War on Coal/War on Energy Users

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Recent EPA/DEP Regulations Make Electricity

More Expensive to Buy.More Difficult to Generate.



Energy Users - On Site Generation Regulations

- Boiler MACT
 - Effective for area sources March 21, 2014
 - ▶ Effective for major sources January 31, 2016
- ► RICE
 - ▶ Effective for compression engines at area sources May 3, 2013
 - Effective for spark ignition engines at area sources October 19, 2013
- ► PA RACT 2 (Proposed)
 - ► Will be approved by AQTAC on November 6
 - ▶ Will go to EQB in February 2015 at the earliest
 - Scheduled to be effective January 1, 2016

Boiler MACT Major/Area Rule Comparison

► Gas fired boilers are exempt at area sources of HAPS

	Area Source (Existing)	Major Source (Existing)
Emission Limits	Coal-fired >10 MMBTU/hr	All but Gas -1 fueled
Tune ups	2-yr (most), 5-yr except NG	1-yr (most), 2-yr, 5-yr
One time energy assess.	All >10 MMBTU except NG	All
Initial Notice	January 20, 2014	May 31, 2013
Compliance date, including tune-up, energy assessment	March 14, 2014	January 31, 2016



EPA RICE - Existing CI Emergency Engines-Area Sources (Example)

Emergency Engine Operational Limits

- ► Unlimited for emergency.
- ► 100 hours per year for:
 - Maintenance checks and readiness testing
 - Emergency Demand Response (Alert Level 2)
 - ► Frequency or voltage deviation ≥ 5%
- ▶ 50 hours per year (out of the 100 above) for non-emergency:
 - No Peak Shaving
 - ► To supply power to another entity if (area sources only)
 - Dispatched by ISO to mitigate local conditions following established protocols

PA RACT2

- ▶ PA only rule.
- More Stringent Emission Limits for all non de minimis sources at major NO_X or VOC facilities.
- ▶ In the energy field, limits apply to engines, boilers, turbines.
- Proposed limits for coal fired boilers are very controversial.
 - Environmental NGOs, adjoining non-coal states, and EPA have all commented toward making the rules more stringent.
 - ► Issue of operation of installed air pollution control equipment.



Coal -Fired EGU Regulations

- Mercury and Air Toxics Rule (MATS)
 - Effective April 2015 (1-yr extension available for sources adding control).
- Clean Power Plan
 - ▶ 111(b) Rule for GHGs for new sources.
 - ► Effective upon operation.
 - ► 111(b) Rule for GHGs for modified sources.
 - ► Effective upon modification.
 - ▶ 111(d) Rule for GHGs for existing sources.
 - ▶ Phased in between 2020 and 2030.



Mercury and Air Toxics Rule

- Requires Control of Mercury, other metals, and Acid Gases from coal/oil-fired EGUs.
- One of the prime reasons for the early shut down of many coal fired EGUs.
- While there is in theory a corresponding rule for NGCC units, no stand alone NGCC facility would actually trigger the rule.



PA Coal Fired Fleet



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Natural Gas Plants in the Planning Process

Plant	County	MW	Permit	Status
Panda Liberty	Bradford	900	9-11	~50% complete
Panda Patriot	Lycoming	900	1-12	Groundbreaking 8/14
Berks Hollow	Berks	855	12-13	Not started
Hickory Run	Lawrence	900	4-13	Not started
Sunbury	Snyder	1064	4-13	Not started
Future Power PA	Schuylkill	346	3-14	Not started
AES Beaver Valley	Beaver	120	2-14	Not started may end 2017
Tenaska	Westmoreland	900	No	App. 11-13
Lackawanna Energy	Lackawanna	1300	No	App. 6-14
New Castle	Lawrence	354	No	App. 12-13
Calpine York	York	535	No	App. 6-14
Brunner Island	York	1490	No	App. 3-14



111(b) Rule - GHG for New EGUs (Proposed January 2014)

- New Coal-Fired Steam Generating Units
 - ▶ Must meet emission limit of 1,100 lb. CO₂/MWh gross (12 month-rolling average).
 - ▶ PA's coal rate is currently at 2,108 lb/MWh.
 - ▶ 1,100 lb/MWh represents an efficiency of about 64%.
 - ▶ The highest efficiency for a state of the art supercritical boiler is around 40%.
 - ► EPA has determined that the Best System of Emission Reduction (BSER) is "partial" carbon sequestration and storage (CSS).
- New Combustion Turbines
 - ► Large turbines must meet limit of 1,000 lb. CO₂/MWh gross (12 month-rolling average).
 - ▶ PA's NGCC rate is currently at 855 lb/MWh.
 - ▶ 1,000 lb/MWh represents an efficiency of about 40%.
 - Efficiencies of F-Class NGCCs can approach or even exceed 50%.
 - ► EPA has determined that BSER is modern, efficient NGCC technology (No CSS).
- ► NO NEW COAL PLANTS

111(b) Rule - GHG for Modified EGUs (Proposed June 2014)

- Modified Coal-Fired Steam Generating Units
 - Must exceed by 2%, the best ever observed efficiency from 2002 until the time of the modification.
 - ▶ The EPA proposal fails to recognize that:
 - Boilers run less efficiently in a turned-down mode, which has been a more frequently occurring status.
 - ▶ It is problematic for any boiler to continuously exceed its best performance in a 12-year period.
- Modified Combustion Turbines
 - ► Large turbines must meet limit of 1,000 lb. CO₂/MWh gross (12 month-rolling average).
 - Easily achievable by a modern NGCC turbine.
- ► NO MODIFIED COAL PLANTS



111(d) Rule - GHG for Existing PA EGUs (Proposed June 2014)

- ▶ Rule establishes a CO₂ rate for EGUs in PA of 1,179 lb/MWh net (2020-2030)
- ► Rate is established from 2012 baseline with the following modifications:
 - ► Coal-fired emissions are reduced by 6% under the assumption that this can be met.
 - ► Total NGCC dispatch is increased to 70% with corresponding reduction in coal/oil.
 - A factor for "nuclear at risk" is used to further reduce the fossil fuel rate by incenting nuclear to remain in operation (even though PA has no nuclear at risk).
 - ► A factor for renewables is factored in to offset fossil fuel generation.
 - And finally a factor for energy efficiency is included to further reduce the fossil fuel rate.





111(d) Rule - GHG for Existing PA EGUs (Proposed June 2014) - Effects in PA

- PA has eleven coal-fired plants in the baseline that will be shut down or converted.
 - ▶ 14.7 GWh emitting 16 million tons of CO₂ (2,157 lb/MWh).

Armstrong	Elrama	Hatfield	AES Beaver Valley
Mitchell	Piney Creek	Portland	New Castle
Shawville	Sunbury	Titus	

- If all remaining fossil fuel plants are allocated emissions based on their 2012 baseline, all fossil fuel would be curtailed at 84% of their baseline, a loss of 23 GWh, equivalent to 10 1X1 F-Class NGCC facilities.
- If NGCC argued that they are already below the rate and should not be curtailed, coal would be curtailed to 66% of its baseline, a loss of 49 million MWh of coal.



Scheduled and Required Shutdowns in Fossil Fuel Generation

PA 2012 Fossil Fuel Fired Generation - 143 GWh





111(d) reduction assumes a proportionate reduction based on current CO_2 emissions



Why it Matters to Users

- ► Less supply, higher cost.
- Less fuel diversity, higher cost.
- ► More renewables, higher cost.
- Energy Efficiency and Renewables are speculative. Failure to achieve goals will mean further reductions in supply with no CO₂ to allocate.



What you need to do!!!

- Comment on the Clean Power Plan rule!
 - Modified and New EGU comment periods have closed.
 - Existing EGU comment period has been extended to December 1.
 - ▶ This is the most critical component of the three rules.
 - Details of the rule may be found at:

http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule



Problems with the War on Coal

- ▶ If Coal Plants Shut Down they will Not Come Back.
- ▶ No studies on the adequacy of gas to take-up the slack.
- ▶ No studies on the adequacy of infrastructure to deliver the gas.
- Capacity is much better assured with a well-stocked coal yard than with a pipeline that is expected to deliver the fuel needed for generation.



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