

**Regional Greenhouse Gas Initiative  
Stakeholder Group Meeting Process  
February 16<sup>th</sup> 2005**

NY PSC- 4<sup>th</sup> Floor Conference Room  
90 Church Street  
New York, NY 10007

Facilitator: Dr. Jonathan Raab, Raab Associates, Ltd.

**RGGI Stakeholder Group Meeting #6: Meeting Summary**

123 people attended this meeting that began at 9:30am and concluded at 4:30pm.

**I. Materials Distributed and Presented**

Prior to Meeting:

- Agenda

At the Meeting:

- b. RGGI Process/Architecture Chart, *Franz Litz, NY DEC*
- c. RGGI Preliminary Electricity Sector Modeling Results; Carbon Policy Scenarios and Sensitivities, *Steve Fine and Chris MacCracken, ICF Consulting, Inc.*
- d. RGGI Renewable Energy Modeling Assumptions, *Bob Grace, Sustainable Energy Advantage*
- e. Integrated Optimization for Greenhouse Gas Reduction, *Peter Spinney NEUCo,* and New Technology Options for Active CO<sub>2</sub> (and NO<sub>x</sub>) Emissions Management, *Julianne Zimmerman, GreenFuel Technologies Corporation*
- f. RGGI Markets Workshop 11-30-04: Summary and Key 'Take-Aways,' *Susan Tierney, Analysis Group*
- g. Staff Working Group Update on Development of Potential Offsets, *Chris Sherry, NJ DEP et al.*
  - o Standards Development Update
  - o Project Application and Approval Process
  - o Example of Standards
- h. NO<sub>x</sub> Trading Success in the Northeast: Observations and Lessons, *Andrew Aulisi, World Resources Institute*

All the documents and presentations can be accessed on the RGGI project website:

[http://www.rggi.org/stakeholder\\_schedule.htm](http://www.rggi.org/stakeholder_schedule.htm)

## II. Welcome, Agenda Overview, Meeting Summary Review

Facilitator Jonathan Raab, of Raab Associates, Ltd. welcomed attendees to the meeting. All those present introduced themselves, and then Dr. Raab reviewed the agenda for the day, mentioning that the agenda had been changed in the past few days due to the release of the new modeling results.

## III. RGGI Process/Architecture Chart

Franz Litz, of NY DEC presented the Staff Working Group's RGGI Process/Architecture Chart and passed it around the room. He also passed out copies of a document about the struggle to renovate the 90 Church Street building following the attack on the World Trade Center. In the immediate aftermath of the destruction of the twin towers on September 11, 2001, the first floor of 90 Church Street was used as a morgue, so the building played a very specific role in that tragedy. Franz Litz pointed out that the fact that state agencies are now moving in here is tribute to the governor's commitment to rebuilding the downtown area. Click [here](#) to view this presentation.

***Questions from one or more RGGI Stakeholder Members, and Resource Panelists:***  
***(questions in italics, answers in regular font from Franz Litz, unless otherwise noted):***

*Question: What is RGGR?*

EATS is a spreadsheet that houses the accounts for emissions and allowance data. At the end of each compliance period there will be emissions and allowance data for each source and they will have to match up. RGGR is where this data will be housed.

*Question: Who is handling those elements, because NE already has a tracking system under its disclosure rules and PJM is developing its own system? Might be inefficient not to leverage existing system.*

Not really. They are tracking different things and using different data sources. We need to see if the two systems are compatible.

*Comment: I'm concerned about some things in the green boxes that say "if any". Is this a prescriptive doc or just a sketch? It is also a nice attempt to summarize, but there is a sequence of issues – some things have to precede other things (i.e. caps influence other things)*

I agree that the "if anys" don't belong there and we should get rid of them. We can't make a decision until we have the full picture.

*Question: What is the timeframe?*

We want to bring together all the agency heads in April to identify areas of agreement and any issues still needing resolution. It's possible the agency heads won't agree at that

time on everything. If there are issues remaining that require further development we will bring the agency heads back together two to three months later to address these issues.

*Question: When will a draft be available for Stakeholder review, before or after the meeting?*

After. This (Stakeholder) Group is advisory and doesn't make decisions. The agency heads make the decisions, and that is what would be released in draft form. There could be an additional Stakeholder meeting in May.

*Question: The basis for allocating allowances seems to be missing here.*

It's actually the first block under the MOU column: "state by state". The MOU could agree on allocation principles but ultimately it would likely be up to the states.

*Question: Will this be completely up to states with no input?*

Although it will likely ultimately be up to each state, its location on this chart should not indicate that there won't necessarily be a common set of agreements.

*Question: Timeline – when will there be a draft rule?*

At the meeting in April we will be identifying what the outstanding issues are.

*Comment: Need more time to discuss this.*

#### **IV. RGGI Preliminary Electricity Sector Modeling Results: Carbon Policy Scenarios and Sensitivities**

Before introducing Steve Fine and Chris MacCracken from ICF Consulting, Inc., Karl Michael of NYSERDA made brief comments about the IPM modeling process. Karl stated that the modeling looked at specific levels of carbon caps and that it has resulted in real numbers (results) that will be shown today along with sensitivity results, in particular, vis a vis gas prices, so we can see how the results vary depending on assumptions used.

He went on to say that the reference case could still be changed but that the modeling used available information to evaluate things that models are good at showing. Now that there are cap scenario results, the Stakeholder Group can have real discussions about this. He reminded participants that the modeling attempted objectivity about numbers and that opinions should be kept separately: It is important for Stakeholders to understand that we haven't made any decisions yet based on the modeling results.

Steve Fine and Chris MacCracken of ICF Consulting, Inc. presented the new results of the IPM modeling undertaken to look at and quantify impacts on the nine-state RGGI region. They explained that this updated version, as it currently stands, is not locked down and that any additional changes to be made would tend to be local and not regional, so that the directionality of regional results should not be changing dramatically.

Jonathan Raab reminded attendees that the ICF presentation would be available on the RGGI website shortly. He also explained that at specific junctures in the ICF presentation there would be opportunities to stop for clarifying questions.

Click [here](#) to view the presentation.

***Clarifying questions from one or more Stakeholders, Resource Panelists: (questions in italics, answers in regular font from Steve Fine or Chris MacCracken, unless otherwise noted):***

*Question: What kind of assumptions were made for gas infrastructure? Are new pipelines available to meet demand?*

We assumed that the supply would be there. No additional implied charges for gas infrastructure were made beyond those contained in the EPA transportation adders and EPA price-volume supply curves that the SWG decided on using.

*Question: AES settlement, with or without? The document that went out before had errors – were corrections made?*

Yes. The current results incorporate the corrections that were not incorporated in the assumptions document, which was distributed without the corrections made.

*Comment followed by question: After model runs two days ago, the American Gas Association issued report that differs a lot – prices going up. Will you change the reference case or do a sensitivity run due to this newly released document? –Their expected price is \$8.50.*

We will show a high price sensitivity run. It is also important to note whether the \$8.50 price is in real or nominal dollars. All price forecasts in IPM are in constant 2003 dollars.

Karl Michael clarified that there will be gas runs at \$6.50 price. We'd be open to possibly doing some other high gas price sensitivity.

*Question: Imports, what is it currently?*

Actual imports in 2001 were 60 Terawatt hours (TWh).

*Question: How much of the imports are from Canada and how much from PJM?*

In the modeled results for 2006, approximately 30 TWh comes from Canada, and approximately 50 TWh from PJM.

*Question: Are any plants in the reference case economically retired and what kind of plants were they?*

Approximately 2.5 gigawatts are firmly planned retirements and another 700 MW are economically retired by the model.

*Question: Why reduction in imports over time? Transmission constraints?*

No, it has to do with price competition. Additions in the exporting areas are mainly gas. There is near-term spare coal capacity in most of region. But vast majority of projected new builds are gas, so no longer have that price advantage. So, you are seeing more gas-on-gas competition resulting in a reduction in imports.

*Question: Transfer capability in New Jersey?*

No, has not increased. Internal modeling changes didn't change overall import capabilities.

*Question: Also showing nuclear generation as flat. Do you show any nuclear units coming off line? Some plants in New Jersey may not be allowed to re-license.*

We are assuming plants will be able to re-license at the end of their 40-year license period, and they re-license in the model if economic. You could deal with NJ possibility as a sensitivity analysis.

*Question: Assumption gas will be available without constraint. Is that carried forward to the Policy Case runs - so will it not trigger an increase in gas prices?*

The high gas price sensitivity aimed to get at this, but could be looked at in a more refined way. The model does employ gas supply curves, so as gas demand rises, prices increase.

*Question: Are you assuming all CC units have dual fuel capability?*

No, all new CC units are assumed to burn only gas.

*Question: Do you assume seasonal variability in gas prices?*

Yes.

*Question: Are pancaked rates in there or not?*

A transmission charge is still assumed for power flowing from PJM to NY, although not within the expanded PJM region and not between NY ISO and ISO NE.

*Question: On gas infrastructure issue, what is implicit in model? Will it be added at same price as existing infrastructure?*

The assumption is there are costs, but on a variable cost basis we assumed that prices don't rise.

*Question: Isn't it expected that gas infrastructure is added at same cost as current?*

Yes.

*Comment: I have some concerns about transmission as well as the interaction between overall model and renewables case. What kind of transmission will be necessary – also, will efficiency in congested areas decrease transmission needs? If more efficiency applied it might avoid transmission costs.*

Energy efficiency is addressed in a sensitivity run currently. Not assuming any additional transmission besides what ISO's are projecting.

*Question: How did you model combined cycle units, did you take into account NOx rates?*

Combined cycles are assumed to meet all state standards in model and subject to federal 3P requirements. Assumed can go from 0% to 100% of output, with certain turndown considerations.

### ***Comments and Clarifying Questions about Carbon Policies:***

Steve Fine explained that in 1990, the RGGI region emitted 145 million short tons of CO<sub>2</sub>. ICF modeled 5%, 10%, 15% and 25% below 1990 levels by 2020. The caps implemented in the model assume a linear decrease from 2008 to 2020 and then maintain that level thru 2024. The 2008 starting point was based on an average of 2000 to 2002 RGGI unit emissions, adjusted to take into account behind-the-meter emissions (which IPM does not include) and a CEMs reporting bias. Steve made the following observations about the modeling results:

- 5% below 1990 Case is not binding due to banking of early allowances that represents the gap between the reference case projection in the early years and the starting cap level.
- 25% Case with banking results in a flat-line emissions trajectory.
- There is only a \$2.48 rise in 2024 in wholesale electricity prices in the 25% reduction Case.

- In all Cases, mainly backing off new units that would have been built in RGGI rather than fuel switching and increasing imports. But imports from new generation are primarily gas rather than coal.

Franz Litz clarified that it's difficult to differentiate gas from coal on the chart. The dark region above represents decreased generation from natural gas units in the region and above it represents decreased generation from coal units in the region.

### **Questions About Carbon Policies:**

*Question: What is the discount rate you are using?*

6.86% real.

*Question: Did you calculate net change in CO<sub>2</sub> emissions when you compared the decrease in the RGGI region with the increase outside the region?*

Depends on year and Case you are talking about. At 15% in 2024 there are reductions in RGGI of almost 15 million tons, while there are increases in all of the Eastern Interconnect of approximately 10 million tons.

*Question: So there's a net 5 million ton gain?*

Roughly.

*Comment followed by a question: It would be helpful to understand what CO<sub>2</sub> emissions were every year back to 1990 and to show that trend line as it goes down for imports on top of that. Assumption of increased building outside RGGI of gas doesn't jive (with) plans to build coal plants outside of RGGI. Assumptions we'll see lot of gas built in ECAR and PJM? Seems a bit off, considering eastern US and Midwest. Might be useful to do sensitivity run in regard to this.*

We are seeing some new coal generation in model and are seeing new coal builds especially in 2024. The build decision of coal vs. gas is based on a long-term gas price assumption of about \$4.50/mmBtu.

*Question: Why are the reference case prices going down? Is more efficient gas driving out less efficient gas?*

Mostly just gas prices setting marginal price and the gas price and power price trajectory mostly track each other. Based primarily on fact that gas price is forecast to decrease.

*Model is projecting significant new gas in PA and outside RGGI region. Have you thought about costs of siting that much gas in PA? Are PA ratepayers going to be willing to pay for this, not factoring in carbon costs? I think those leakage numbers are inflated.*

*Question: Emissions profile would then be higher?*

Karl Michael clarified that it goes both ways – lots of factors could cause emissions to be higher or lower.

*Comment: Should look at actual emissions. Overall we haven't factored in a lot of stuff that could presumably drive prices lower and yet we are seeing good results. We're not seeing emissions reductions, however. Using 1990 as a reference point, which was highly inflated due to a unique set of circumstances in NY in 1990, makes no sense. We should be looking at more significant reductions. 25% reduction from current levels is what we'd proposed.*

Franz Litz explained that the SWG recognized when we chose the starting point that it is higher than what emissions are currently. This is largely because there's a gap between the reference case projection in the early years and the cap level in the first few years due to new capacity coming on-line (1,000 megawatts of wind, 3,000 megawatts of natural gas combined cycle, and nuclear up-rates).

### **Sensitivity Analyses**

ICF described that the low-demand scenario was modeled by taking the 15% scenario (p20) and reducing load growth by 30%. This was meant to look at directionality and how things react when you make an aggressive demand reduction. Turns out that when you reduce demand by this amount you end up with zero allowance prices and the cap is non-binding. Steve and Karl clarified that this was meant as a rough proxy for increased end-use efficiency and not meant to imply that this was a measure of the cost-effective energy efficiency potential that was reasonably achievable.

Chris MacCracken then reviewed the 2<sup>nd</sup> sensitivity run, the US and Canada Carbon Policy Case.

*Question: Early years, baseline years what was done to validate? Did capture oil emissions in dual fuel or was it based exclusively on gas?*

*Comment: 1990 data just based on EIA historical data.*

*Comment: Projections for high gas at 6.50 belied by new report, in which expected gas price is at \$8.15 and the high price is \$13.76.*

Are these real or nominal prices? You can make recommendation to RGGI SWG to model latest projection, but will be up to them.

Sonia Hamel clarified that extensive discussions on modeling is part of the Stakeholder process. We get new data all the time and we'll look at this new data.

*Question: Did you look at impact of allocation method on allowance prices?*

Allowance price is an output of the model and every generator under the cap faces that price.

*Question: Why are gas generators built outside of RGGI to sell into RGGI, rather than built directly in the RGGI region?*

Purely because there is a carbon price inside RGGI region but not outside.

*Comment followed by question: Seems like you chose all the most optimistic assumptions. Is this really a best-case scenario model?*

Karl Michael responded that the SWG thinks the assumptions are middle of the road and not optimistic.

*Question: Should have run combo of different sensitivities in more of a scenario analysis, not one only discretely.*

Karl responded that this could be done, but that isolating assumptions allows you to see what is driving the results under different scenarios.

*Question: What type of coal facilities does model assume will come in?*

Almost all is IGCC.

*Comment followed by question: If it were more conventional coal it would be higher. Still large carbon footprint. Have you expanded analysis to include Pennsylvania and Maryland?*

Karl responded that this will be done.

*Did you look at added demand? Are you assuming existing infrastructure will handle increased gas demand?*

No, there will likely be a need to build new infrastructure.

*Can you see the New Jersey impacts isolated?*

Yes.

*Comment: Based on results we'd like to see more aggressive CO<sub>2</sub> policies modeled. You mentioned you reached proposed reductions in the modeling by 2020 and then hold emissions at that level. How come allowance prices from 2020 to 2024 show continuing*

*increases in price without showing any impact from having stopped the decrease in the cap (in reference to the allowance price curves in slide 14 of the presentation).*

Cap maintained between 2020 and 2024. Allowance prices keep increasing from 2020 to 2024 and don't show any impact from having stopped reducing the cap because of banking.

*Comment followed by question: We can disagree on assumptions, but this is a tremendous piece of modeling work. Want to commend you for amount of work put in and the graphic presentations. Why so much new building outside region of gas? Why not coal, based on along-term price of roughly \$4.50 for gas and \$1.50 for coal?*

This is based largely on energy prices and cost and performance assumptions for new conventional generation capacity. The SWG decided to use EIA assumptions for the cost and performance of new generation capacity.

*Comment: All environmentalists would likely support a more aggressive carbon policy than those modeled. Also, you shouldn't let gas and coal be separated because gas prices will affect coal prices?*

*Comment: Don't make implicit policy decisions. Model real carbon reductions and put more focus on energy efficiency. Unless we robustly model a scenario in which we cap actual emissions and start reducing the cap from those emissions, we won't be modeling the CO<sub>2</sub> reductions that RGGI is all about - then it's an enormous waste of time. We need some scenarios that group together these contingencies as PJM said.*

Franz Litz said that he appreciated the comments. However, he pointed out, as slide 13 shows, that maintaining flat CO<sub>2</sub> emissions is actually a 25% reduction from the business as usual reference case.

### **Clarifying Questions and Comments from Observers in the Audience:**

*Question: I assume there was no taxation for carbon for imports?*

Karl Michael said that this was not done.

Dr. Raab thanked ICF for its work on the modeling and Franz Litz reminded everyone that this is just the first step, and only the first set of runs. Franz asked stakeholders to think about what you want to see modeled, rather than drawing conclusions from this.

## **V. Integrated Optimization for Greenhouse Gas Reduction**

Dr. Raab introduced Peter Spinney of NEUCo, who presented his company's software solution to improving efficiency at power plants. . Dr. Raab apologized for the lack of time to cover Peter's appendix slides but reminded participants and observers that his

presentation will be accessible on the RGGI website. Click [here](#) to view this presentation. Karl Michael commented that everyone involved in RGGI hopes that some technological breakthroughs might positively impact compliance with a carbon cap.

***Questions below are from one or more RGGI Stakeholder Members, and Resource Panelists: (questions in italics, answers in regular font from Peter Spinney, unless otherwise noted):***

*Comment: One thing the modeling doesn't do is show technological improvement over time.*

*Comment from Franz Litz: The model doesn't recognize innovation going forward and we know this is going to be an issue. So we chose two options and may take these or other options and build them into a sensitivity run that considers the development of abatement options.*

*Question: What are the cost savings?*

There is a less than two-year payback on the software.

#### **IV. RGGI Renewable Energy Modeling Assumptions**

Bob Grace, of Sustainable Energy Advantage, presented on the renewable energy assumptions for the IPM modeling. Click [here](#) to access Bob Grace's presentation.

***Questions from one or more RGGI Stakeholder Members, and Resource Panelists: (questions in italics, answers in regular font from Bob Grace, unless otherwise noted):***

*Question: Did you do an assessment of the reality of each state meeting its renewable portfolio requirements with in-state resources?*

States are not limited to drawing from resources within their own state for the RPS; most have a larger geographic footprint.

*Question: Could more robust RPSs be adopted in the greater RGGI region?*

*Comment from Franz Litz: When you say the PTC wildcard as a modeling assumption, we meet the RPS targets (except for MD); the PTC impacts the fraction projected to be met by wind.*

It wouldn't change much in terms of the emissions. It would dramatically effect costs if PTC was extended. Then wind would become more competitive relative to other renewables.

*Question: Did you consider wind in Illinois?*

No, we had to draw the line somewhere, but we did look at West Virginia.

*Question: You have to consider Illinois and DC. Why did you consider Maryland as having met half the demand...?*

The alternative compliance payment level in Maryland is a lot lower and may not be high enough to encourage building new capacity.

## **VII. New Technology Options for Active CO<sub>2</sub> (and NO<sub>x</sub>) Emissions Management**

Julianne Zimmerman of GreenFuel Technologies discussed an algae based energy solution GreenFuel is working on in Cambridge, MA and elsewhere. Click [here](#) to view her presentation.

***Questions from one or more RGGI Stakeholder Members, and Resource Panelists: (questions in italics, answers in regular font from Julianne Zimmerman, unless otherwise noted):***

*Question: Do you have an idea of what the net CO<sub>2</sub> emissions would be in terms of release and combustion?*

That's a question that's over my head. I'm not an economist- I'm an engineer. This raises the question of how you bound the problem. Would you bound the problem around the plant or around the state? You've had two uses from original carbon dioxide, first to generate electricity or heat, and then to reuse in the form of biofuel. For instance, if the algae is co-fired in the power plant, clearly you have a local net reduction in CO<sub>2</sub>; whereas if it is used in biodiesel and replaces a petroleum product you would have a much larger reduction overall. The difficult part is deciding where to draw the boundaries in accounting for total net CO<sub>2</sub> emissions.

*Question: Do you have to reheat the gas after it passes through water and is that part of your cost?*

We are not reheating now, because we are handling relatively clean flue gases without significant particulates or heavy metals. In cases where we handle flue gases containing heavy metals, SO<sub>x</sub>, or particulates we may have to redirect and reheat. But our goal is release at ground level.

*Question: What is the acreage/MW?*

It is hard to say, as more correlated to the amount of CO<sub>2</sub> being emitted.

*Comment: This is very exciting. What are the sizes of the demos? What are your plans?*

Our current beta trial (at MIT) diverts less than one percent of total capacity but we are planning to expand that system by late summer to a few percentages higher. We are also planning 2-3 new small-scale installations this year. One is one to three acres, producing 20-25,000 gallons of biodiesel. These small-scale installations will not be economically self-sustaining. In the Southwest we are planning to go from single digit to a 25-35 acre installation in 2007 or 2008, which will represent commercial scale operations.

*Question: Are there other companies doing this?*

Yes, there are other companies doing related work, although none exactly competing head-to-head with GreenFuel. For example, there are some companies looking at genetic modifications to algae, bacteria, or plants, but we are not doing genetic manipulation. There is a research group in the Netherlands that is about two years behind us, using what appears to be a similar approach to ours. Competition isn't here today, but it is coming. It's not magic - just clever invention. The previous work by the US DOE and other organizations is widely publicized and not something secret.

*Question: Could you give an accurate cost projection?*

Depending on the type, size, and location of an installation, a GreenFuel facility could reduce CO<sub>2</sub> at a \$2-3 /ton cost in a very weak case, to \$5/ton revenue in what we would characterize as an economically self-sustaining case. We are happy to work with the RGGI Staff Working Group to provide numbers that accurately reflect realistic assumptions for the RGGI states.

*Comment: I really appreciate these kinds of presentations. It is important to remember that there are a ton of opportunities. However, most modeling runs are likely to over-predict costs because they don't tend to factor in innovation well.*

*Question: Is this better considered as a control technology or as an offset for the purposes of RGGI?*

We are in no way prepared to make any suggestion about how technologies like ours should be measured. We measure gas going in and out, so we can be precise about the reductions we make in CO<sub>2</sub> and NO<sub>x</sub> on a site-specific basis. That's how CK Environmental made their evaluation. However, the question of whether this is a control technology option or an offset option is a RGGI policy distinction from our perspective.

*Bio-control programs are subject to catastrophe. Is there a back-up system and is this accounted for through additional acres?*

Because it's an enclosed system, infection is not likely, but there is no redundancy for disasters such as hurricanes. The likely threats to this system are not biological issues. We do, however, take on the regulatory burden for non-performance. We also over-design a few percentage points to 20% over the capacity we need.

## VIII. RGGI Markets Workshop 11-30-04: Summary and Key “Take-Aways”

Dr. Raab introduced Sue Tierney of Analysis Group to present a report on the RGGI Markets Workshop that took place November 30, 2004. Click [here](#) to view this presentation.

Dr. Raab suggested that members of the Resource Panel and Stakeholder Group take some time to discuss and determine if they agree with Sue’s perceptions of the core RGGI issues.

***Questions from one or more RGGI Stakeholder Members, and Resource Panelists: (questions in italics, answers in regular font from Sue Tierney, unless otherwise noted):***

*Comment followed by question from stakeholder: Many of us think that energy efficiency should be integral to RGGI and funded. Is it core or ancillary?*

When I think of RGGI, I think of a regulatory program. That could just be me, but if it does not go beyond air regulators, that would be core. I can conceive of allowance mechanisms going to energy efficiency. This raises questions about all non-carbon sources, including all efficiency, wind, nuclear etc.

*Clarifying question from stakeholder: Would you agree from a policy perspective that we should be looking at strategies that are low cost and that mobilize the market as much as possible, but that the market doesn’t always work.*

How could I disagree?

Dr. Raab encouraged attendees to use Sue’s presentation as a launching pad to discuss their own thoughts, rather than to focus on Sue’s impression of the workshop.

*Clarifying question: Comments made that leakage was a factor in PJM but not in Northeast.*

Because I haven’t seen the modeling results, it’s based on my understanding of economics and the interaction of New England and Canada and of NJ as being part of a market that goes West. Based on that, I hypothesized that a cap would have less leakage concern in NE and NY.

*Comment: There is a tremendous overlap between ISO and environmentalists, and their goals should be aligned, for example, FERC’s distaste for outside market contracts. We need to stay calm and stick to goals: efficiency and renewables. It’s not easy, but it is doable if clear about reliability. ISO has a clear idea of goals and I think we can meet them.*

*Comment: We can't over-emphasize the importance of security. I agree we need long-term certainty and a planning horizon.*

*Comment: You identified fuel diversity and fuel neutrality as one of the most important points [Sue clarified "resource diversity" rather than "fuel diversity"]. What I heard this morning is that the model is calling for a huge amount of new gas generation in the region, 20,000 MW plus imports of gas generation from outside the region, plus the maximum amount of nukes and no new coal in the RGGI region. This assumes that there are nuclear updates and RPS compliance, etc. Power producers will be facing a world with a lot more gas. So if resource diversity is a core issue, how can energy efficiency not be core?*

*Comment followed by question: Great summary, and you did it without using the word ICAP once!*

*Comment from Franz Litz: I'm concerned we may have mischaracterized this morning's results. These runs are only preliminary. We still have many more runs to do.*

## **IX. Staff Working Group Update on Development of Potential Offsets**

Dr. Raab passed out handouts of the update on offsets development process standards. Chris Sherry, John D'Aloia, and Jason Denham then presented the SWG's update on the development of potential offsets, and looked specifically at an outline of potential standards for SF<sub>6</sub>, and afforestation. Click [here](#) to view this presentation.

***Questions from one or more RGGI Stakeholder Members, and Resource Panelists:***  
*(questions in italics, answers in regular font from Chris Sherry, unless otherwise noted):*

*Comment: The list of offset types is less important than the principles and standards for additionality, permanence, etc. for any offset. A lot of us would like to have input on what these would be.*

There is general agreement among the SWG that regulatory additionality should be a minimum requirement. We are attempting to develop benchmarks or thresholds as a proxy for case-by-case evaluation of financial additionality. We understand the desire by some for the elaboration of general principles for key criteria such as additionality that would be used to inform the development of future category-specific standards.

*Comment: It would be great to have a description in writing of what the tests would be.*

*Question: Do you see offsets coming from outside or only from inside RGGI region*

These issues are still under discussion.

*Question: What about geologic sequestration? Would that qualify as an offset? (E.g. IGCC with geologic sequestration)?*

It is one of the offsets types that was evaluated, but there are issues of permanence. The offsets that were short-listed for development of model rule standards included types that would involve relatively straightforward standards and did not have significant unresolved technical issues or perceived liabilities. We'd welcome your input on issues specific to this type of offset in the context of offsets that might be recommended for standards development post-model rule.

*Question: What about disagreements between states? What if a state certifies an offset not allowed by another state? What do you do?*

The SWG envisions a role for a regional technical assistance organization, which would be a consultative body managed by the states participating in RGGI. This regional organization would provide technical assistance to states in both administering and further developing an offsets component of the program. In the scenario you envision a state could address concerns through this regional body prior to a state making a final determination to approve an offset. If there is still disagreement at that point, ultimately it is a state reciprocity issue. We envision addressing reciprocity issues through a Memorandum of Understanding and in individual state implementing rules.

*Comment: Historically people tried to develop a generic approach and then apply it to a specific project. Standards could actually be easier for states. RGGI is trying to get around this.*

*Comment: EPA has run a voluntary program since the 1990's on SF<sub>6</sub>, which has been pretty successful [slides 21,22,23].*

*Comment: Con Ed is the biggest user of SF<sub>6</sub> in the region. We're in the process of looking at the data. SF<sub>6</sub> is an unregulated gas in the US with a very high GWP.*

*Question: Do you have any idea of what the tons per acre, per year potential might be from afforestation?*

I don't have it here. It is not huge. It is incremental, but it is something we think is doable from a standards development standpoint.

*Question: What are the other offsets beyond the shortlist?*

Franz Litz: It is already on website in a previous PowerPoint presentation.

*What percentage of reductions will be met through offsets?*

Franz Litz: This is a political decision that will ultimately be in the hands of the agency heads.

## **X. NOx Trading Success in the Northeast: Observations and Lessons**

Andrew Aulisi of World Resources Institute, presented WRI's new study on the history of NOx trading in the Northeast. Click [here](#) to view this presentation.

***Questions from one or more RGGI Stakeholder Members, and Resource Panelists:*** (*questions in italics*, answers in regular font from Andrew Aulisi, unless otherwise noted):

*Comment: This is an excellent report, well done by you and your colleagues. One lesson I learned in that process is there were clearly winners and losers in the different states in terms of allocations, which had implications for how well various companies stood when they began the process.*

Any allocation plan will create winners and losers. We looked at the NOx allocation and the allocation process primarily at an aggregate level, and did not analyze the allocations on a state-by-state basis. Such an analysis would be a useful piece of additional research.

*Comment: I was surprised that one of your lessons wasn't the big difference between anticipated cost and actual cost.*

I attribute that to the fact that models have not performed well at predicting the rates of innovation. They seem to rely on overly conservative estimates on innovation.

*Question: Did the issue of NOx allowance costs show up in electricity prices?*

We didn't look at daily or monthly electricity prices. We calculated a gross figure for electricity price impacts based on the market price for NOx allowances and overall generation during the period. It was a top-down approach.

## **X1. Wrap up / Announcements**

Dr. Raab noted that there were numerous specific comments and recommendations and that we assume there are even more. He advised attendees to submit their questions or comments to the appropriate Staff Working Group contact in writing. Dr. Raab pointed out that this was a very crowded day and that several Stakeholders had requested more time to provide feedback, potentially in a two-day format.

Dr. Raab asked attendees to pencil May 19<sup>th</sup> into their schedules for a potential additional Stakeholder meeting. In any case, Stakeholders et al. are set to meet again on April 6<sup>th</sup> in Boston.

**RGGI Stakeholder Meeting #6**  
**February 16, 2005**

**Attendance List**

| <b>Affiliation</b>         | <b>Name</b>        | <b>5/20/04</b> | <b>6/24/04</b> | <b>9/13/04</b> | <b>11/12/04</b> | <b>2/16/05</b> |
|----------------------------|--------------------|----------------|----------------|----------------|-----------------|----------------|
| <b>Staff Working Group</b> |                    |                |                |                |                 |                |
| CT DEP                     | Chris James        |                | <b>X</b>       |                | <b>X</b>        |                |
| CT DEP                     | Chris Nelson       | <b>X</b>       |                | <b>X</b>       |                 | <b>X</b>       |
| DE DNREC                   | Philip Cherry      |                | <b>X</b>       | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| DE PSC                     | Bruce Burcat       |                |                |                | <b>X</b>        |                |
| DE PSC                     | Robert Howatt      |                |                |                | <b>X</b>        |                |
| ECP                        | Bill Breckenridge  |                |                |                | <b>X</b>        | <b>X</b>       |
| MA DEP                     | Bill Lamkin        |                |                | <b>X</b>       |                 | <b>X</b>       |
| MA DEP                     | Nancy Seidman      |                | <b>X</b>       |                | <b>X</b>        |                |
| MA DOER                    | Dwayne Breger      | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| MA OCD                     | Sonia Hamel        | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| MD-DOE                     | Gene Higa          | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| MD-Energy Admin.           | Michael Li         |                |                |                |                 |                |
| ME DEP                     | Kevin Macdonald    |                | <b>X</b>       |                |                 |                |
| ME DEP                     | James Brooks       |                |                |                |                 |                |
| ME PUC                     | Dennis Bergeron    |                |                |                |                 |                |
| NB                         | Darwin Curtis      |                |                |                |                 |                |
| NH DES                     | Joanne Morin       | <b>X</b>       |                | <b>X</b>       |                 |                |
| NH DES                     | Bob Scott          |                |                |                |                 |                |
| NH DES                     | Andy Bodnarik      |                |                |                |                 |                |
| NH DES                     | Joe Fontaine       |                | <b>X</b>       | <b>X</b>       |                 |                |
| NH PUC                     | Maureen Sirois     |                |                |                |                 |                |
| NJ BPU                     | Michael Winka      |                |                |                |                 |                |
| NJ DEP                     | Christopher Sherry | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| NJ DEP                     | Joe Carpenter      |                |                |                |                 |                |
| NJ DEP                     | Jeanne Herb        |                |                |                |                 |                |
| NJ DEP                     | Sam Wolfe          |                |                |                |                 |                |
| NY DEC                     | Franz Litz         | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| NY DEC                     | Michael Sheehan    | <b>X</b>       |                | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| NY DEC                     | Thomas McGuire     | <b>X</b>       | <b>X</b>       | <b>X</b>       |                 | <b>X</b>       |
| NY DEC                     | Lois New           | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| NY DEC                     | Mark Lowery        | <b>X</b>       |                | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| NY DEC                     | Jason Denham       |                | <b>X</b>       |                |                 | <b>X</b>       |
| NY PSC                     | John D'Aloia       | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| NY PSC                     | Tina Palmero       |                |                |                | <b>X</b>        | <b>X</b>       |
| NYSERDA                    | Karl Michael       | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| PA DEP                     | Joe Sherrick       | <b>X</b>       | <b>X</b>       |                |                 | <b>X</b>       |
| PA DEP                     | Don Brown          |                |                |                | <b>X</b>        |                |
| RI DEM                     | Steve Majkut       | <b>X</b>       |                |                |                 |                |
| VT DEC                     | Dick Valentinetti  |                |                | <b>X</b>       |                 |                |
| VT PSB                     | David Farnsworth   |                |                | <b>X</b>       |                 |                |

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|-----------------------------|------------------------------------|----------------|----------------|----------------|-----------------|----------------|
| <b>Stakeholder Group</b>    |                                    |                |                |                |                 |                |
| ACEEE                       | Bill Prindle                       | X              | X              | X              | X               |                |
| AES                         | Mark Buzel                         | X              | X              | X              | X               | X              |
| AES                         | Chris Wentlent                     |                |                |                |                 |                |
| CLF                         | Seth Kaplan                        | X              |                | X              | X               | X              |
| Constellation               | John Quinn                         | X              | X              | X              | X               | X              |
| Dominion                    | Dan Weekley                        | X              | X              | X              | X               |                |
| Dominion                    | Lenny Dupuis                       | X              | X              | X              |                 | X              |
| Dominion Energy New England | Paula Hamel                        |                |                | X              | X               | X              |
| EDF                         | Jessica Holliday                   | X              |                | X              | X               | X              |
| Entergy                     | Brent Dorsey                       | X              |                | X              | X               | X              |
| Entergy                     | Jeff Williams                      |                | X              |                |                 |                |
| Environment Northeast       | Dan Sossland                       |                |                |                |                 |                |
| Environment Northeast       | Derek Murrow                       | X              | X              | X              | X               | X              |
| Environment Northeast       | Heather Kaplan                     |                |                |                | X               | X              |
| IEP of NJ                   | Steve Gabel                        |                | X              | X              |                 |                |
| IEP of NJ                   | Mally Becker                       | X              |                |                |                 |                |
| International Paper         | Doug Stilwell                      |                |                |                |                 |                |
| International Paper         | Karen B Risse                      | X              | X              | X              | X               | X              |
| Keyspan                     | Bob Teetz                          | X              | X              | X              | X               | X              |
| Keyspan                     | Cathy Waxman                       | X              | X              | X              | X               | X              |
| Maine Public Advocate       | Steve Ward                         | X              | X              | X              |                 | X              |
| NEGT                        | Susan Flash                        |                | X              |                |                 |                |
| NGRID                       | Joe Kwasnik                        | X              | X              | X              | X               | X              |
| Northeast GHG Coalition     | Michael J Bradley                  | X              |                | X              | X               | X              |
| Northeast GHG Coalition     | Brian Jones                        | X              | X              | X              | X               | X              |
| NRDC                        | Dale Bryk                          | X              | X              | X              | X               |                |
| NRDC                        | Luis Martinez                      | X              |                |                | X               | X              |
| Northeast Utilities         | Jon Russell                        | X              | X              | X              | X               | X              |
| NY Coalition                | John G.Holsapple                   | X              | X              | X              | X               | X              |
| NY Coalition                | Sandra Meier                       | X              | X              |                |                 |                |
| PA Consumer Advocate        | Sonny Popowsky                     |                | X              | X              |                 | X              |
| Office of PA Consumer Adv.  | Griffiths, Dan                     | X              |                |                | X               |                |
| Pace Law Center             | Larry De Witt                      | X              | X              | X              | X               | X              |
| PIRG                        | Rob Sargent                        | X              | X              | X              |                 |                |
| PSEG                        | Ron Drewnowski                     | X              | X              | X              |                 | X              |
| PSEG                        | Christine Neely                    | X              |                | X              | X               |                |
| PSEG                        | James Hough                        |                | X              |                |                 |                |
| The New England Council     | Deirdre Savage<br>Jim Krustapentus | X              | X              | X              | X               |                |
| UCS                         | Deb Donovan                        | X              |                | X              |                 | X              |
| UCS                         | Michelle Manion                    | X              | X              | X              | X               | X              |
| United Technologies Co.     | Christopher Powell                 | X              |                | X              | X               | X              |

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|-----------------------|-------------------------|----------------|----------------|----------------|-----------------|----------------|
| <b>Resource Panel</b> |                         |                |                |                |                 |                |
| ICF Consulting        | Steve Fine              |                |                |                |                 | <b>X</b>       |
| ICF Consulting        | Chris McCracken         |                |                |                |                 | <b>X</b>       |
| ISO-NE                | Mark Babula             |                |                |                |                 |                |
| ISO-NE                | Jim Platts              |                | <b>X</b>       | <b>X</b>       | <b>X</b>        |                |
| NatSource             | Richard Rosenzweig      |                |                |                |                 |                |
| NatSource             | Ben Feldman             |                | <b>X</b>       | <b>X</b>       |                 | <b>X</b>       |
| NatSource             | Michael Intrator        |                |                |                | <b>X</b>        |                |
| NESCAUM               | Ken Colburn             |                |                | <b>X</b>       |                 | <b>X</b>       |
| NESCAUM               | Suzanne Watson          | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        |                |
| NESCAUM               | Kelly Levin             |                |                |                |                 | <b>X</b>       |
| NYISO                 | Dave Lawrence           |                |                | <b>X</b>       |                 | <b>X</b>       |
| NYISO                 | Mollie Lampi            |                |                |                |                 |                |
| NYISO                 | Aaron Breidenbaugh      | <b>X</b>       |                | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| Pew Center            | Sally Ericsson          | <b>X</b>       |                |                |                 |                |
| Pew Center            | Judi Greenwald          | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| PJM                   | Susan Covino            |                |                |                | <b>X</b>        |                |
| PJM                   | Kenneth A. Schuyler, PE | <b>X</b>       |                |                |                 |                |
| PJM                   | Joe Kerecman            | <b>X</b>       |                |                |                 | <b>X</b>       |
| RAP                   | Richard Cowart          | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| RFF                   | Joe Kruger              | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| WRI                   | Jonathan Pershing       | <b>X</b>       | <b>X</b>       |                | <b>X</b>        |                |
| WRI                   | Andrew Aulisi           |                | <b>X</b>       |                |                 | <b>X</b>       |
| <b>Facilitators</b>   |                         |                |                |                |                 |                |
| Raab Associates, Ltd. | Jonathan Raab           | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        | <b>X</b>       |
| Raab Associates, Ltd. | Peter Wortsman          | <b>X</b>       | <b>X</b>       | <b>X</b>       | <b>X</b>        |                |
| Raab Associates, Ltd. | Susan Rivo              |                |                |                |                 | <b>X</b>       |
|                       |                         |                |                |                |                 |                |

| <b>Others</b> |                   |  |  |  |  | <b>2/16/05</b> |
|---------------|-------------------|--|--|--|--|----------------|
| NY SERDA      | Dave Coup         |  |  |  |  | <b>X</b>       |
| DE DNREC      | Valerie Gray      |  |  |  |  | <b>X</b>       |
| CT DPUC       | Michael Chowaniec |  |  |  |  | <b>X</b>       |
| NYC DEC       | Mapes, Jeffrey    |  |  |  |  | <b>X</b>       |

| <b>Affiliation</b>                            | <b>Name</b>                                      | <b>2/16/05</b> |
|---|--|----------------|
| <b>Observers at February 16, 2005 Meeting</b> |  |                |
| Aeschliman, Lea                               | Pew Charitable Trust                             | X              |
| Angoorly, Caroline                            | NRG  | X              |
| Ashford, Michael S.                           | The Climate Trust                                | X              |
| Asteriadis, Sakis                             | NEPOOL GIS Program Manager                       | X              |
| Austin, Frank                                 | Stone & Webster                                  | X              |
| Beal, Lisa                                    | Interstate Natural Gas Assoc. of America         | X              |
| Blankenship, Julia                            | Cinergy Services                                 | X              |
| Breslow, Marc                                 | Mass Climate Action Network                      | X              |
| Burtraw, Dallas (Dennis)                      | Resources for the Future                         |                |
| Buttazoni, Marco                              | Environmental Resources Trust                    | X              |
| Chattopadhyay, Amit                           | Malcolm Pimie Inc.                               |                |
| Chestone, Alissa                              | Access Industries                                | X              |
| Coyne, Martin                                 | Platis Publishing                                | X              |
| Clark, Sean                                   | The Climate Trust                                | X              |
| Cunningham, Bill                              | Unions for Jobs and the Environment              | X              |
| Cunningham, Dan                               | PSEG   | X              |
| Cusack, John                                  | Gifford Park Associates                          | X              |
| Eckersley, Olivia                             | International Emissions Trading Association IETA | X              |
| Fontaine, Peter J.                            | Cozen O'Connor                                   |                |
| Gage, Laurie                                  | Cantor Fitzgerald Environmental Brokerage        | X              |
| Greer, Diane                                  | NYC Apollo Alliance                              | X              |
| Grace, Bob                                    | FPL Group  | X              |
| Hall, Michael                                 |  | X              |
| Hampp, John                                   | Sustainable Energy Advantage                     | X              |
| Hamrin, Jan                                   | Center for Resource Solutions                    |                |
| Holdsworth, Eric                              | EEl  | X              |
| Heck, Werner                                  | Heck Associates                                  | X              |
| Jacobson, Lisa                                | Business Council for Sustainable Energy          | X              |
| Johnson, Lucy                                 | Synapse  | X              |
| Jones, Sue                                    | Natural Resources Council of Maine               | X              |
| Jope, Andrew                                  | U of Vermont                                     |                |
| Karlic, Cynthia                               | NRG Energy, Inc.                                 |                |
| Kilgore, Kedin                                | Natsource, LLC                                   | X              |
| Krotoff, Oleg                                 | Con Edison of NY, Inc.                           | X              |
| Koda, Richard                                 | Koda Consulting, isn behalf of UWUA and IBEW     | X              |
| LeBlanc, Alice                                | Environmental and Economic Consulting            | X              |
| Linky, Edward                                 | USEPA Region II                                  | X              |
| Mapes, Jeffrey                                | NYC DEC  | X              |
| Maillet, Bruce                                | Shaw E & I                                       | X              |
| Marzilli, James                               | MA House of Representatives                      | X              |
| Mernick, Mike                                 | ICF Consulting                                   | X              |
| Miletich, Radmila                             | Independent Power Producers of NY                | X              |
| Milkowski, Stefan                             | Columbia journalism student                      |                |
| Moore, Robert                                 | EANY   | X              |
| Moore, Michael                                | Falcon ES  | X              |

|                          |  |   |
|--------------------------|--|---|
| Murdock, Sarah Woodhouse | Nature Conservancy                                   |   |
| Nagle, Kara              | Headwaters   | X |
| Neal, Don                | Calpine  | X |
| Parker, Lisa             | BP Emissions Markets Group                           | X |
| Paul,, John              | CEED   | X |
| Quillian, Mary           | Nuclear Energy Institute                             | X |
| Rabinowitz, Robert       | Chicago Climate Exchange                             | X |
| Rawls, Tom               | THR Associates. LLC                                  |   |
| Rio, Robert              | AIM  | X |
| Roberts, Gail            | Platts   | X |
| Sandell, Layla           | EPRI   | X |
| Short, Bill              | Ridgewood Power Management, LLC                      |   |
| Siegel, Joe              | EPA  |   |
| Skernolis, Ed            | Waste Management, Inc.                               | X |
| Smith, Maureen           | Center for Resource Solutions                        |   |
| South, David             | Technology & Market Solutions, LLC                   |   |
| Space, William           | Ctr for Environmental Studies, Brown Univ.           | X |
| Spencer, Greg            | Blue Source  | X |
| Spinney, Peter           | NEUCo  | X |
| Tierney, Susan           | Analysis Group                                       | X |
| Tranter, Laura           |  | X |
| Trisko, Eugene           | UMWA   | X |
| Tuffey. Thomas           | PennFuture   |   |
| Van Atten, Christopher   | MJB & A  | X |
| Vanderlan, Christine     | Environmental Advocates of NY                        | X |
| Weiner, Scott            | Rutgers Ctr for Energy, Environment and Econ. Policy | X |
| Wintergreen, Jay         | First Environment Inc. Corporate HQ                  | X |
| Wood, Susan              | AgCert International Ltd.                            |   |
| Yost, Peter              | PSEG Power   | X |
| Younger, Mark            | Slater Consulting                                    | X |
| Zimmerman, Julianne      | GreenFuel Technologies                               | X |
|                          |  |   |