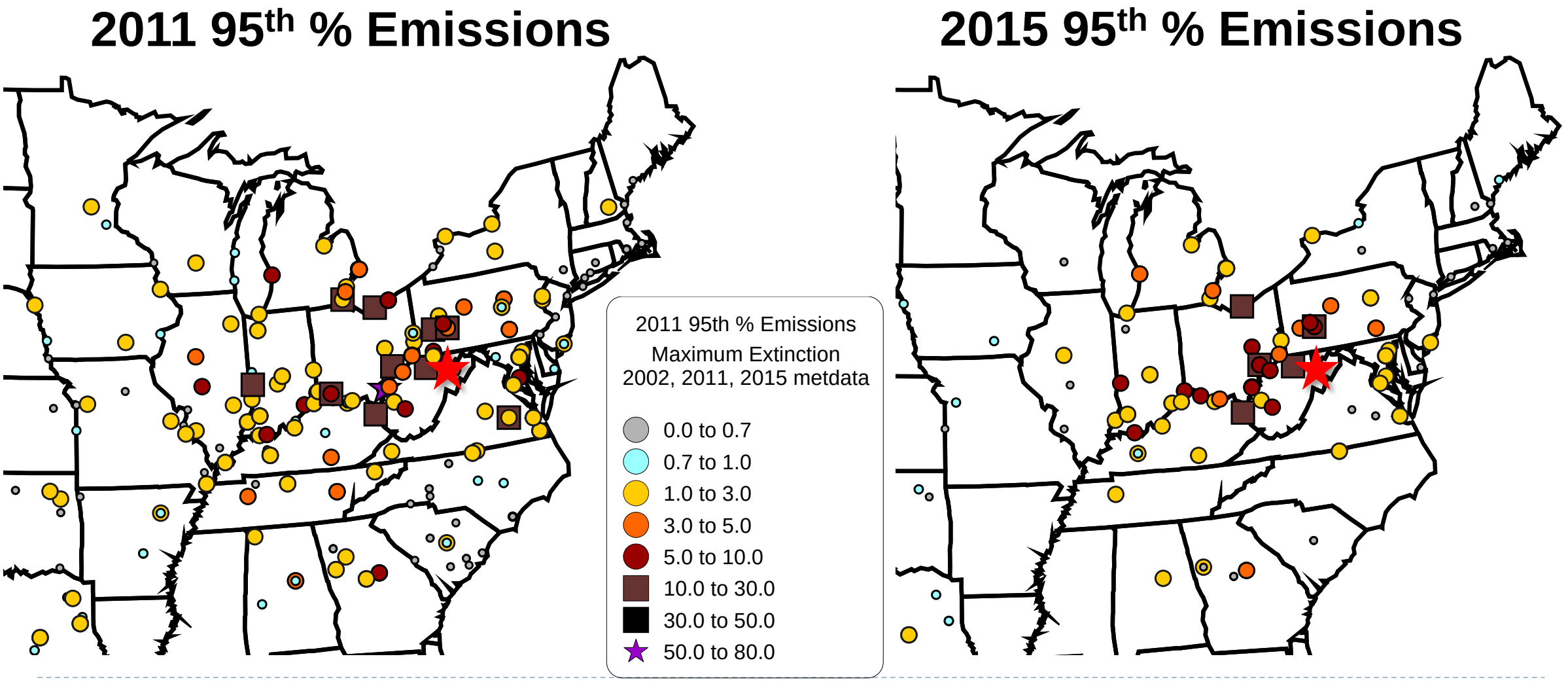
Great Gulf - Draft Max EGU Extinction over 3 Meteorology Years



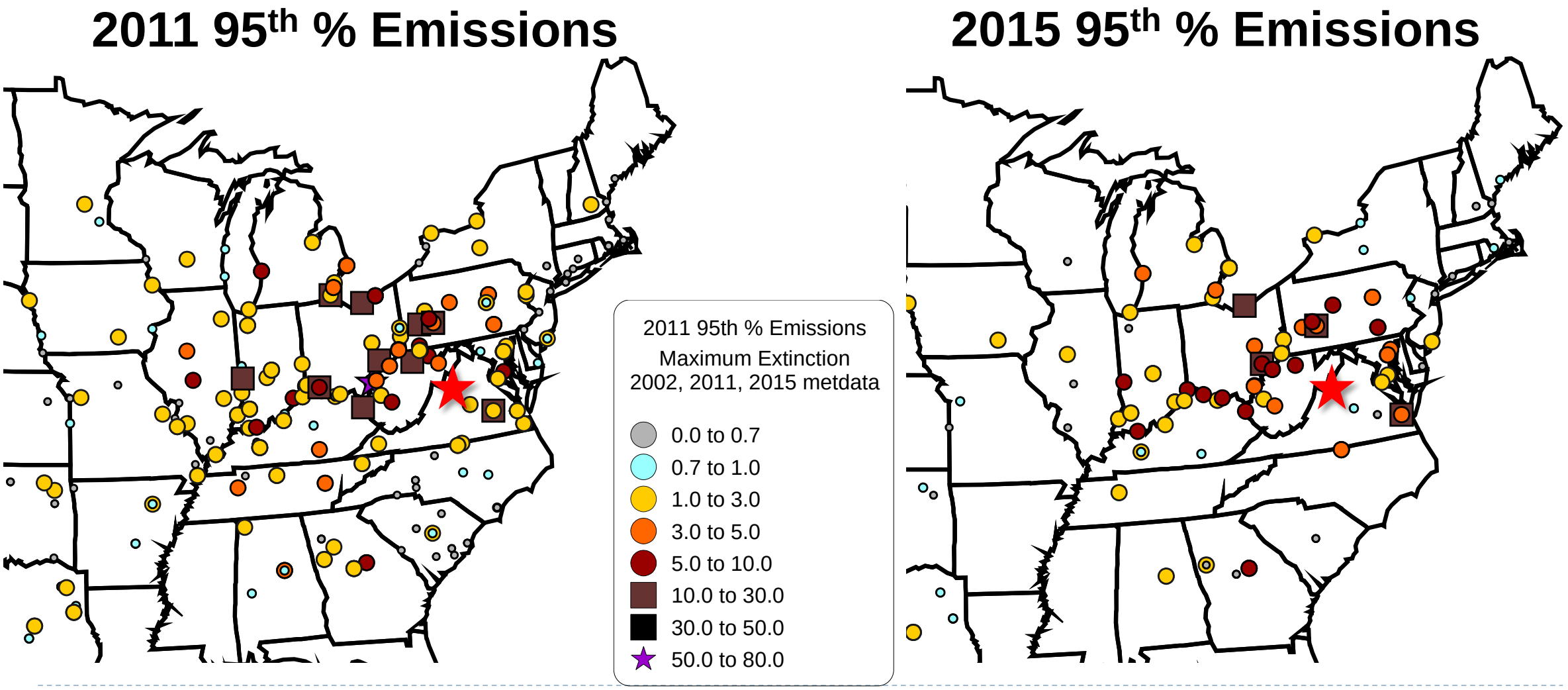
Lye Brook - Draft Max EGU Extinction over 3 Meteorology Years



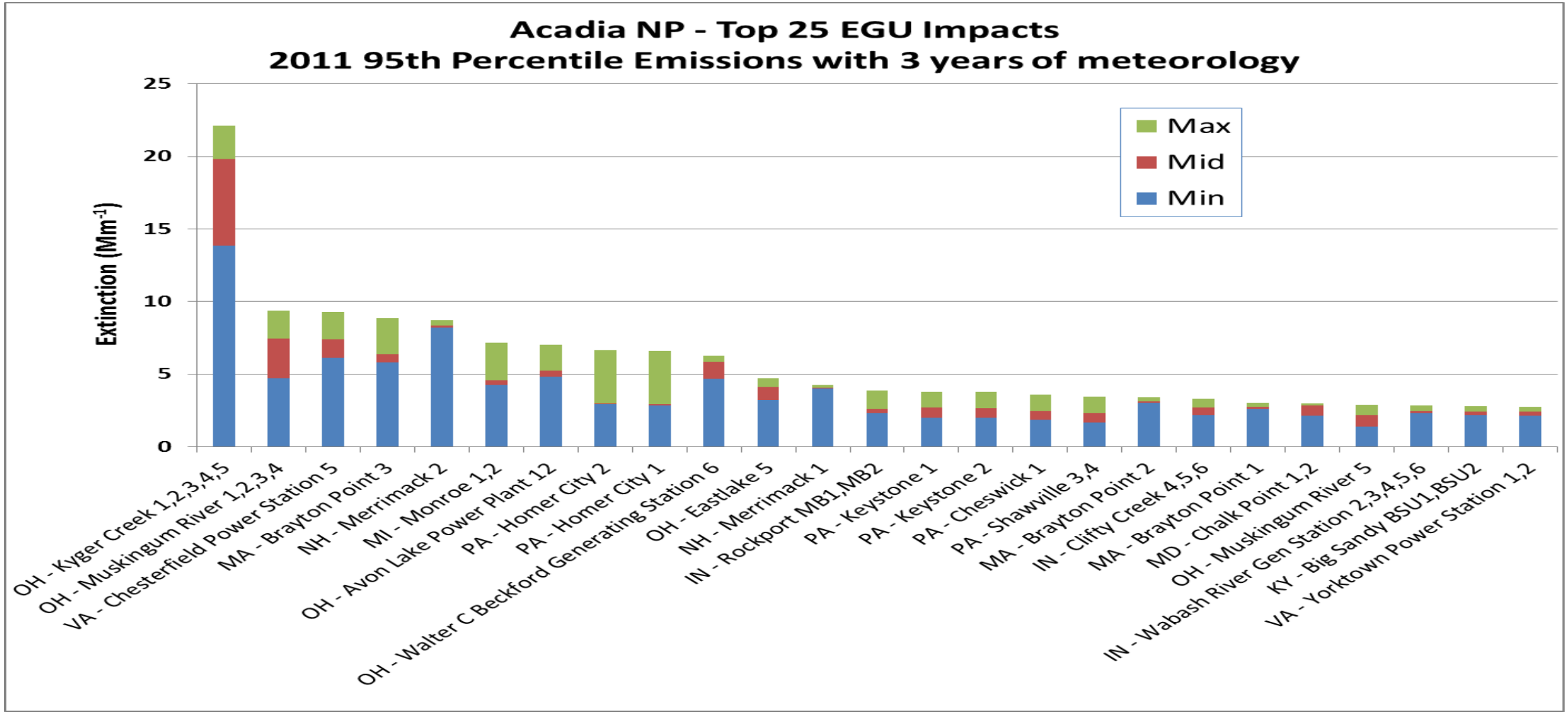
Dolly Sods - Draft Max EGU Extinction over 3 Meteorology Years



Shenandoah - Draft Max EGU Extinction over 3 Meteorology Years



Example: Top 25 Stacks over 3 Years of Meteorology (showing max, mid, and min meteorology year)

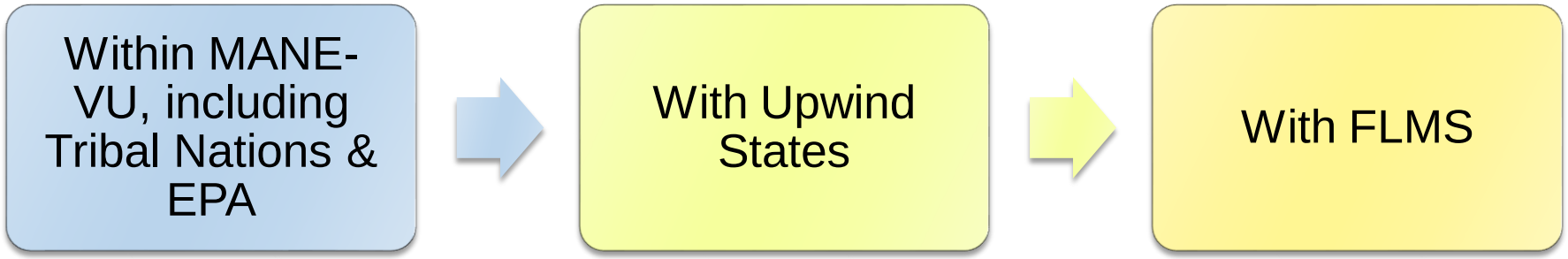


Preliminary Conclusions

- Significant improvements in EGU visibility impacts since 2002
  - Even more 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

Next Steps

- Complete Pre Consultation Technical Work by Spring 2017
- Support Consultation



- Develop Control Inventories & Run RPG Modeling

Questions?