

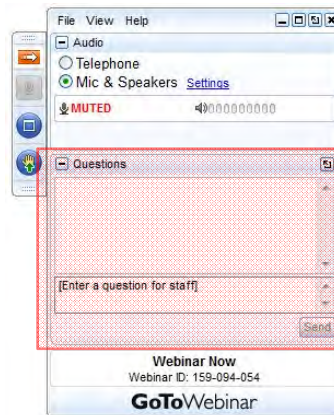


OTC ELECTRIC GENERATING UNIT 2018 EMISSION PROJECTIONS ERTAC EGU 2.2

- OTC modeling platform EGU inventory development
- ERTAC EGU Analysis Results
- Timeline for inclusion in OTC modeling platform

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Q & A



Eastern Regional Technical Advisory Committee (ERTAC)

ERTAC convenes ad-hoc groups to solve inventory problems

Collaboration:

- States - NE, Mid-Atlantic, Southern, and Lake Michigan
- Multi-jurisdictional organizations
- Industry

ERTAC EGU growth convened 2010

Goal: Build a low cost, stable/stiff, fast, and transparent model to project EGU emissions

Utility representatives provided guidance on model design & inputs

USEPA: Kept informed

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How does it work?

Starting Point:

Base Year Hourly CEM data by region

2007 and 2011 CEM data developed as base years by ERTAC team

Regional Growth Rates

Base – Department of Energy (EIA) Annual Energy Outlook (AEO)

Peak – North American Electric Reliability Corporation (NERC)

States provide info: new units, controls & other changes

Future hourly estimates

Available capacity is matched to projected demand

Unit capacity is never exceeded

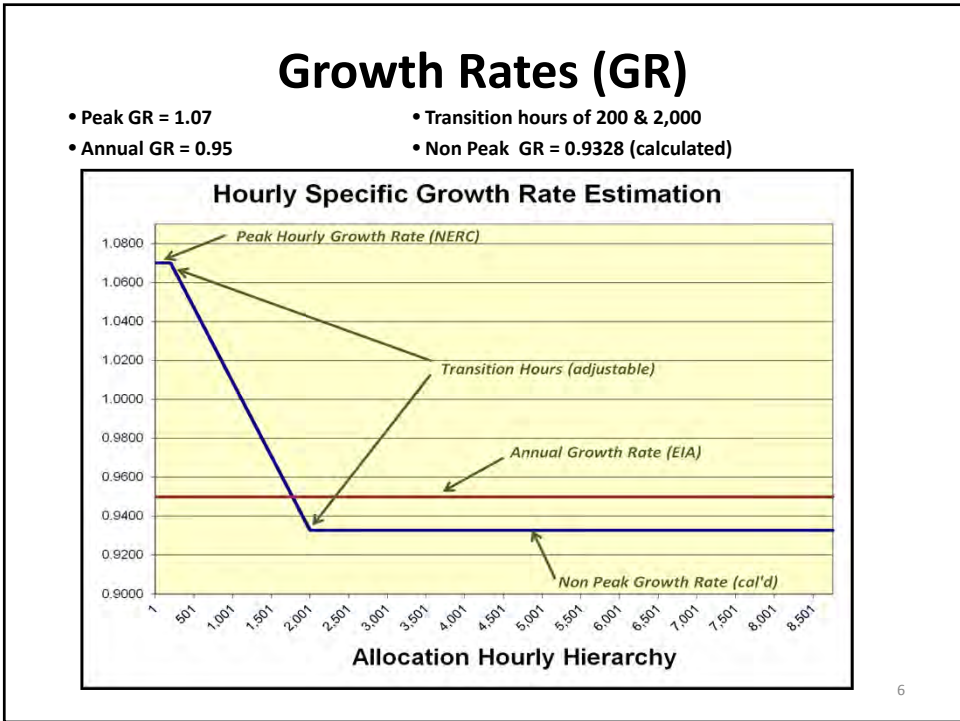
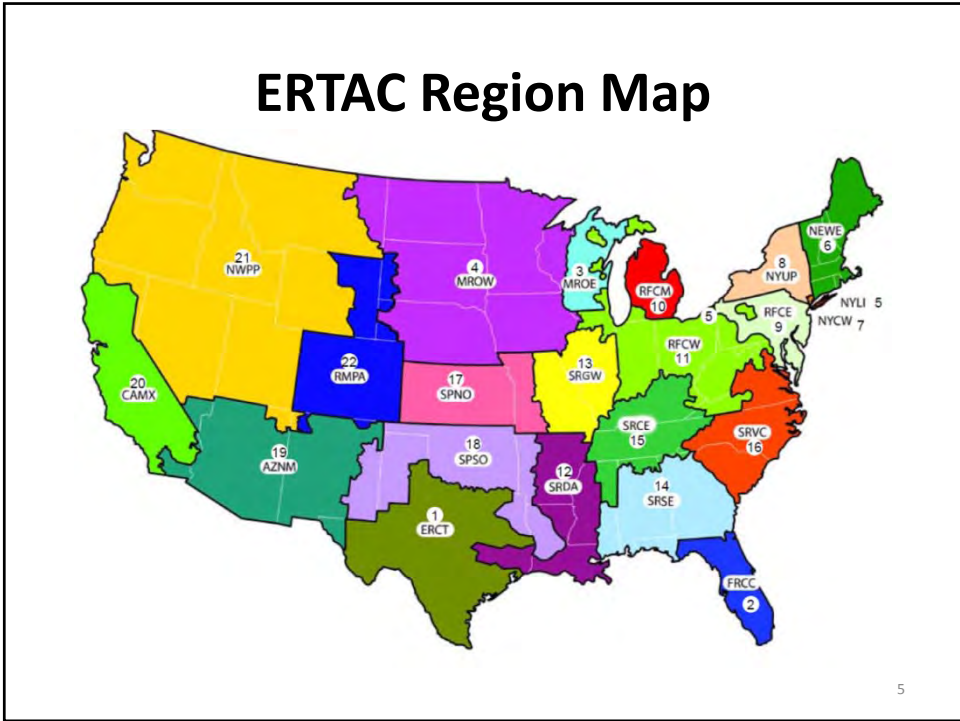
Excess Generation is applied to other available units or Generation deficit units created if demand exceeds capacity.

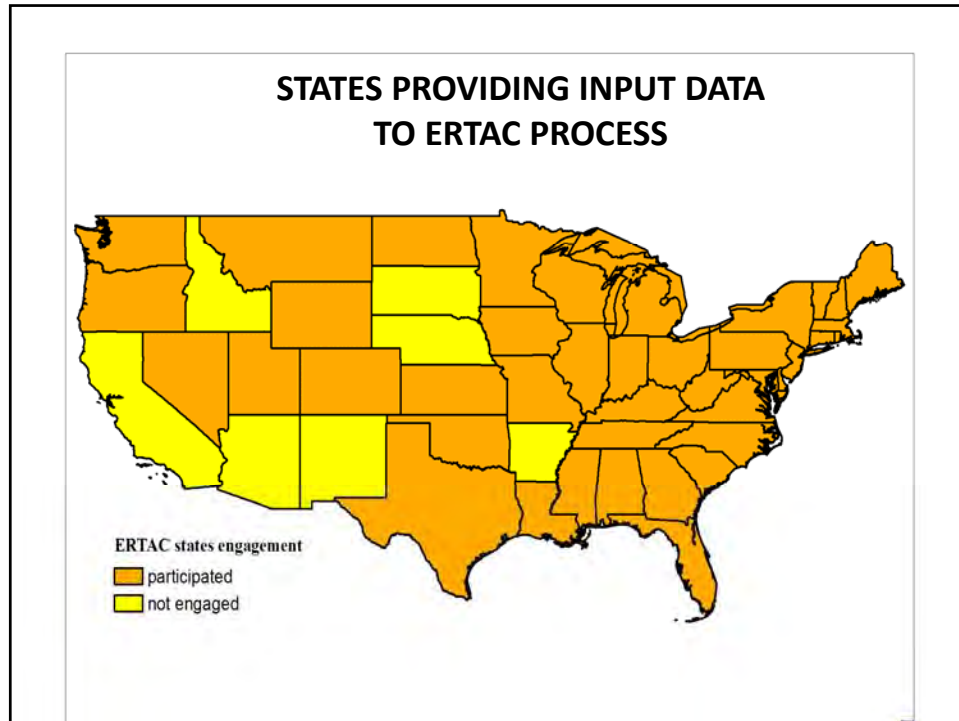
Base year activity is used as a pattern for future activity

Temporal profile matches meteorology

Calculate emissions and convert to SMOKE

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Benefits of ERTAC EGU Growth Tool

Conservative predictions

- No big swings in generation
- No unexpected unit shutdowns

Inputs are completely transparent

Software not proprietary

Hourly output files & reflect base year meteorology

- Hourly emissions reflect HEDD concerns

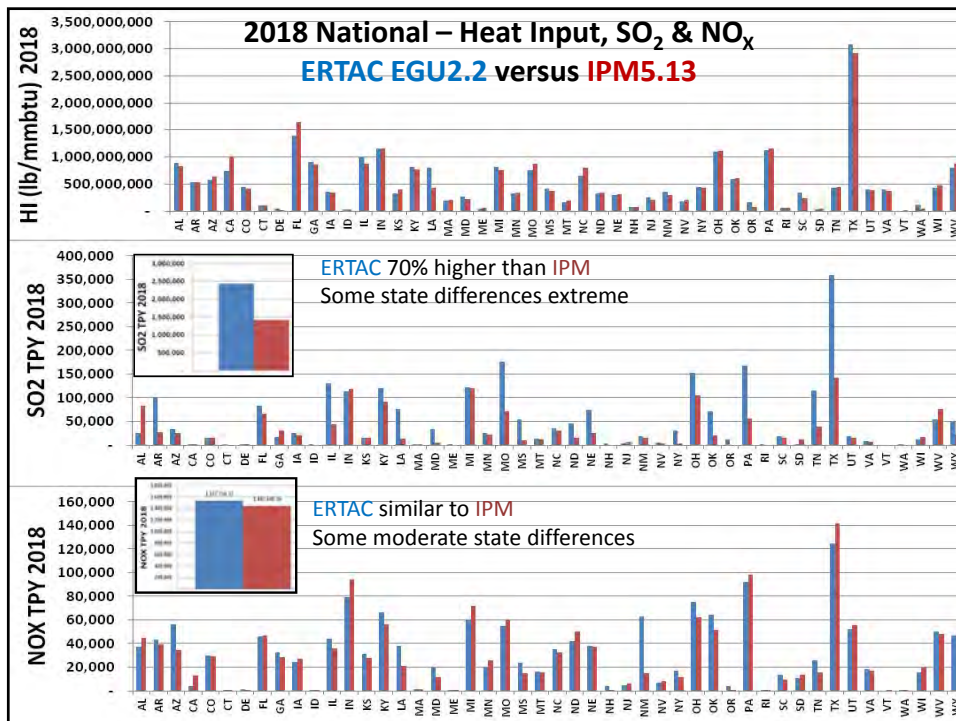
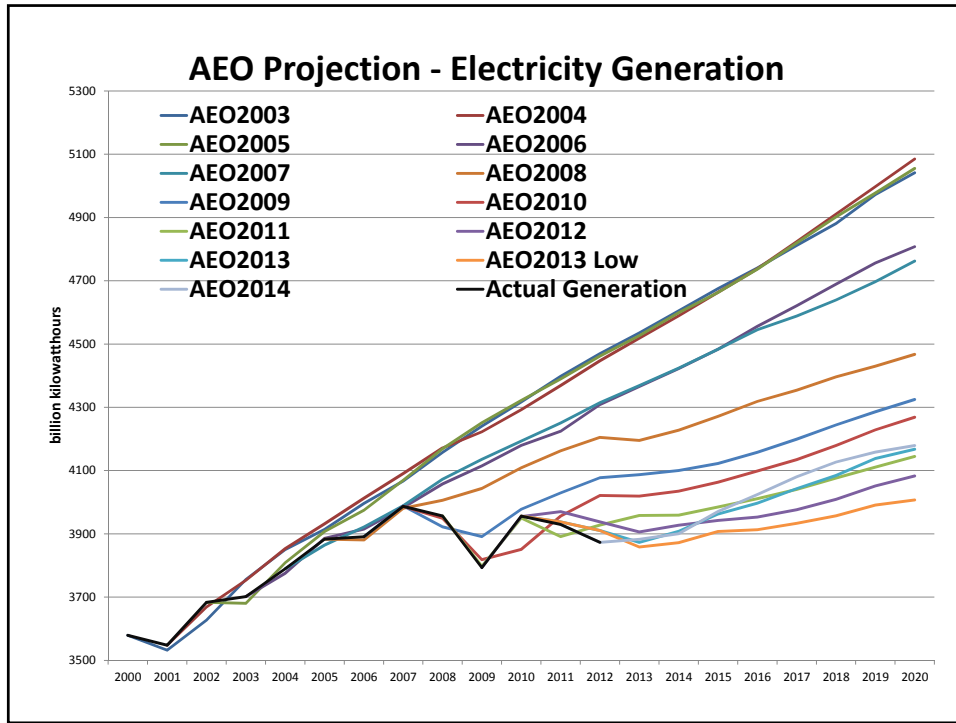
Quickly evaluates various scenarios

- Regional and fuel modularity
- Can test retirements, growth, and controls

Numerous states in MW, NE, and SE regions are running the model.

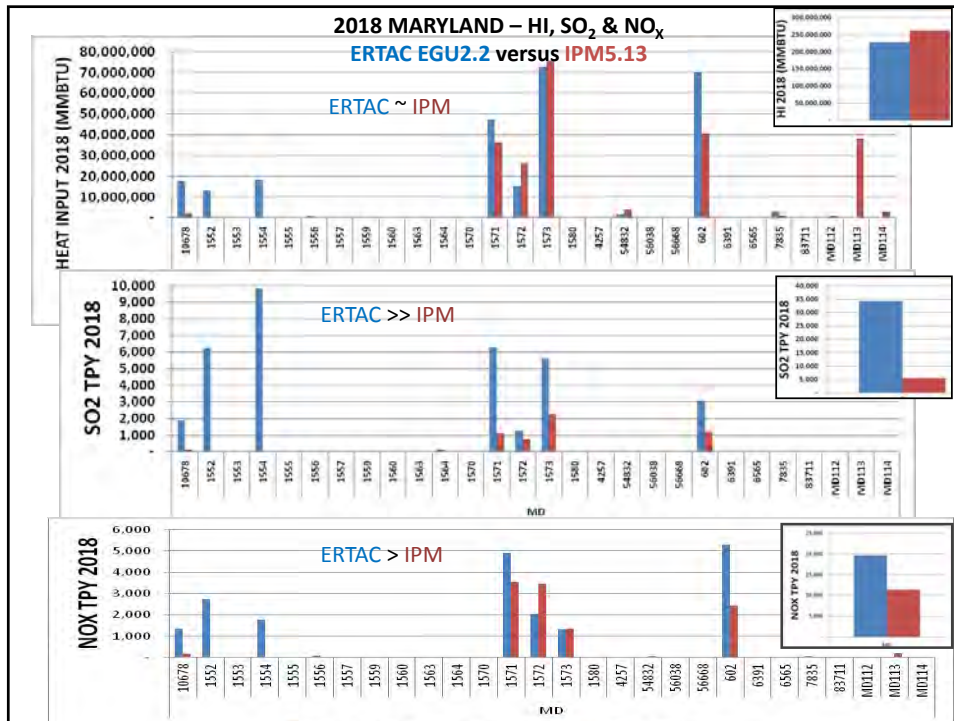
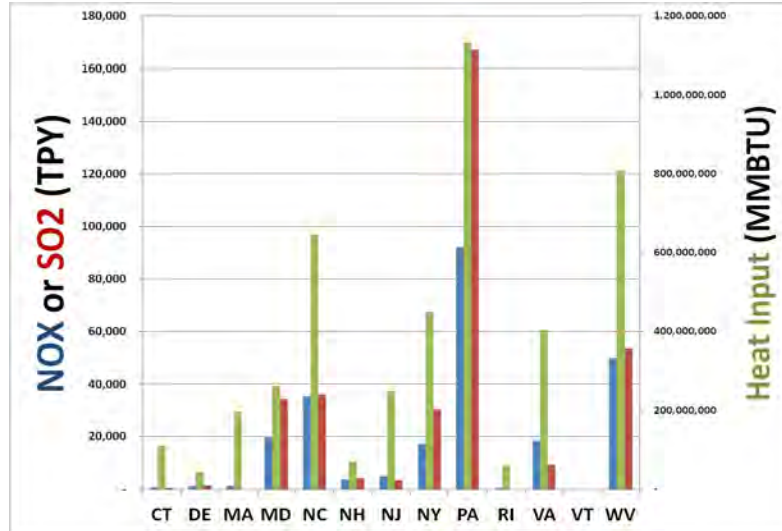
Code can be run by individuals with some knowledge of Perl, SQL-lite

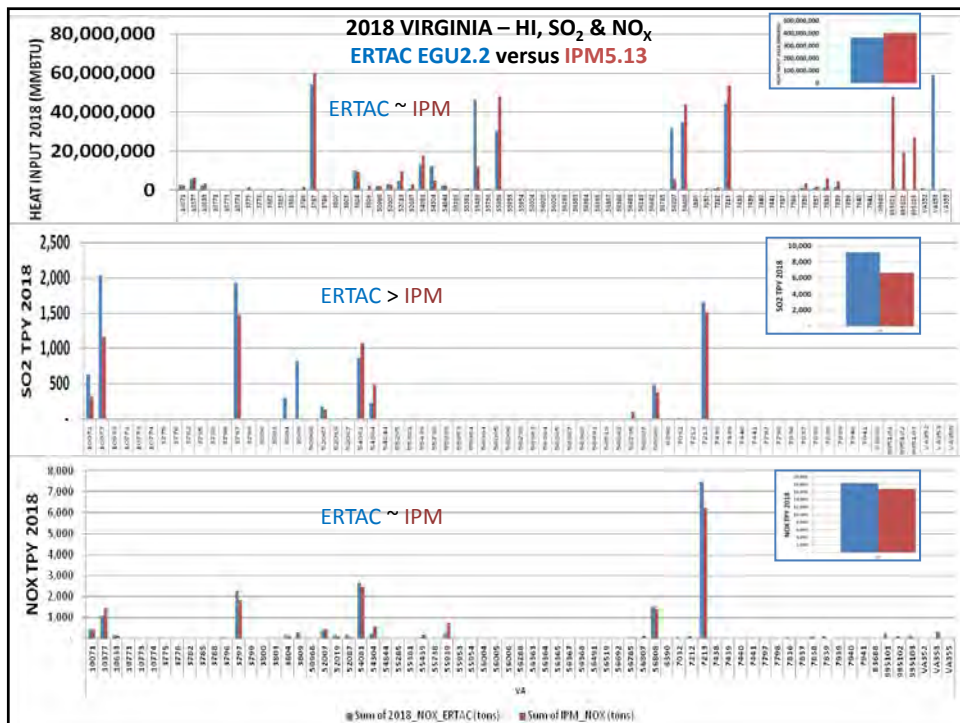
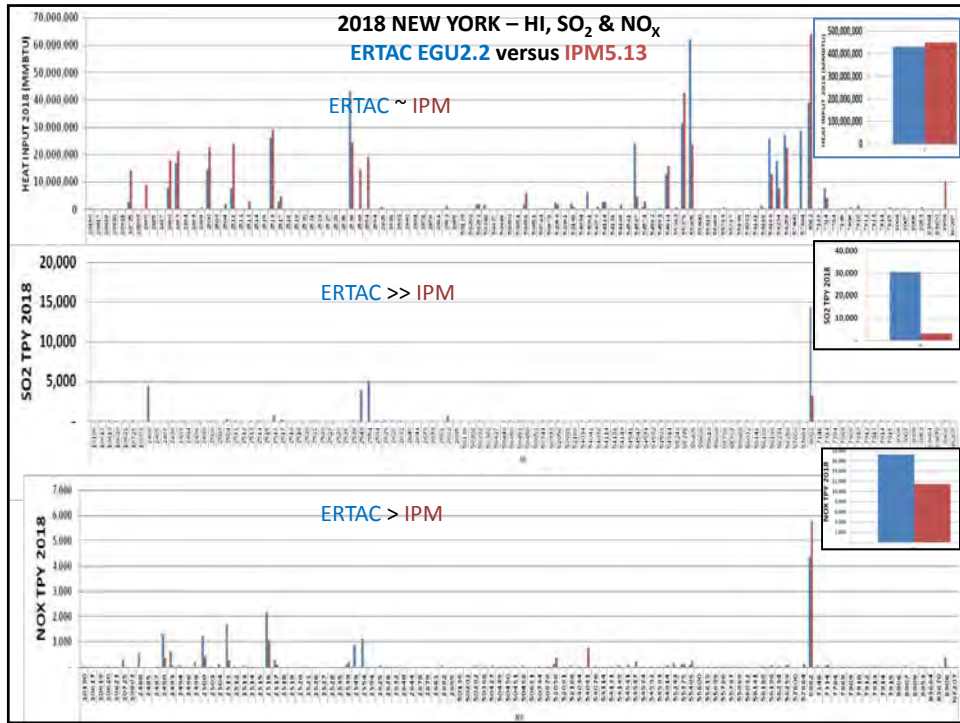
Some states are adding CO₂/GHG to the model.



Regional 2018 Emissions and Heat Input

ERTAC EGU V2.2



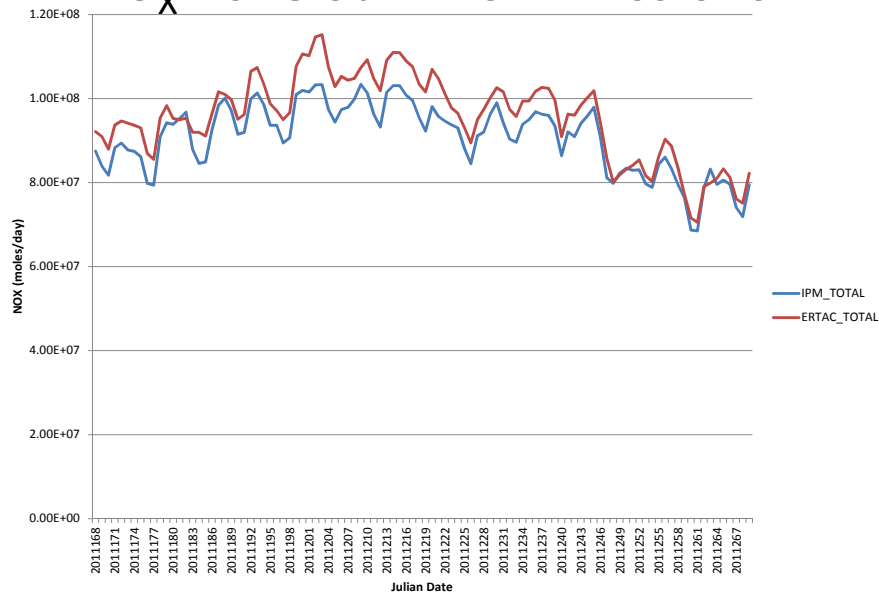


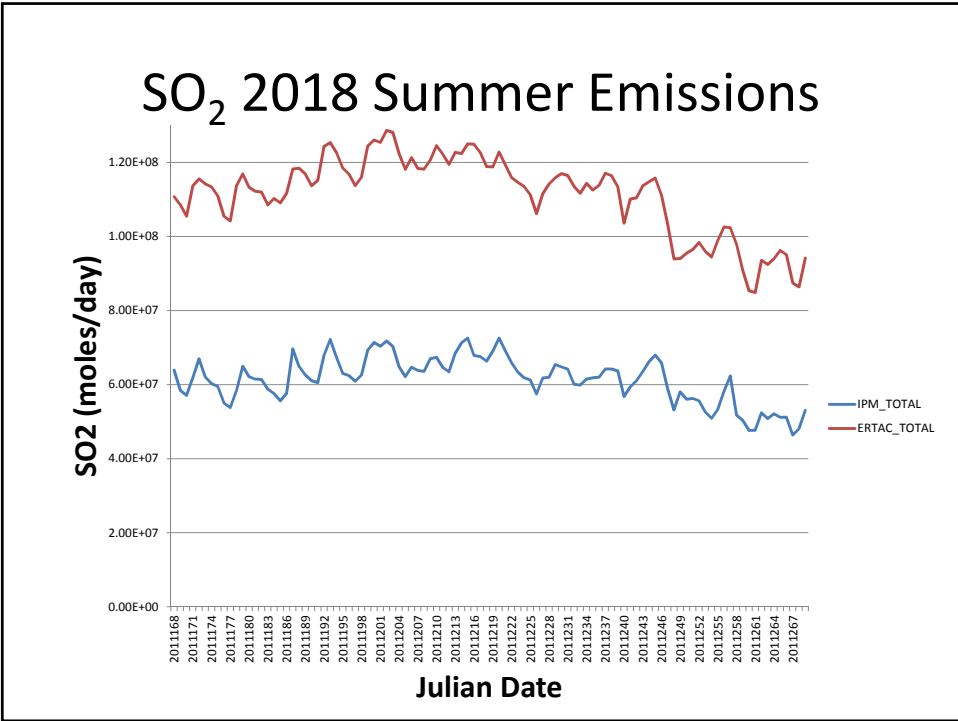
Conclusions

- 2018 Heat Input:** ERTAC & IPM similar
- 2018 SO₂ Emissions:** ERTAC much higher than IPM. IPM optimistic about MATS impact.
- 2018 NO_x Emissions:** ERTAC higher than IPM. IPM assumes use of control equipment that has not been used by facilities in recent years.
- IPM did not include all states inputs in NEEDS v5.13 database.**
- Unit Shutdowns:** IPM does not utilize units not anticipated for closure by states, particularly oil units.

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NO_x 2018 Summer Emissions





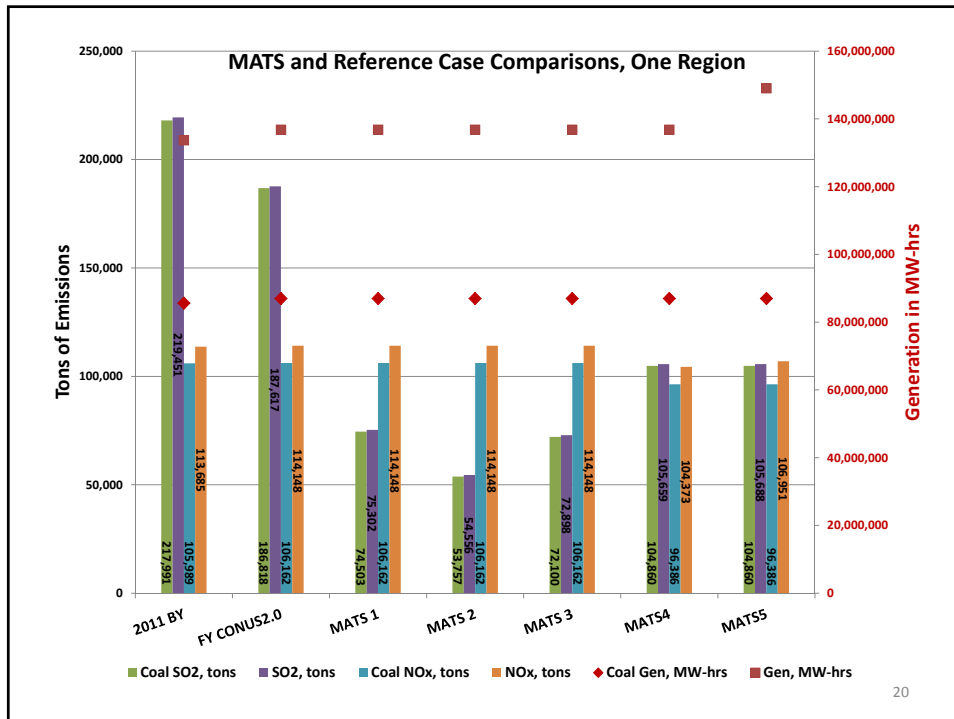
MATS

- **Base case projection includes the effects of MATS**
 - AEO2013
 - Regional impact - change in estimated FY coal generation
- **State staff provide unit changes caused by MATS**
 - Gasifications, coal unit retirements
 - Addition of acid gas controls
- **A lot of interest in how MATS might play out at the *unit level* for facilities that have not shared their plans with regulators.**

5 Scenarios for Meeting MATS

MATS 1	
Flat Rate	All units > 0.2 #/mmBtu - Apply 0.2 #/mmBtu.
MATS 2	
Capacity	Small units > 0.2 #/mmBtu - Apply 0.2 #/mmBtu Large units > 0.2 #/mmBtu - Apply 90-98% SO ₂ reduction.
MATS 3	
Emission Rate	Units >1 #/mmBtu – Apply 90-98% SO ₂ reduction All others > 0.2 #/mmBtu - Apply 0.2 #/mmBtu.
MATS 4	
Retirement	Small units > 0.2 #/mmBtu - Retire. Large units > 0.2 #/mmBtu - Reduce by 30%.
MATS 5	
Fuel Switch	Small units > 0.2 #/mmBtu - Switch to NG. All others > 0.2 #/mmBtu - Reduce by 30%.

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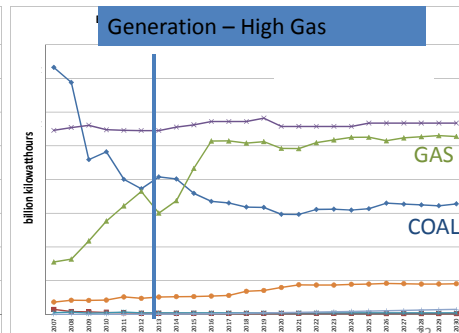
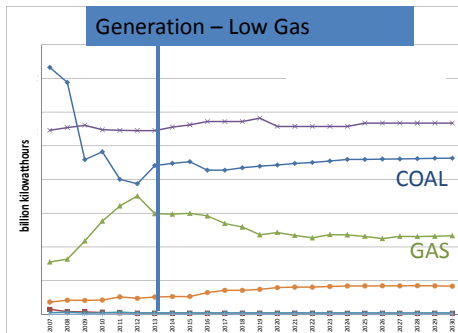
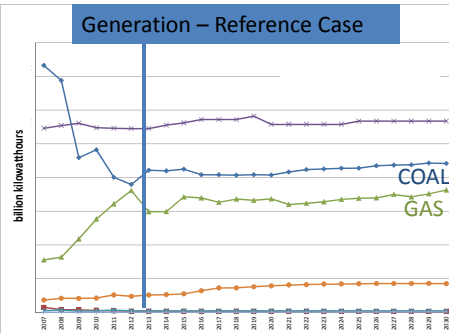
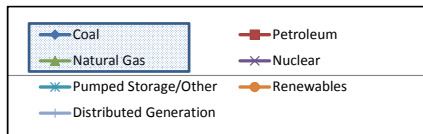
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High/Low Gas Growth Rate Case Study

- Compare potential future growth scenarios to see how emissions may differ between alternate growth in the exploration and development of natural gas.
- Runs not yet set up and performed. Stay tuned.....
 - On the list of things to do

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Generation 2007-2030, Reference vs High & Low Gas



Summary

- The second version of the model complete.
- Model is running well and results are stable.
- States conducted thorough QA of model inputs, including permitted new units, shut-downs, and future controls; QA efforts are on-going.
- 7 States and MJOs currently running the model with consistent results.
- Documentation at:
<http://marama.org/2013-ertac-egu-forecasting-tool-documentation>

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Projected ERTAC EGU Timeline

June 2014 – ERTAC EGU V 2.2 runs complete

August 6 2014 – State & Stakeholder Outreach

August 20 2014 – State & Stakeholder Feedback Due

November 2014 – ERTAC EGU V2.3 runs complete

March 2015 – ERTAC EGU V2.3 Air Quality Modeling Complete

December 2014 – State & Stakeholder Feedback Due

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Commenting on ERTAC EGU

Email your comments to:

jmcdill@marama.org

Please include the words "Stakeholder Comment" in your email

Or by snail mail to:

Julie McDill

MARAMA

8600 Lasalle Road

Suite 636

Towson, MD 21281

Comments due by Wednesday August 20, 2014

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