

Pilot Project on Rules for Minnesota's Power Sector

Minnesota Pollution Control Agency

Friday, August 19, 2011

General Meeting Notes

Introductions: MN PCA Assistant Commissioner David Thornton thanked everyone for coming and asked participants and meeting observers to introduce themselves.

MN Commerce Commissioner Mike Rothman offered welcoming remarks, emphasizing the importance of this effort to the Dayton Administration. Referencing the importance of expert input from the private sector in how Minnesota responds to and implements EPA rules, Commissioner Rothman state that "none of us is as smart as all of us."

Ellen Anderson, Chair, MN Public Utilities Commission:

- She echoed Commissioner Rothman's focus on the importance of this collaboration, and the value of thinking proactively and together about how best to respond.
- This is a measure twice, cut once opportunity to get our response to EPA regulations right the first time.
- She asked that, within the context of this process and project meetings and calls, that participants interact informally and address each other on a first name basis.

Julia Miller, Policy Analyst, U.S. EPA:

- She shared a bit about her background, including her previous work for an Energy Office in Georgia.
- EPA's interest in this effort: agency wants to engage with a leading state to work through how all states can best respond to the various rules and to provide a model for other states to follow on how to respond to emerging regulations as a coherent package and at lowest cost.
- Why MN? The state has a great reputation for working together and is in a region that will be heavily impacted by these EPA rules
- Want to share with NARUC, NASEO and NAACA

Questions:

- How unique is this process? Answer: MN is the only state with which EPA is working in this way.

PRESENTATION: *Minnesota's Power Sector, MISO/EPA rules impact analysis*, Clair Moeller, Vice President, Transmission Asset Management, MISO

- 136,000 MW of generation; just over half of that is impacted by one or more rules
- How much coal generation should retire (generally means a fuel switch to natural gas or something else): Assumed:
 - EPA rules
 - EPA rules + \$50 carbon cost
 - \$4.50 natural gas cost
- How should utilities choose between retire and retrofit. What is the future of carbon costs? What's the future of natural gas? If you plan for \$4 gas you'll get \$8; if you plan for \$8 gas, you'll get \$4.
- 5,000 MW would be retired under EPA-alone scenario; cost of replacement is \$30 billion (7% rate increase)
- With \$50 carbon cost is more like 13,000 MW
- Not knowing the carbon cost makes it hard to know what the best long-term compliance strategies are. MISO modeled everything from zero to \$100/ton for carbon in \$10 increments
- \$35/ton of carbon is the "break point" = 12,000 MW; and \$50/ton you get more like 12,800 MW should retire. So there is a steep turning point in the curve at \$35/ton
- 1 MWh = 1 ton of carbon
- \$25/MWh is typical cost of electricity at the hub
- 1% load growth in region
- All steam plants are paid for.

- If there is a \$5 spread between gas and coal, w/\$50 carbon cost, coal and gas still break even in terms of being dispatched (in other words, the carbon cost has to be very high in order to make it un-economic to run those coal plants because all those coal plants are already paid for).
- "Retire, replace, or retrofit" at each \$10 increment of carbon cost, all the way to \$100/ton.
- It's the interplay between carbon cost and natural gas cost that makes it difficult to determine best compliance strategies.
- MISO model dispatched around the constraints until you couldn't economically dispatch any more.
- Estimates on what it actually costs for a plant to comply will be a critical assumption

Evolution of electricity markets

- It used to be that reserve margins were specified. Energy trades happened between utilities (happened every hour)
- In MISO states (and some others), it now works more like a commodity market:
 - Every 5 min. (spot market)
 - Tomorrow I'm willing to sell my electricity for X ("Day ahead market")
 - How do you know you have enough generation to make this market work (and thus the "reserve margin" question arises)—integrated resource plans have been the solution for most states, but the problem with IRPs is that they don't offer transparency on price. It's hard to tell whether or not it might have been cheaper to buy electricity elsewhere cheaper than building a new plant. MISO is still in the middle of transition to constructing what is known as a "Forward Capacity Market" in which you can bid in demand response and energy efficiency.
 - The problem with the "Forward Capacity Market" is that sometimes people can say "I can deliver this much DR," but then if they don't, then the whole network shares in the deficit of electricity.

PRESENTATION: *Existing State Policies that affect Minnesota's Power Sector, Bill Grant, MN Dept. of Commerce, Division of Energy Resources.*

Main policies covered:

- 1) RPS (216B.1691)
 - 2) 1.5% EE requirement (216B.1691)
 - 3) Ban on carbon emissions, except under certain exceptions (216H.03)
 - 4) Nuclear moratorium (216B.243)
 - 5) Mercury reduction, requiring 90% control at units above 250 MW (David Thornton, MPCA) - MN law is more restrictive than the EPA MACT requirement of 70% control at units below 250 MW
- Utilities are at or ahead of schedule in meeting MN RPS requirements
 - 95% of RPS will likely be met with wind
 - Not as far along in meeting the 1.5% EE goal, but close. This is having an impact on expected demand growth.
 - Without the EE savings goal, annual load growth would be 2%/year; with the EE policy, seeing just above 1% load growth.
 - SHERCO was last coal plant to be built; came on-line in ~1985

QUESTIONS:

- What is the impact of load growth predictions on consumers? Slower load growth would lead to less pressure on electricity rates.
- Does load growth affect the cost of compliance? Not for the most part, but compliance reduces efficiency of plants.
- If a utility is NOT experiencing growth in demand, and must cover increasing compliance costs, then those costs must be spread across the same rate base.

PRESENTATION: *Existing and pending federal regulatory policies to impact the electric sector, Julia Miller, U.S. EPA*

- 1) Background on why EPA is undertaking all these rules
- 2) Details on the rules themselves

- 3) Achievability of rules
- 4) See her powerpoint presentation for more detail.

- Mercury and Air Toxics Rule (MATS) is thought to be the most expensive rule to comply with. Though this might not be true for MN because the state has already taken action on mercury.
- Each state will be given an emissions “budget,” but MN will have an 18% “exceedence level” for compliance with the Cross-State Air Pollution Rule (CSAPR).
- This rule covers a large number of toxic pollutants (CAA covers ~160 various toxics)
- This looks doable if you take into consideration everything from technical feasibility to labor availability. EPA doesn’t believe these rules, taken together, present reliability concerns.

Questions:

- Q Since the electricity market does not operate state by state, what happens if a utility wants to preserve the operation of a plant in a neighboring state (e.g., WI) for reliability reasons, but doing so blows the “budget” of WI?
- Q Does complying with CSAPR also qualify as meeting BART (“Best Available Retrofit Technology”) for the Haze Rule? State will need to decide this.
- Q MISO had natural gas curtailments due to low pipe pressure.
- Q What is the penalty for non-compliance? Depends on the Rule. Some penalties are statutorily defined, and some are decided by the state.
 - Compliance schedules are a potential tool for avoiding non-compliance yet still giving utilities some flexibility.
 - Scheduling compliance will be important, especially if it means taking multiple plants off-line at a particular time (i.e., during a given summer).

PRESENTATION: *Greenhouse Gas Regulation under Section 111(d) of Clean Air Act.* **Franz Litz, Executive Director, Pace Energy and Climate Center, Pace Law School** (see powerpoint presentation for more detail)

- Rules collectively make EE more attractive; and potentially makes renewables more attractive depending on what future natural gas prices look like.
- Individual rules have limits on flexibility for compliance, but a comprehensive state plan that addresses the entire utility sector will likely be well-received by EPA
- Section 111(d) has never been used for existing sources (except for a couple instances)
- Top EPA administrators have state agency backgrounds and thus see state feedback as critical in shaping the final rule
- States have a lot of discretion in developing their compliance plan
- “standard of performance” is the essence of what states must define and build their compliance plan around. This can be a broad range of things (e.g., emissions rate standard + emissions trading). The mix of compliance options simply have to meet the requirements of the EPA Guideline.
- Guideline coming out Sept. 26th—this will clarify what is an allowable approach when determining “a system of emission reduction.”
- Final rule applies to new sources immediately; and applies to existing sources over a 3-yr. period (typical)

Questions & Discussion

- Section 112L under Utility Mercury and Air Toxics Standard (MATS) Rule: that provision allows development of a state plan. This needs to figure into the discussion later.
- Any statutory deadline for GHG state plans? No, there is a regulatory deadline of 9 months. So the MN plan would be due 9 months from March 2012
- Draft Guideline on New Source Performance Standards (NSPS) will be issued
- Part 60 sub-part B describes the process.
- How will different types of biomass be counted? (don’t have an answer yet from EPA). This would be a valuable topic for state of MN to advise EPA on (especially given that MN has significant biomass resources and biomass is dispatchable)

- Has EPA talked to any professional engineering associations? Turbines are not plug-and-play, and it will take time to implement compliance options.
- Everyone trying to comply all at once may push commodity and labor costs up because of the burst in demand.
- Hard to find large numbers of good electrical engineers
- What do we do if we make these plants so clean that the emissions are so low that they are too low to measure? Will utilities be able to measure to the level required to demonstrate compliance?
- Utilities have already been doing a lot; EPA not looking to penalize states that have been ahead of the curve on these issues.
- EPA should recognize existing clean energy policies in the states where those exist.

PRESENTATION: *Introduction to EPA modeling effort*

Julia Miller, U.S. EPA

- ICF uses IPM model (EPA uses this model to make apples-to-apples comparisons)

Boddu Venkatesh, Technical Director, ICF International (Venkatesh joined by phone, but the audio was very difficult to hear, so these notes are incomplete. Please also refer to powerpoint presentation.)

Biggest assumptions?

- 1) Price of natural gas (the differential between coal and natural gas)
 - 2) Fuel prices in general
 - 3) Cost of new plants
 - 4) Demand
 - 5) Cost of emission controls
- How do we validate the costs in the model with the real costs utilities face? This will be the job of the modeling sub-group.
 - Does the model deal with EE or DR? Yes, but haven't done it yet in modeling for EPA. Have "forced EE" into the model to date, but the model does not naturally treat EE as something that would be traded off against building a new plant.
 - Does the model have a transmission "layer" in it (does it assume a particular transmission configuration). Model base case does not allow new transmission.
 - Updates to the model attempt to capture new transmission, but this will be a question to address, especially in modeling years that are further out in time.
 - Model's region boundaries do not conform to the actual market boundaries for electricity? How does the model deal with that?

QUESTION: How much should the group attempt to modify the model (for example, MISO is proposing \$5 billion in new transmission that will dramatically influence the amount of renewables possible on the system?)

Nicholas Bianco, Senior Association, World Resources Institute

- Role of technical group is to inform and advise the larger stakeholder group
- Take policy cases recommended by the full group, model them, and then come back to the larger group with answers on how those policy cases work out in the model
- Four Cases will be modeled (including a base case) + sensitivity runs of two different energy efficiency levels
- EPA is already modeling the rules they are proposing, so some of that work can inform this process.
- Should leverage other modeling that is being done (and can be done), such as modeling that MISO does.
- Transmission that we already know is going to be built should actually be in the base case.

Questions:

1. Will the group be able to “stress” the model by running things like high and low carbon prices and/or high and low natural gas prices.

This larger stakeholder group is responsible for coming up with Policy Cases 3 & 4; and then the modeling sub-group will model those.

Opportunities for Minnesota to Influence Federal Policy (input from each project participant)

- Important to address real cost and rate impacts for Minnesotans
- Want the opportunity to review the model with others in our organization (need to make sure we know what’s in the model and that we can trust in the assumptions)
- Good opportunity to create broadly-shared awareness of the potential impacts of these emerging EPA rules
- Need to account for how sudden demand for resources and talent may increase their costs; and also need to know in advance that we will be able to accurately measure the results.
- Should find some way to integrate the on-going RPS impact study and base load diversification study by MN Power.
- Need to discuss CSPR as being equivalent to BART under regional Haze Rule
- Recognition of MN’s clean energy programs as part of MN’s compliance with 111d (should get credit for early action)
- Interested in flexibility on how MATS EGU Rule, Section 112L, is implemented
- Need to emphasize EE, since it’s generally the cheapest form of generation
- Concerned about tradable permits, since it seems easy to cheat.
- Want to have authority/clarity to move ahead (in advance of the regulations) rather than being caught behind the wave.
- Concerned about making investments that turn out to be mistakes (measure twice, cut once)—avoiding unintended consequences.
- Understand how EE, DR and DSM can be treated as bona fide generation resources both in the model and in our deliberations about compliance options. MISO can run this if you can get people to agree on the unit costs are for each of these things.
- Don’t like the idea of equating CSPR and BART (BART is pretty unit-specific, and not confident that the expertise of this group will be in a position to get this specific).
- Low-income consumers suffer the most from environmental impacts (on the one hand), and also feel the rate price hikes disproportionately: Given that even the most cost-effective compliance plan will raise rates, are there strategies to mitigate the cost impacts on low-income consumers?
- Can’t model everything, so if the main interest is in identifying areas of flexibility we should probably keep the assumptions pretty simple and make sure the modeling is focused on answer what is MOST important to this process.
- We should not debate the merits of the rules themselves; but rather focus on the best compliance approach assuming that the rules will go into effect.
- Concerned about the proposal from MISO that some facilities get designated as “critical for reliability” and therefore not subject to EPA rules. This feels like a large wildcard in this process that works against the integrity of what the rules are trying to accomplish.
- MISO sees this “critical facility” idea as being more about timing—can’t take all plants off-line all at one time and maintain reliability.
- How will biomass be treated from a GHG standpoint (as a compliance option).
- Modeling should reflect the fact that MN is part of a larger electricity market (i.e., the low-cost compliance option might be buying power from a neighboring state).
- Don’t let the perfect be the enemy of the good (no model is perfect).
- Let’s be creative about policy ideas and compliance options, but not so creative that they can’t actually be done (e.g., let’s not hinge recommendations on new law from Congress).
- Can this process take Smart Grid and demand control that could avoid peaks be taken into account?

Discussion of Timeline:

- EPA needs to have modeling done by end of October

- Full group and modeling sub-group will need to focus early on agreeing to the assumptions that should go into the base case
- Mondays and Thursdays are not good for future meetings

Parking Lot

1. What is the impact of water use for electricity production on compliance cost? In other words, will water present a costly compliance factor.

Comments from Observers

1. We didn't talk about new 1-hour (National Ambient Air Quality Standard (NAAQS) for SO₂
2. Also didn't talk about new NO₂ NAAQS could impact diesel and/or natural gas peakers. May not be able to meet new NAAQS standards
3. This seems like a potentially large volume of new work for MPCA (this is a constraint)
4. Would like EGU emission files for CAMEX model that would help MPCA do Regional Ambient Air Quality modeling
5. Need clear definitions of the outputs we're after:
 - a. Need
 - b. Emissions
 - c. MWh generated
 - d. Capacity
 - e. Million BTU input
 - f. Cost
 - g. What is the universe we're talking about: Is this the cost to provide electricity to customers? Or is it the cost of retrofitting a plant.

NEXT STEPS

- q Julia Miller to share EPA's study on how it calculated costs and benefits of complying with Clean Air Act.
- q Send around other information on Haze Rule (utilities paying a lot of attention to that one, but it was not in Julia's presentation)
- q We need a graphic or spreadsheet to help participants see where and how the various EPA rules overlap and where the areas of flexibility lie.
- q Turn the group's listed concerns into a set of principles to bring back to the group. These could guide this process and be useful to the state of MN in advising EPA.
- q Participants need to review the assumptions that are in the IPM base case and begin to prioritize which assumptions they think are critical.
- q Schedule a call with the sub-group and ICF next week since it was hard to hear the ICF presentation (work through Nicholas Bianco, WRI).
- q David to send out DOODLE to schedule future meetings
- q Participants should send David Thornton suggestions about what other information/presentations they would like in order to make informed decisions as part of this process.
- q Need attendee list

Things for next time:

- q Name tents and name tags
- q Sign-in sheet
- q Better audio arrangement if there will be people calling in