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March 31, 2005

Karl S. Michael
New York State Energy Research and Development Authority
17 Columbia Circle
Albany, NY 12203-6399

Re: Comments on RGGI IPM Reference Case Modeling

Dear Mr. Michael:

Dominion appreciates the opportunity to comment on RGGI's IPM Modeling. As an owner of multiple generation facilities in the Northeast, Dominion will be affected by the outcome of the RGGI process.

Our comments are attached below. If you need additional information or have any questions on our comments, please contact Leonard Dupuis at 804-273-3022 or Lisa Moerner at 804-273-2998.

Sincerely,

A handwritten signature in cursive script that reads "Lisa C. Moerner".

Handwritten initials "PFF" in cursive script.
Pamela F. Faggert

Ebc: Mr. Leonard Dupuis
Ms. Paula Hamel
Mr. Steven Jones
Ms. Diane Leopold
Ms. Lisa Moerner
Mr. Dan Weekley
Mr. Bob Thomas

Dominion on RGGI IPM Reference Case Modeling

Constraints on Regional Natural Gas Infrastructure

- As noted by many RGGI stakeholders and observers, RGGI's modeling efforts to date have not incorporated constraints on regional gas infrastructure in the Northeast.
- As evidence of the natural gas constraints faced by the Northeast, consider the premium price for gas consumers in the Northeast pay compared to the national price of gas.

NYMEX Gas Futures Prices

Price Point	April 2005 Price (\$/mmbtu)	January 2006 Price (\$/mmbtu)
National Average – Henry Hub	\$7.00	\$8.32
Transco Zone 6, NY	\$7.59	\$12.25
Transco Zone 6, Non-NY	\$7.57	\$11.60

- Consider also ISO New England's RTEP04 Technical Report released October 21, 2004 which states that "New England has long been at the end of the nation's natural gas pipeline system." A discussion of gas constraints in the region continues in the document with a review of events during New England's January 2004 cold snap. The report states that "While the gas system was able to meet the demand of its firm customers, many generators have interruptible service and thus have limited rights to delivery under tight conditions. While there was ample gas supply beyond the Northeast, the availability of gas transportation for non-firm customers within New England was a limiting factor and a root cause of both high gas prices and gas unit unavailability."
- As evidence of the difficulty of eradicating these gas infrastructure constraints in the Northeast consider the situation of Columbia Gas Transmission and partners as they have attempted to increase gas supply to the Northeast by building a natural gas pipeline into New York. Since 1997 Columbia has been trying to build the Millennium pipeline project into New York. They have encountered a great deal of opposition from landowners and environmental groups even though much of the pipeline would be built along existing right of ways and multiple attempts have been made to reroute the pipeline to accommodate concerns. ISO New England believes that additional infrastructure is necessary and states that "Based on ISO New England's analysis, it is critical for reliability that additional LNG import terminals be constructed in the Northeast" in their RTEP04 Technical Report released October 21, 2004. Yet there is considerable opposition in RGGI states as evidenced by opposition to Keyspan's plans to expand its LNG facility in Providence and opposition to other LNG facilities such as Weaver's Cove and Broadwater just to name a few.

Constraints on National Natural Gas Supply

- An additional element which RGGI needs to consider as it finalizes its modeling is current and predicted constraints on U.S. natural gas supplies.
- Consider the following quotes from the non-partisan American Gas Foundation's Natural Gas Outlook To 2020: The U.S. Natural Gas Market – Outlook and Options for the Future dated February 2005.
 - “Lower-48 sources will account for a declining share of our total natural gas supply.”
 - “Even with substantial natural gas resources in the ground, merely sustaining annual gas production will challenge domestic producers.”
 - “A significant portion of the domestic gas resource is restricted from exploration and it is likely to remain so.”
 - “The trend of steadily increasing natural gas imports from Canada is likely over.”
 - “By 2020, Canada likely will be exporting less natural gas to the U.S. than it does today.”
- The American Gas Foundation's study is not the only study to document declining domestic natural gas production. Other reputable organizations have reached the same conclusion. Consider the National Petroleum Council's 2003 Balancing Natural Gas Policy – Fueling the Demands of a Growing Economy.

Constraints on Expansion of Renewable Energy Supply

- Even though most states in the Northeast have renewable portfolio standards, it has been difficult for entities to purchase the required amounts of renewable energy for resale.
- Consider the situation in Massachusetts. Since 2003 retail power suppliers have been required to provide an increasing amount of the power they sell from renewable sources. In 2004 retail suppliers were required to provide 1.5% of power renewable sources. They were simply not able buy enough renewable energy in the region to meet the Renewable Portfolio Standard (RPS) requirements according to the Division of Energy Resources' (DOER's) Annual RPS Compliance Report for 2003. Instead, retail suppliers are expected to make Alternative Compliance Payments (ACPs) of over \$15M into the Massachusetts Technology Collaborative (MTC) fund by June of this year. Also, according to the DOER report, the ACPs are expected to remain level over the next three years.
- While renewable growth is likely to occur to meet these requirements, it seems implausible that growth could occur to the extent predicted by RGGI's reference case. That reference case assumes that 10 GW or approximately one-third of the total generation growth in New England is from renewables through 2024. Compare this assumption to the assumption the U.S. Department of Energy's well-respected Energy Information Administration (EIA) makes about renewable growth in the U.S. In their

Annual Energy Outlook 2005 EIA states, “Despite strong growth in renewable electricity generation as a result of technology improvements and expected higher fossil fuel costs, grid-connected generators using renewable fuels are projected to remain minor contributors to U.S. electricity supply. From 359 billion kilowatt-hours in 2003 (9.3% of total generation) to only 489 billion kilowatt-hours (8.5 %) in 2025.”

- Consider also the difficulty efforts to make large renewable expansions in New England have faced thus far. Energy Management Incorporated has been working since 2001 to build Cape Wind, a 420 MW 130 wind turbines project off the coast of Massachusetts. The project is not yet a reality however due to multiple lawsuits and other maneuvers by interests opposed by the project.

Unrealistic Modeled CO2 Emissions in the 2006-Year Run

- We are concerned that the 2006 model run projects CO2 emissions from electric generating units that are significantly below current emission estimates for the RGGI region (118 million tons predicted versus about 136 million tons¹). Since current emissions are already below 1990 levels (which were about 140 million tons), the effect of this unexplained under prediction is that policy scenario runs, whether based on actual current levels or the 1990 baseline, will overestimate the amount of allowance banking that may occur in the early years under the cap and artificially deflate the potential cost of the CO2 reduction program. We suggest the RGGI Staff Working Group use current CO2 emission levels for the initial run year in any policy scenario modeling, and at a minimum, provide a reasonable explanation as to why the model is projecting emission levels in the 2006 model year that are at least 10 percent below current levels.

Suggested Modeling Modifications

- Dominion believes these all three of the constraints referenced above – gas infrastructure constraints, gas supply constraints, and renewable build constraints -- must be recognized by RGGI and incorporated into the reference case used by RGGI. The purpose of the reference case is to serve as a baseline from which all RGGI efforts can be evaluated. If the reference case is not realistic, the costs and benefits of the RGGI effort cannot be determined.
- To address all of the concerns above, Dominion makes the following two suggestions.
 1. First, for a natural gas price trajectory, RGGI should use the prices developed in the American Gas Foundations Existing Policy Scenario.
 - Given constraints on natural gas infrastructure in New England, the difficulty of eradicating those constraints and constraints on national gas supply, the

¹ U.S. DOE EIA 1990-2003 U.S. Electric Power Industry Estimated Emissions by State (<http://www.eia.doe.gov/cneaf/electricity/epa/epasprdshts.html>)

price trajectory assumed in RGGI reference case is too low. We therefore looked for a publicly available non-partisan source for an alternative gas forecast and found the forecast for the “Existing” scenario in the American Gas Foundation’s Natural Gas Outlook To 2020: The U.S. Natural Gas Market – Outlook and Options for the Future dated February 2005.

- We briefly considered suggesting that you use the American Gas Foundation’s (AGF) “Expected” scenario but our evaluation of that scenario revealed that RGGI makes very different assumptions about the future than the assumptions AGF makes about the future in their expected case. Namely, RGGI assumes that approximately two thirds (20 GW) of the generation built in the Northeast will be gas-fired through 2024. AGF assumes that gas generation “is not expected to capture as much of the new generation market in the future – down to 40 percent of the new market as opposed to the more than 90 percent it has realized in recent years” By assuming a lower growth rate for gas-fired generation in their “Expected” scenario than RGGI does in its reference case, AGF does not put nearly as much pressure on gas demand (and thus prices) as RGGI would in New England. Thus AGF’s “Expected” scenario gas price forecast is not compatible with RGGI’s assumption that almost all new generation built will either be gas or renewable. AGF’s “Existing” scenario is more in line with RGGI assumptions because the “Existing” scenario assumes the kinds of upward increases on gas prices that would result if almost all new fossil fueled electric generation build was gas-fired (although they derive the high prices from constrained gas supply rather than increased gas consumption).
2. Second, RGGI should remove the restriction in its modeling on the expansion of coal-fired facilities in New England.
- We continue to question the RGGI State Modeling Workgroup decision to exclude the construction of new coal generating units, including IGCC, in the RGGI region, particularly in light of the existing and expected natural gas prices and supply constraints discussed above. The only option for new coal allowed is for existing coal capacity to re-power to super-critical controlled coal, which is a very expensive option (and thus only 11 Mw of existing coal is predicted to re-power to super-critical in the model).
 - We also question the model’s aggressive build of combined cycle natural gas outside of the RGGI region (Pennsylvania) coupled with minimal new coal build realized exclusively by IGCC technology and no additional, conventional pulverized coal. These constraints on potential new coal build will result in underestimates of future CO2 emission levels in the RGGI region, which will underestimate projected costs of the regional program and/or will underestimate the amount of leakage from emission sources outside of the RGGI region.

- As you may be aware, the New England ISO held a conference last September where representatives from major financial institutions including JP Morgan Securities Inc., John Hancock Financial Services, and Lazard Frères & Co. LLC, indicated that the financial markets would not be willing to finance new gas electric generation in New England in the foreseeable future after experiencing losses in the early stages of restructuring. When asked what type of base-load technology they would be able to finance, all three agreed it was “coal.” If the model is predicting major gas generation builds in New England, where will the financing come from?
- Dominion suggests that RGGI eliminate the artificial constraint in the RGGI model that disallows coal facilities from being built in the RGGI region. In addition, we suggest the RGGI State Working Group Staff work with ICF to re-evaluate the assumptions related to new coal build outside of the RGGI region, most notably Pennsylvania.

Suggested Sensitivity Modeling

In accordance with the concerns expressed above, Dominion suggests RGGI consider the following model sensitivity runs if the modifications recommended above are not incorporated into the reference case:

- We suggest a sensitivity run be performed that would allow the consideration of new coal in the region. We suggest such a run also include more reasonable assumptions regarding new coal outside of the region (again, if not included in the reference case).
- We suggest RGGI consider an alternative “high gas” sensitivity run using the gas prices from AGF’s “existing” case scenario.
- Finally, we reiterate our recommendation that RGGI perform a sensitivity run to evaluate the impact if nuclear power plants do not renew their licenses (i.e.; either by assuming that all nuclear units would shut down at the end of their current license term or that a certain percentage of nuclear capacity is not re-licensed). Since nuclear power represents approximately 30 percent of the electricity generation in the region, we believe it imperative that RGGI evaluate, understand and document the impact of nuclear generation with respect to both current and future CO2 emissions in the region. Furthermore, we recommend this case not be modeled in combination with any other sensitivity analysis so that the impact of nuclear generation can be evaluated in isolation. We would urge the RGGI State Working Group to work with the Nuclear Energy Institute (NEI) to come up with a mutually acceptable sensitivity scenario.