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The State of New Hampshire
**DEPARTMENT OF ENVIRONMENTAL SERVICES**

**Thomas S. Burack, Commissioner**

October 25, 2011

Electric Utility Restructuring Legislative Oversight Committee (pursuant to RSA-374-F:5)
Legislative Office Building, Room 304
Concord, New Hampshire 03301

Air Pollution Advisory Committee (pursuant to RSA-125-J:11)
Legislative Office Building, Room 304
Concord, New Hampshire 03301

Re: RSA 125-O:21 RGGI annual report required of the Department of Environmental Services (DES) and the Public Utilities Commission (PUC)

Dear Chairman Holden and Members of the Committees:

New Hampshire Revised Statutes Annotated Chapter 125-O[1], sections 18 – 28 established the state's Carbon Dioxide Emissions Budget Trading Program in accordance with the Regional Greenhouse Gas Initiative (RGGI). RGGI is a cooperative effort by ten Northeast and Mid-Atlantic States (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey[2], New York, Rhode Island, and Vermont) to reduce greenhouse gas emissions from the electric power generation sector. For more detailed information on RGGI please refer to the attached RGGI Fact Sheet (www.rggi.org/docs/RGGI_Fact_Sheet.pdf) and the website (www.rggi.org).

The statute requires an annual report on the program to specific standing legislative committees with responsibility for oversight of air pollution issues and electric generation in the state. Specifically, RSA 125-O:21, VI requires the following of DES and PUC:

*"**125-O:21 Carbon Dioxide Emissions Budget Trading Program. –***

*VI. The department and the commission shall report on an annual basis to the air pollution*

[1] See: *www.gencourt.state.nh.us/rsa/html/NHTOC/NHTOC-X-125-O.htm* for full text.
[2] NJ has announced its intention to withdraw from RGGI effective 1/1/12. See: www.rggi.org/news/njstatements.

*advisory committee under RSA 125-J:11 and the legislative oversight committee on electric utility restructuring under RSA 374-F:5, on the status of the implementation of RGGI in New Hampshire, with emphasis on the prices and availability of RGGI allowances to affected $CO_2$ sources and the trends in electric rates for New Hampshire businesses and ratepayers. The report shall include but not be limited to:*

*a) The number of allowances sold in the RGGI program and the type of entities purchasing allowances;*
*b) The number of unsold allowances in the RGGI program;*
*c) The available price data of allowances from the regional auction and secondary markets;*
*d) Market monitoring reports;*
*e) The $CO_2$ emissions by affected source, state, and RGGI region;*
*f) The spending of revenues from auction allowances by each RGGI state;*
*g) The allocation and spending of the greenhouse gas emissions reduction fund, including associated energy savings and emissions reductions; and,*
*h) The status of any proposed or adopted federal $CO_2$ cap and trade program, the impact on New Hampshire's RGGI program, and recommendations for any proposed legislation necessary to accommodate the federal program."*

## Overview

RGGI's phased approach means that reductions in the $CO_2$ cap are initially modest, providing predictable market signals and regulatory certainty. Electricity generators will continue to be able to plan for and invest in lower-carbon alternatives and avoid dramatic electricity price impacts. Revenues from allowance auctions have been primarily directed to energy efficiency measures intended, directly or indirectly, to reduce regional electricity demand and $CO_2$ emissions.

Quarterly RGGI auctions have been conducted for three full years, smoothly and professionally. The state has received nearly $33,000,000 to date in allowance auction revenues for energy efficiency investments. Total revenues collected for consumer benefit in the ten RGGI states have exceeded $900 million.

The RGGI states jointly established an administrative entity, the Regional Greenhouse Gas Initiative, Inc. (RGGI, Inc.), a non-profit corporation created to support development and implementation of the ten participating states' $CO_2$ Budget Trading Programs. The environmental and utility or energy agency heads of the RGGI states serve as the Board of Directors of the non-profit corporation (without compensation beyond their state jobs). DES Commissioner Burack has served as Chair of the Board's Audit Committee since the inception of RGGI, Inc. and has recently joined the Executive Committee as an at-large member. PUC Commissioner Below has served, first, as the Secretary of the Board and then as Vice-Chair until he resigned on October 17, 2011 as he winds up his work as a PUC Commissioner. Governor Lynch has designated Office of Energy and Planning Director Joanne Morin to succeed Commissioner Below as the energy agency representative to RGGI. RGGI, Inc. provides technical and support services for key elements of the states' $CO_2$ Budget Trading programs, including:

- Development and maintenance of a system to report data from emissions sources subject to RGGI, and to track $CO_2$ allowances;
- Implementation of a platform to auction $CO_2$ allowances;
- Monitoring the market related to the auction and trading of $CO_2$ allowances;

- Providing technical assistance to the participating states in reviewing applications for emissions offset projects; and,
- Providing technical assistance to the participating states to evaluate proposed changes to the states' RGGI programs.

Each RGGI state retains its own sovereign authority to implement and enforce the program in its own state, and auction proceeds for individual state allowances are directed back to that state for distribution in accordance with state law. RGGI, Inc. simply coordinates the joint activities, in particular the allowance auctions and allowance tracking, thereby achieving administrative efficiencies by reducing duplicative administrative programs.

## Program Evaluation and Potential Changes

RGGI continues to function smoothly and as intended according to market monitoring analysis and reports. Four quarterly allowance auctions have been conducted since the October 2010 report (auction results and monitor reports are discussed on pages 8-9 of this report).

While RGGI is functioning as designed, DES and the PUC acknowledge that current allowance prices remain at the minimum value, because emissions are well below the level anticipated when the program was originally designed. This was the result of a number of unanticipated factors, including the following (also refer to chart in regional $CO_2$ Emissions Trends section on page 10 of this report):

- Fuel switching from oil and coal to natural gas due to relatively lower natural gas prices,
- Increased generation from non-emitting sources, such as:
  - Wind,
  - Hydro, and
  - Nuclear
- Weather,
- Economic conditions, and
- Increased energy efficiency, due in part to investment of RGGI funds.

RGGI participating states are currently preparing to support the 2012 program review called for in the RGGI Memorandum of Understanding (MOU[3]). As the MOU specifies, program review will be a comprehensive evaluation to include program success, program impacts, additional reductions, imports and emissions leakage, and offsets. In preparation for the 2012 program review, RGGI participating states are holding regional stakeholder "learning sessions". RGGI invited expert market analyst Point Carbon to present[4] at the September 20, 2011 meeting. As stated on its website[5], *"Point Carbon's in-depth knowledge of power, gas and $CO_2$ emissions market dynamics positions us as the number one supplier of unrivalled market intelligence of these markets. Our staff includes experts in international and regional climate policy, mathematical and economic modeling, forecasting methodologies, risk management and market reporting."* Their September presentation was a follow up to their independent analysis[6], issued after the June 2011 auction that recommended the following:

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[3] See RGGI MOU: www.rggi.org/design/history/mou.
[4] See RGGI, Inc. website: www.rggi.org/design/program_review/materials_by_date.
[5] See: www.pointcarbon.com/aboutus.
[6] See "RGGI's Upcoming Auctions - The Road To A Short Market?" June 22, 2011: www.pointcarbon.com/research/promo/research/1.1552164.

> *"We find that a conservative cap adjustment under the program's 2012 Review combined with state regulators' retirement of a large volume of unused allowances could result in a short market by 2016 or 2017. The next two auctions will determine how much of a bank emitters hold, and thereby the chances that a change to the cap would be effective.*
>
> *"RGGI states set the cap to 188 million short tons (Mt) annually for the first years of the program, a total of 564 Mt over the first compliance period, 2009-2011. Based on historical numbers and our emission forecast, we estimate covered entities' total cumulative compliance obligation for 2009-2011 will be 399 Mt. RGGI was very over-allocated in 2009 and 2010, with an excess 51-64 million allowances in 2009-2010, and we expect it will remain similarly long in 2011. Overall, we estimate the 1st compliance period will end with 165 million surplus allowances, over and beyond what emitters need to cover their emissions. One of the most important questions for RGGI's future is: who holds these surplus allowances – market participants or the states?*
>
> *"After the 12th RGGI auction, market participants have purchased a total of 357 million allowances of the 415 Mt offered to date. These 357 Mt allowances, added to the 45 Mt free allowances we estimate emitters have received, means emitters hold up to 401 Mt allowances. With a compliance obligation forecasted at 399 Mt, covered entities could already be in compliance and may not need to buy any allowances at the coming auctions. States hold 58 Mt unsold allowances from auctions to date, as well as at least 24 Mt allowances earmarked for retirement or unclaimed by covered entities, totaling 82 Mt. With another 81 Mt to be offered for sale in September and December, the question of whether emitters will hold a large bank by the end of the first compliance period remains open….*
>
> *"We think a politically palatable change would be to 'update' the cap down to 2009 emissions levels instead of continuing the program's current baseline year of 2005 emissions. This would make the cap 108 Mt instead of 165 Mt (without NJ). We run our model assuming the 2013 and 2014 caps are lowered to 108 Mt, and the cap declines thereafter by its current trajectory of 2.5 percent a year. We assume players would buy all the allowances they can once there is a signal that the 2012 Review may deliver a change in the cap the following year. This means the market would build up a bank in 2012 of about 45 Mt, which comes in addition to what emitters will have banked in the first compliance period.*
>
> *"Tightening the cap and forcing extra emission reductions in RGGI states would strengthen the case for the program to constitute implementation of the US federal Environmental Protection Agency's New Source Performance Standard. In turn, this could provide an added incentive to state regulators to update the cap, since generators would at least have the flexibility of complying with their familiar cap-and-trade program rather than new federally-mandated EPA requirements."*

Furthermore, a joint group of both electric industry companies and environmental organizations stakeholders[7] sent in the following comments by letter dated May 31, 2011.

> *"Below are three suggested cap reduction scenarios that the RGGI states should consider modeling as the primary policy cases, although another similar range of cap levels may also be acceptable:*

[7] Calpine Corporation, Dominion Energy New England, ENE (Environment Northeast), National Grid, New York Power Authority, Natural Resources Defense Council, NRG Energy, Pace Energy and Climate Center, Public Service Enterprise Group

***Low Cap Scenario:*** *actual 2009 emissions levels*
***Medium Cap Scenario:*** *average actual emissions levels for 2008-2010*
***High Cap Scenario:*** *10 percent above actual average emissions levels for 2008-2010*

*The potential policies below should be considered in concert with revisions to the regional allowance budget.*

*1) Treatment of Banked and Unsold Allowances:*

*a) Retire unsold allowances – retire all allowances that were offered at auction but not sold, including future compliance period allowances.*

*b) Adjust the budget to account for all unused allowances (unsold and banked) – retire all unsold allowances and reduce the aggregate cap (e.g. total over the IPM modeling horizon) by the number of allowances banked from the first compliance period.*

*2) Alternate Reduction Path:*

*a) Instead of a 3 year stabilization step, begin reducing the cap the year after the initial reduction is implemented.*

*b) Slower reduction path: reduce regional allowance budget by 1.5% annually for the duration of the modeling horizon.*

*3) Combination of the sensitivities to address adjustment for unused allowances (1)(b) and second year cap reduction (2)(a)*

*4) Adding other electric sector sources: Include regulation of emissions associated with imported power (based on conversations about policy options to address imported power and associated emissions leakage)"*

DES and PUC staff will continue to monitor and participate in the 2012 Program Review, and will report back to these Committees as part of next year's annual report. Concurrently, DES and PUC will conduct the state level review of the RGGI program in New Hampshire as required under RSA 125-O:27, "Review of the New Hampshire RGGI Program."[8]

## Trends in Electric Rates

The cost of $CO_2$ emissions allowances is a very small part of overall electricity bills. On average, the cap on $CO_2$ emissions accounted for 0.24 to 0.61% of average residential electricity bills across the 10-state region.[9] Based on typical household electricity usage, that translates into 46 cents per month for residential consumers. PSNH has estimated their direct compliance costs to be about $3.3 million for 2011, or $0.0006 per kWh ($3.3 million divided by 5,318,921,000 kWh in distribution sales to default service customers), which translates to 30 cents per month for a household using 500 kWh. This small rate impact is offset by strategic reinvestment of $CO_2$ allowance proceeds in energy efficiency measures which reduce demand for electricity and give households and businesses better control over their energy bills.

Changes in electric rates, particularly the energy or generation component of rates, which is larger than all other components combined, have been driven primarily by changes in the cost of fossil fuels, especially natural gas, which operates on the margin most of the time in New England. For Unitil, National Grid and the New Hampshire Electric Cooperative, the cost of $CO_2$ allowances may be reflected in their default service rates to the extent that natural gas power plants operating on the margin factor carbon allowance prices in bids that set the market clearing price for power.

The monthly average wholesale locational marginal price (LMP) for New Hampshire for energy only (excluding capacity and ancillary service charges, as well as distribution and transmission

[8] See: www.gencourt.state.nh.us/rsa/html/X/125-O/125-O-27.htm
[9] Fact Sheet: The Regional Greenhouse Gas Initiative, 2010: www.rggi.org/docs/RGGI_Fact_Sheet.pdf.

charges) compared to New Hampshire wholesale natural gas prices since 2003 are shown in Figure 1.

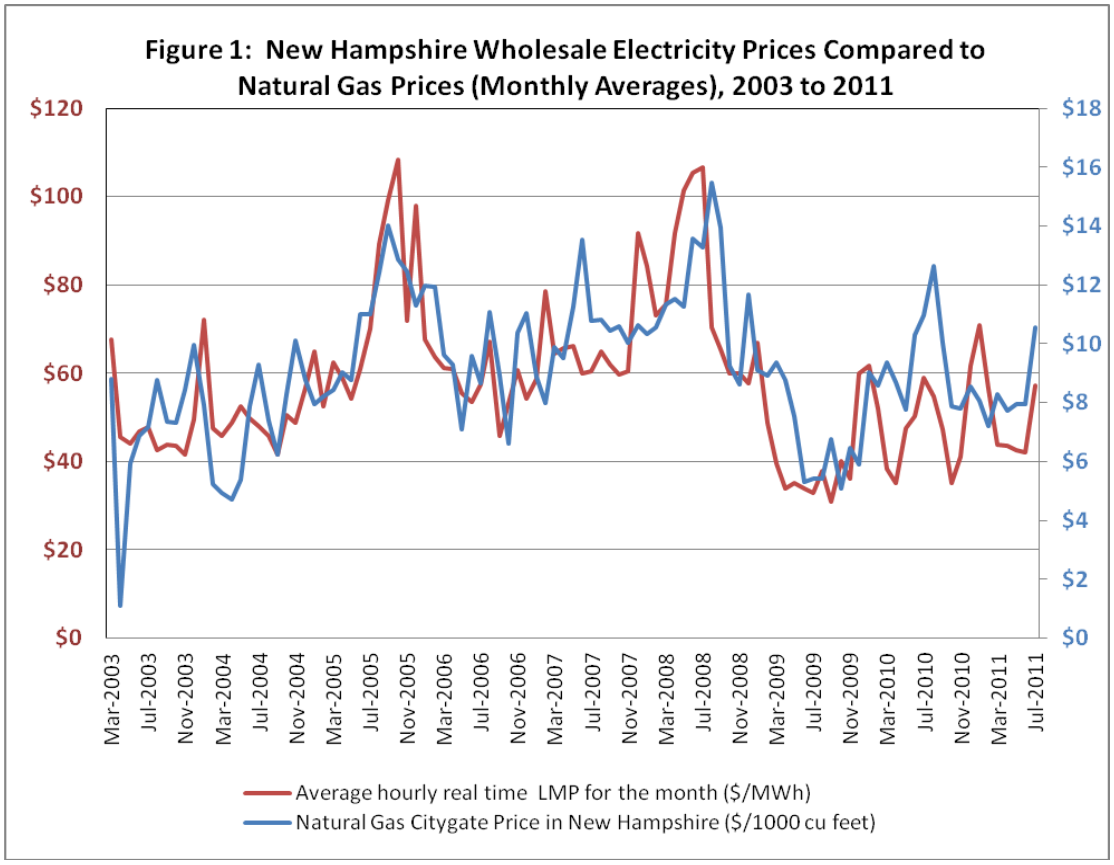
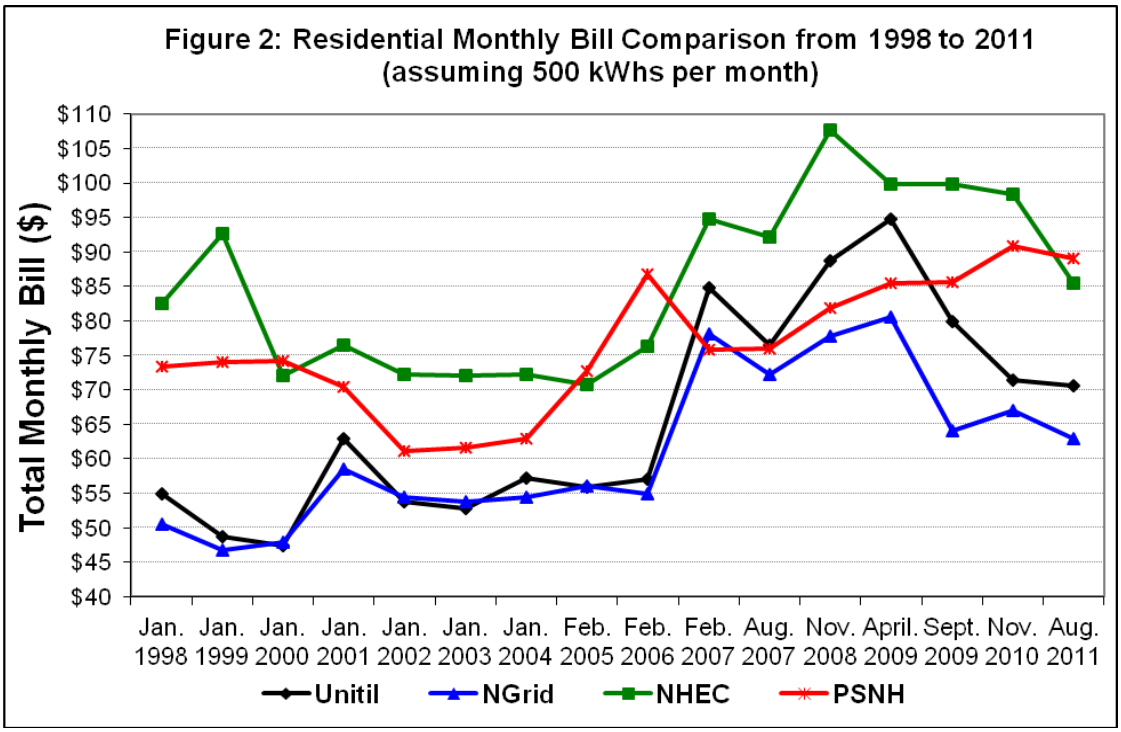



Figure 2 provides a monthly bill comparison of New Hampshire's four electric utilities.



A comparison of average residential monthly electric bills for 500 kWh of use per month (close to the median usage level) for New England residential customers is shown in Figure 3.

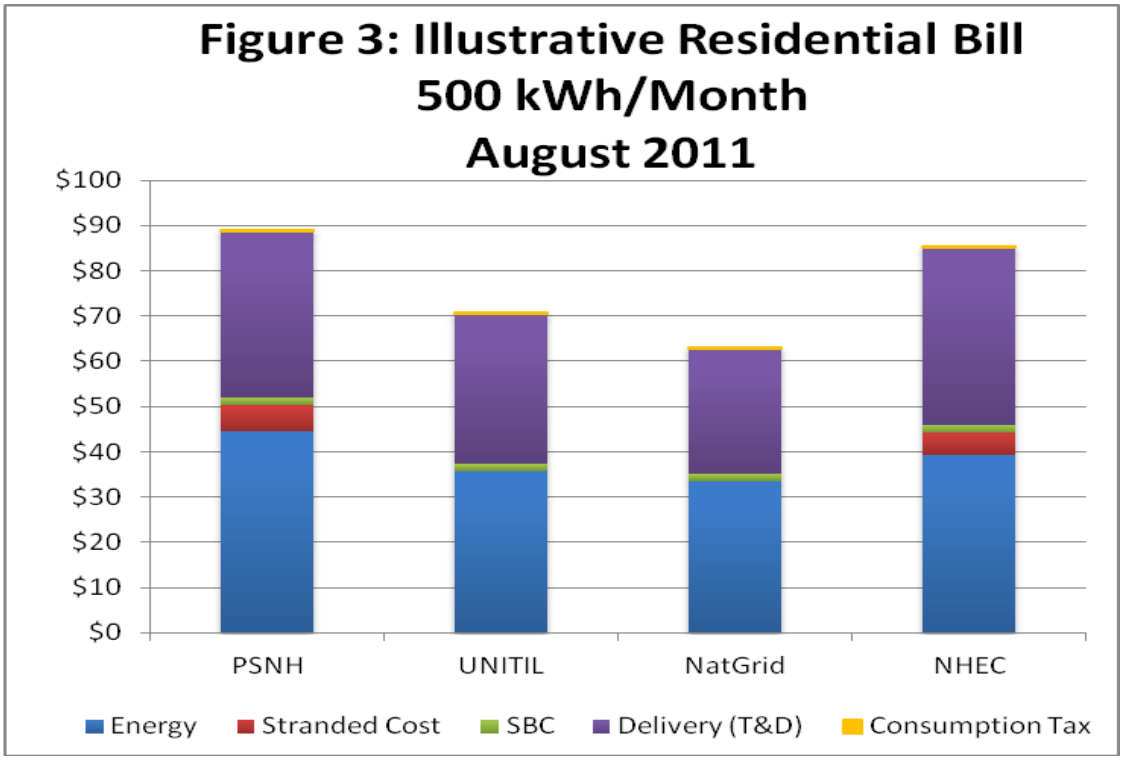
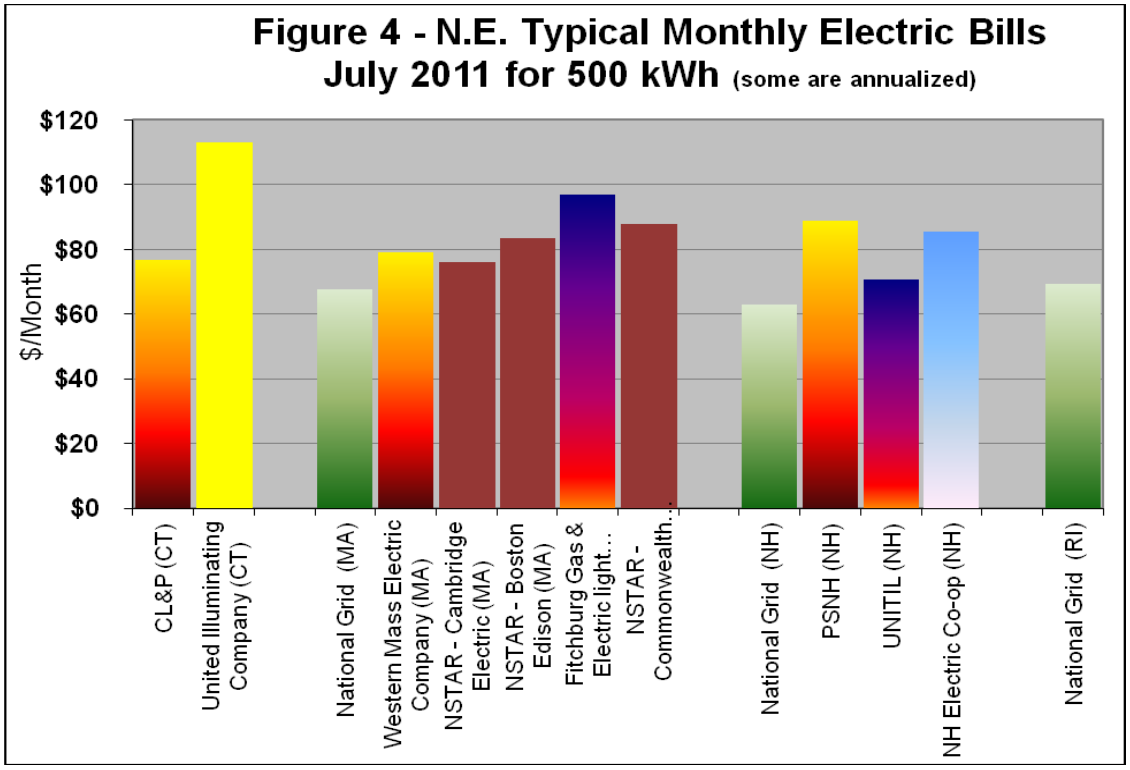



Figure 4 demonstrates the typical monthly bills for New England residents.



## Allowance Auctions and Sales Information

The RGGI MOU established individual statewide allowance budgets under an initial regional budget cap of 188,076,976 tons. The regional and state specific caps were negotiated by the ten states based on adjusted regulated electric generation sector (25 MW or greater fossil fuel fired plants) emissions. New Hampshire's budget for the initial compliance period (2009 – 2011) is 8,620,460 tons (or allowances) per year, based on 2003 – 2004 annual New Hampshire affected source emissions.

New Hampshire has participated in twelve regional auctions to date. A regional total of 383,873,415 allowances have been sold in 13 auctions. Another 99,006,903 allowances that were offered for sale went unsold. Greater than 85% of allowances have been purchased by regulated compliance entities (electric generators and their corporate affiliates). There has been no evidence of allowance hoarding for speculation by non-compliance entities and allowance shortages or escalating prices due to speculative behavior have not been observed. New Hampshire specific auction details are presented in Table 1.

**Table 1: NH Auction Sales and Revenues to Date**

| Auction (Vintage) | Date | Allowances | Price | Revenue |
|---|---|---|---|---|
| 1-2009 | 9/25/08 | 0 | $3.07 | $0 |
| 2-2009 | 12/17/08 | 1,189,610 | $3.38 | **$4,020,882** |
| 3-2009<br>3-2012 | 3/18/09 | 1,189,611<br>86,850 | $3.51<br>$3.05 | **$4,175,535**<br>**$264,892** |
| 4-2009<br>4-2012 | 6/17/09 | 1,189,610<br>86,850 | $3.23<br>$2.06 | **$3,842,440**<br>**$178,911** |
| 5-2009<br>5-2012 | 9/9/09 | 1,189,610<br>86,850 | $2.19<br>$1.87 | **$2,605,246**<br>**$162,409** |
| 6-2009<br>6-2012 | 12/2/09 | 1,362,019<br>63,922* | $2.05<br>$1.86 | **$2,792,139**<br>**$118,895** |
| 7-2010<br>7-2013 | 3/10/10 | 1,487,013<br>84,941* | $2.07<br>$1.86 | **$3,078,117**<br>**$157,990** |
| 8-2010<br>8-2013 | 6/9/10 | 1,487,013<br>86,850 | $1.88<br>$1.86 | **$2,795,584**<br>**$161,541** |
| 9-2010<br>9-2013 | 9/8/10 | 1,122,109**<br>53,296* | $1.86<br>$1.86 | **$2,087,123**<br>**$99,130** |
| 10-2010<br>10-2013 | 12/1/10 | 852,627**<br>47,609* | $1.86<br>$1.86 | **$1,585,886**<br>**$88,553** |

| | | | | |
|---|---|---|---|---|
| 11-2011<br>11-2014 | 3/9/11 | 1,659,423<br>86,850 | $1.89<br>$1.89 | **$3,136,309**<br>**$164,147** |
| 12-2011<br>12-2014 | 6/8/11 | 443,512**<br>43,915* | $1.89<br>$1.89 | **$838,238**<br>**$82,999** |
| 13-2011<br>13-2014 | 9/7/11 | 263,886**<br>0* | $1.89<br>$0 | **$498,745**<br>**$0** |
| **Total** | | | | **$32,935,712** |

*86,850 allowances were offered; some went unsold.
**1,487,013 allowances were offered; some went unsold.

There is a currently a Minimum Reserve Price (price floor) of $1.89 per allowance[10]. The 2011 vintage allowances are being sold in four equal lots over 4 auctions. Each auction occurs in the last month of each quarter.

## Market Monitoring and Secondary Market Reports

*Market Monitor Report for Auction 13* (attached), prepared for RGGI by Potomac Economics, is typical of all auctions to date and stated:

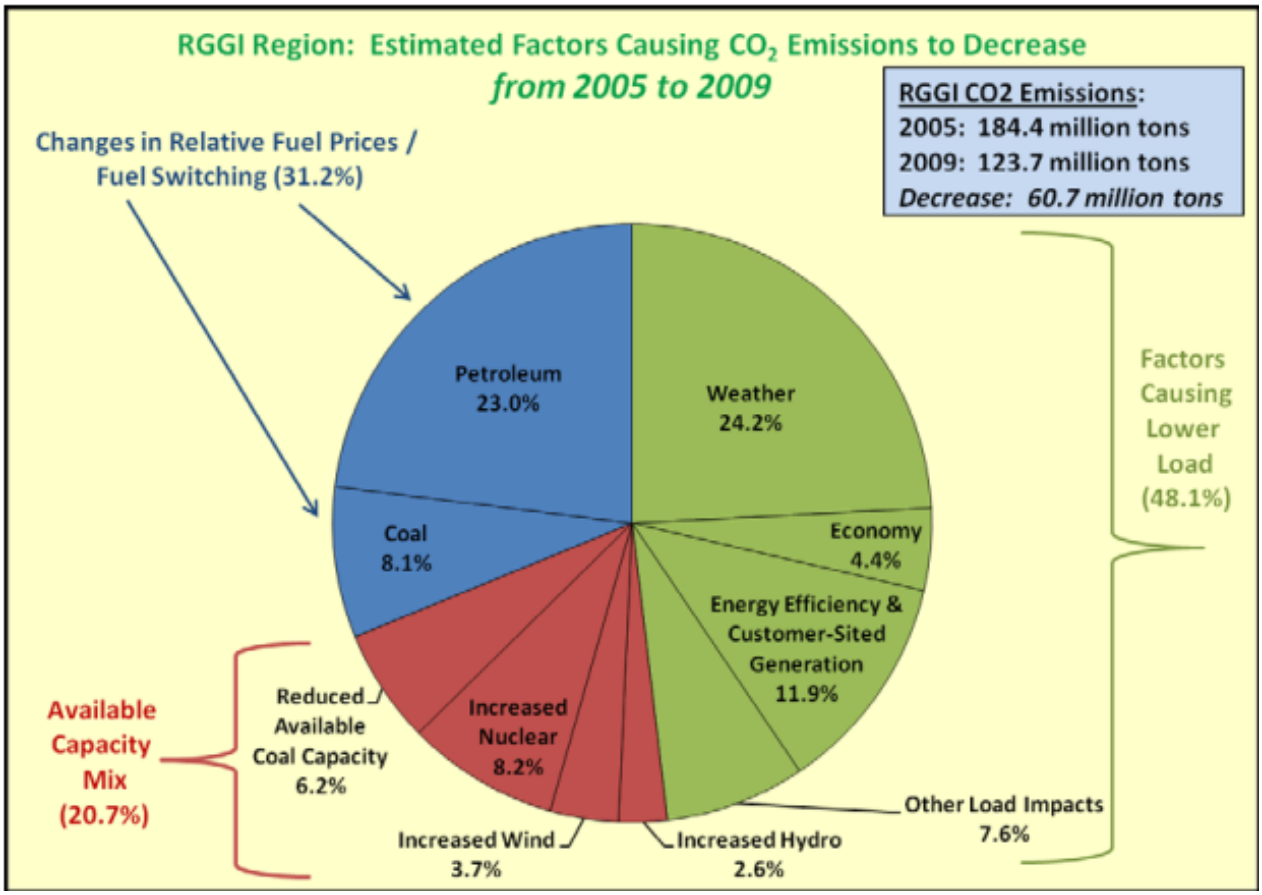
> *"We observed the auction as it occurred and have completed our review and analysis of its results. Based on our review of bids in the auction, we find no material evidence of collusion or manipulation by bidders. A large number of bidders participated in the offering of CO2 allowances for the current control period (with a 2010 and 2011 vintage year). Thirty-one entities submitted bids to purchase 18 percent of the available supply of allowances, resulting in a clearing price equal to the reserve price of $1.89 per ton. Compliance entities or their affiliates purchased 94 percent of the allowances in the offering. Based on our review of the administration of the market, we found that:*
>
> • *The auction was administered in a fair and transparent manner in accordance with the noticed auction procedures and limitations.*
>
> • *The auction results were consistent with the market rules and the bids received.*
>
> • *Sensitive information was treated appropriately by the auction administrator.*
>
> • *There were no indications of issues with the auction platform such as hardware or software problems, communications issues, or security breaches.*
>
> *In summary, the results of our monitoring of RGGI Auction 13 raise no material concerns regarding the auction process, barriers to participation in the auction, or the competitiveness of the auction results.*"

Market Monitor reports for all auctions are available at http://www.rggi.org/market/market_monitor.

[10] The MRP will be raised for the 2012 auctions based on the Consumer Price Index.

## $CO_2$ Emissions Trends

Regional $CO_2$ emissions have dropped significantly over the past several years. A November 2010 New York State Energy Research and Development Authority analysis[11] found that the factors contributing to the decrease were as follows:




2008 – 2011 emissions from New Hampshire sources in tons of $CO_2$ are as follows:

| | 2008 | 2009 | 2010 | Est. 2011*** |
|---|---|---|---|---|
| **PSNH (Merrimack, Schiller, Newington)** | **3,112,114 + 818,594* + 98,334 = 4,029,042** | **2,597,795 + 632,878* + 197,436 = 3,428,109**** | **2,815,040 + 581,464* + 216,603 = 3,613,106**** | **2,667,378 + 507,068* + 135,062 = 3,309,508** |
| **Granite Ridge** | **1,974,812** | **1,708,459** | **1,445,639** | **1,552,696** |
| **Newington Energy** | **1,091,293** | **633,312** | **840,702** | **1,230,010** |
| **Total** | **7,095,147** | **5,769,880** | **5,899,447** | **6,092,214** |

*excludes 543,810 from biomass (net zero) in 2008, 567,175 in 2009, 520,856 in 2010, & 406,606 in 2011

[11] See *"Relative Effects of Various Factors on RGGI Electricity Sector $CO_2$ Emissions: 2009 Compared to 2005"* www.rggi.org/docs/Retrospective_Analysis_Draft_White_Paper.pdf.

**PSNH received 3,564,718 2009 allowances (early reduction & Clean Power Act (CPA) bonus), 2,500,000 2010 allowances (CPA bonus), and will receive 2,500,000 2011 allowances (CPA bonus)[12]
***actual first half 2011 emissions x 2

2010 emissions from the RGGI region are as follows:

- CT = 8,526,608 DE = 4,299,269
- MA = 19,804,384 MD = 27,958,989
- ME = 3,943,457 NH = 5,899,447
- NJ = 19,681,308 NY = 41,930,455
- RI = 3,504,392 VT = 3,756
- Total = 135,552,035
- Budget = 188,076,976

## Use of Auction Revenue Generally

Each state directs its own strategy for investing $CO_2$ allowance proceeds in programs that benefit consumers and build a clean energy economy. A report[13] released in February 2011 shows that, overall, RGGI Participating States are investing 80 percent of $CO_2$ allowance proceeds in strategic energy programs:

- **52 percent** to improve energy efficiency;
- **11 percent** to accelerate the deployment of renewable energy technologies;
- **14 percent** to provide energy bill payment assistance, including assistance to low-income ratepayers;
- **1 percent** for a wide variety of greenhouse gas reduction programs, including programs to promote the development of carbon emission abatement technologies, efforts to reduce vehicle miles traveled, and programs to increase carbon sequestration.

These investments are reducing $CO_2$ emissions and generating important consumer benefits, including lower energy bills, greater electric system reliability and more jobs. Evaluations of several energy efficiency and renewable energy programs in the RGGI Participating States show $3-$4 in benefits for every $1 invested.

Details on how other states are using their allowance auction proceeds are available at www.rggi.org/rggi_benefits/program_investments.

## Use of Auction Revenues in New Hampshire

### Background

New Hampshire has used RGGI auction proceeds to establish the Greenhouse Gas Emissions Reduction Fund (GHGERF). The fund supports energy efficiency, conservation, and demand response programs to reduce greenhouse gas emissions generated within New Hampshire, as well as administrative costs. The administration of the GHGERF is governed by Chapter Puc 2600: Greenhouse Gas Emissions Reduction Fund, which directs a minimum of 10 percent of program

[12] In accordance with Air Resources Council June 2011 remand of DES decision.
[13] See full report at www.rggi.org/docs/Investment_of_RGGI_Allowance_Proceeds.pdf.

allocations to low income energy efficiency programs. The balance of the funds may be allocated to electric and fossil fuel energy efficiency programs.

These programs include, but are not limited to: energy audits, weatherization programs, energy efficiency related workforce development, revolving loan funds for energy efficiency investment, deployment of industrial process and control systems, passive solar heating and ventilation, building code compliance, improvements to electric and thermal efficiencies of existing buildings, retrofitting of housing, education and outreach, and demand response programs to reduce peak load. The PUC adopted final rules for the administration of the GHGERF in December 2009. In 2010 the General Court also appropriated $3.1 million from the GHGERF toward reduction of a shortfall in the General Fund budget.

## 2009 GHGERF Grant Award History

New Hampshire's first $1.2 million in auction revenue was allocated by the legislature to expand low income weatherization services for the 2008-09 heating season. In 2009, New Hampshire conducted a request for proposals (RFP) resulting in the allocation of an additional $17.6 million to 30 programs that engage non-profits, utilities, businesses, residents, municipalities, universities, and K-8 schools to reduce emissions through increased energy efficiency; energy education and outreach; benchmarking; and green workforce development. The RFP was developed in consultation with the state's Energy Efficiency and Sustainable Energy (EESE) Board, created by the legislature in 2008 *"to promote and coordinate energy efficiency, demand response, and sustainable energy programs in the state."*

Of the 30 programs funded through the 2009 RFP, only one project, the Dartmouth College *Campus Energy and Sustainable Management System,*[14] and two revolving loan funds, the NH Business Energy Conservation Revolving Loan Fund run by the Business Finance Authority and the Municipal Energy Reduction Fund run by the NH Community Development Finance Authority, are still ongoing. Most of the grants included an educational component; grantees showcased their results through displays, presentations, reports, and presentations. The 2009 grants were multi-faceted and many covered different sectors as well as a wide range of services to the State. Projects included:

- Revolving loan funds for commercial and municipal projects as well as on-bill financing designed to service the residential, municipal and commercial sectors;
- Trainings for trades-people in building audits and safe efficiency upgrades, as well as workshops for businesses, municipalities, and residents on energy efficiency;
- Audits, and/or efficiency upgrades for farms, schools, non-profits, municipalities, and small and large businesses;
- A website to provide New Hampshire residents with a portal to creating energy plans as well as a connection to businesses providing a wide range of services that will increase energy efficiency and properly install energy efficient and renewable energy systems.

[14] The Dartmouth College Campus Energy and Sustainable Management Program is achieving improved building energy performance, innovative campus smart grid technology, and energy feedback systems. This study will provide a framework to duplicate these efforts in campus settings for both educational and business settings throughout the state. More information on their program is available at: www.puc.nh.gov/Sustainable%20Energy/GHGERF%202009%20Grantees.htm#4.

- A grassroots program that uses the barn-raising concept to provide hand-on teaching and do-it-yourself implementation called Housewarmings to weatherize homes and Solar Raisers to install optimally-designed and sited solar hot water systems. PAREI has completed a total of 77 Housewarmings and Solar Raisers. This model has been replicated six times to date in New Hampshire, (for solar installations) and has received national recognition.

More information on the 2009 program, including contracts and reports is available at www.puc.nh.gov/Sustainable%20Energy/GHGERF%202009%20Grantees.htm.

The University of New Hampshire's Carbon Solutions New England (CSNE) program has done measurement and verification of the GHGERF grants. Their analysis found that during the first year reporting period (July 2009 to July 2010), the GHGERF grants reduced energy use by 40,500 million BTU, saved NH residents and businesses $1.5 million in energy costs, and reduced $CO_2$ emissions by 4,600 metric tons (Table 2). This is the equivalent to taking 900 cars off of the road for one year.

Projects completed during the first year reporting period and completed or scheduled to be completed during the second reporting period (July 2010 to June 2011) will result in annual energy savings of $4.2 million in energy costs and $CO_2$ emissions reductions of 13,200 metric tons (Table 3). This is the equivalent of taking 2,500 cars off of the road for one year. Lifetime savings due to grants funded by the $17.7 million awarded through GHGERF are $60.6 million in energy costs (at current energy prices) and $CO_2$ emissions reductions of 200,000 metric tons (Table 4). This is the equivalent to taking 38,500 cars off of the road for one year.

For energy reduction projects completed by June 2010, the lifetime cost per ton of CO2 reduced is projected to be negative $147 per metric ton. In other words, there is a net saving (reduced energy costs net implementation costs) of $147 per ton of $CO_2$ reduced. "Put another way, each dollar invested by GHGERF resulted in $3.42 in direct energy savings."[15]

**Table 2: Summary of Actual Energy Reductions Measured During First Year Reporting Period July 2009 to June 2010**

| Fuel Type | Energy Reduced | MMBTU | Equivalent Annual NH Household Usage | Energy Savings ($ millions) | $CO_2$ Reduced (Metric Tons) |
|---|---|---|---|---|---|
| Electric | 7.5 million (kWh) | 25,700 | 1,100 | $1.2 | 3,700 |
| Oil | 54.5 thousand (gallons) | 7,600 | 85 | $0.1 | 550 |
| Natural Gas | 50 thousand (therms) | 5,200 | 65 | $0.1 | 270 |
| Propane | 21.5 thousand (gallons) | 2,000 | 65 | $0.1 | 120 |
| | Total | 40,500 | 1,315 | $1.5 | 4,640 |

[15] *The New Hampshire Greenhouse Gas Emissions Reduction Fund Year 1 (July 2009–June 2010) Evaluation*, Matthew Magnusson, M.B.A., Cameron P. Wake, Ph.D., Carbon Solutions New England, Institute for the Study of Earth, Oceans, and Space, University of New Hampshire, 2011. The Executive Summary is available at: www.puc.nh.gov/Sustainable%20Energy/GHGERF/Evaulations/GHGERF_Year%201_Executive%20Summary.pdf. The full report is available at: www.puc.nh.gov/Sustainable%20Energy/GHGERF/Evaulations/GHGERF_Year1_Report_11Feb2009.pdf.

**Table 3: Projected Energy Savings for Second Reporting Period (July 2010 to June 2011)***

| Fuel Type | Energy Reduced | MMBTU | Equivalent Annual NH Household Usage | Energy Savings ($ millions) | CO2 Reduced (Metric Tons) |
|---|---|---|---|---|---|
| Electric | 18.5 million (kWh) | 63,100 | 2,650 | $2.9 | 9,100 |
| Oil | 98.5 thousand (gallons) | 13,700 | 155 | $0.3 | 1,000 |
| Natural Gas | 484 thousand (therms) | 49,700 | 620 | $0.7 | 2,570 |
| Propane | 97 thousand (gallons) | 8,900 | 300 | $0.3 | 560 |
| | Total | 135,400 | 3,725 | $4.2 | 13,230 |

*Analysis for this reporting period has not yet been completed.

**Table 4: Projected Lifetime Energy Savings for Projects Completed or Known to be Completed at the End of the Second Reporting Period.**

| Fuel Type | Energy Reduced | MMBTU | Equivalent Annual NH Household Usage | Energy Savings ($ millions) | CO2 Reduced (Metric Tons) |
|---|---|---|---|---|---|
| Electric | 253.5 million (kWh) | 863,300 | 36,200 | $39.5 | 124,740 |
| Oil | 1.7 million (gallons) | 235,800 | 2,600 | $4.4 | 17,300 |
| Natural Gas | 9.5 million (therms) | 975,700 | 12,200 | $13.2 | 50,400 |
| Propane | 1.3 million (gallons) | 119,000 | 3,900 | $3.5 | 7,480 |
| | Total | 2,193,800 | 54,900 | $60.6 | 199,920 |

The energy and $CO_2$ reductions achieved during this first year were all verified with a defined measurement and verification protocol and are not annual or life time reduction estimates, but actual energy reductions that occurred during that time period. Many of the grants were just completed or nearing completion at the end of the June 30, 2010 reporting period and were therefore not reducing emissions over the entire year.

GHGERF supported energy efficiency training opportunities for 170 workers over 5,600 contact hours. GHGERF also supported 436 building benchmarking and energy audit evaluations. These are essential first steps in training the workforce and identifying and developing cost-effective projects that directly reduce energy use.

While GHGERF funds were not intended for job creation, the GHGERF grants directly supported 55 full time equivalent (FTE) jobs with an estimated additional 15 to 30 FTE jobs being supported by the grants for a total job impact of 70 to 85 FTE jobs. In addition, low-interest loans helped improve the competitiveness of two manufacturers employing a total of more than 400 workers.[16]

[16] Id.

## 2010 GHGERF Grand Award Activity Summary

In May 2010 the PUC issued its second Request for Proposals. The three program areas targeted through the second RFP included:

1. Program continuation for entities that:
    a. Applied for and received a grant from the GHGERF in 2009;
    b. Submitted multi-year program budgets or plans in their 2009 grant proposal; and,
    c. Demonstrated success in implementing their proposal.
2. Programs to establish a portfolio of energy efficiency projects at large energy user sites to produce energy savings and greenhouse gas reductions; and,
3. Programs to significantly improve energy efficiency and reduce greenhouse gas emissions in affordable housing.

On June 1, 2010, the PUC received 29 proposals requesting over $78 million. The May 2010 RFP was circulated electronically to a list of more than 900 individuals and organizations known to have an interest in energy policy and programs, including members of the EESE Board. The RFP was also posted on the PUC and Office of Energy and Planning websites; advertised in the Union Leader on February 28, April 1 and April 2, 2010; and announced via press release to major media outlets in the state.

The PUC employed a two-tier grant review process. An initial committee conducted an extensive evaluation of each of the 29 proposals that were submitted. The committee consisted of representatives of the Office of Energy & Planning, the Department of Environmental Services, and the PUC (Sustainable Energy Division). The committee then passed its findings on to the three PUC Commissioners, who in turn carried out their own review process and made final decisions on all grants awards. Six grant awards were approved by the Governor and Council on December 8, 2010. The awarded grant projects are briefly described below.[17]

### Category I, Program Continuation

**Business Finance Authority of New Hampshire (BFA) - $2 million.** The BFA has expanded its Business Energy Conservation Revolving Loan Fund, which non-profit organizations are also eligible for and which was established initially through a $2 million GHGERF grant in 2009. These loans, which would not have been funded through other lending institutions, are helping recipients to lower energy expenses and improve their competitiveness. Loan repayments are reinvested in the fund and used to help additional businesses finance their energy improvements, making the fund self-sustaining in the long-term. Businesses that have benefited through this program include:

- Foss Manufacturing, Hampton, which is ineligible to receive CORE funds, improved its electrical distribution, and upgraded motors and lighting. Foss began to repay their $750,000 loan in October, 2010 and has increased employment from 306 to 350 since the closing of their energy loan;

[17] Legislative activity during the winter and spring of 2011 that proposed the elimination of the RGGI program held back the development of the grants approved on December 8, 2010. Grantees and project partners were reluctant to move ahead on projects until they felt reasonably sure that their funding was secure.

- Canam Steel Corporation, Claremont, borrowed $750,000 for a $4.5 million dollar project to replace space heating and ventilation and to complete a lighting upgrade. Canam began to repay their loan in February, 2011;
- Shelburne Plastics, Manchester, combined business funds with funds from PSNH and a $750,000 BFA loan to improve the layout and operation of their blow molding operation, to consolidate their grinding operations and install efficient process chilling and air conditioning systems; and,
- Warwick Mills, New Ipswich, leveraged a $550,000 loan with both Community Development Block Grant (CDBG) and company funds to install a biomass plant to replace their old, inefficient oil fired steam system that needed to be expanded to support production needs.

As funds are repaid, the BFA will continue to fund energy efficiency projects for the business community.

**Retail Merchants Association of New Hampshire (RMANH) - $2 million.** The RMANH, in partnership with the non-profit Jordan Institute, is expanding its highly successful 2009 Energy Efficiency program for retail businesses. The program helps businesses to identify energy savings opportunities and supports them in implementing measures to reduce energy costs. The program is also showcasing some of the best examples of these energy investments to spur other New Hampshire retailers to take similar actions. The program's goal is to enroll 50 new businesses in 2011 and 2012, up from 25 in 2009-2010. The program also hopes to move 20 businesses to the second phase of the program.

One of the program's foremost achievements is the retrofit of Baron's Major Brands, Laconia store. The Baron's retrofit began with a general overview that compared similar businesses and building types in New England. Next a more detailed energy audit was undertaken that used onsite analysis, blower door studies, and other tools to determine the best investments for cost savings. Major improvements to the building envelope including insulation airflow management and doorway improvements were used to reduce heat and air conditioning losses, resulting in a 45% reduction in costs. In addition, a redesign of lighting and replacement of lighting fixtures with more efficient systems is reducing the store's lighting costs by 70%.

The RMANH program offers a combination of audit services as well as help in structuring the financial package for these deep retrofits. (A combination of utility rebates, some tax benefits, and leveraging of private investment are typically included). The program also has a sliding retrofit rebate component that helps offset some of the costs. The RMANH program pre-qualifies local auditing and construction firms to do the work and assist in managing the projects.

**Department of Resources and Economic Development, Division of Economic Development/Lakes Region Community College - $400,000.** Lakes Region Community College (LRCC) with support from the state of New Hampshire's Division of Economic Development (DRED), and the Plymouth Area Renewable Energy Initiative (PAREI), is expanding their green energy training classes to help prepare the workforce for jobs in the energy efficiency sector. The first phase of classes teaches individuals the essentials for conducting energy audits; the next series of classes and workshops train students in air sealing, insulation and the installation of other building shell improvements.

Classes developed and offered under the 2010 grant are extending participant qualifications by teaching the specifics of cost-effective, reliable and safe building upgrades. In this new phase of

the program courses are being expanded to cover a wider range of job skills. Classes are supported by a Mentoring Support program (operated by PAREI) to give qualified candidates supervised hands-on experience before embarking on their own projects. This program helps to ensure that weatherization and energy efficiency measures are implemented through well-trained locally-based businesses who can guarantee that their energy efficiency and weatherization installations are both sound and safe.

This program has greatly expanded the employment potential for its alumni. Of the 70 alumni (60% response rate) who responded to a survey from August 2010, 8.5% "became employed in the energy field," 10% "started a new energy business", and 20% started a new line of work in an existing business or attracted additional customers as a result of the training. Another 38% of the respondents cited that they had increased their ability to perform existing job duties.[18]

## Category II, Large Energy Users

**TRC Energy Services - $5 million.** TRC has established the Pay for Performance (P4P) program that takes a comprehensive, whole-building approach to saving energy in large commercial and industrial facilities while linking incentives directly to energy savings. The Program has developed a network of 23 qualified Partners who provide technical services under direct contract to building owners. Approved Program Partners have received two trainings; one specific to the P4P program and a second training in the best practice use of the eQUEST energy simulation modeling software. eQUEST enables the development of a comprehensive model of a building's energy use. Once a building has been modeled, auditors and contractors can calculate energy usage, calibrate the model to the utility data, predict savings, and compare improvement scenarios.

Using eQUEST (or another program-approved energy simulation modeling software tool), Partners develop an Energy Reduction Plan (ERP) for each project, a financial plan for funding the energy efficient measures, and a construction schedule for implementation of the facility improvements. An energy verification component ensures a minimum source energy savings of 15%. The P4P program provides three levels of incentives (based on the projected savings outlined in the ERP) designed to encourage large energy users to fully implement energy efficiency measures.

Of the 23 current Partners, twelve are NH based (three of the twelve are large Energy Service Companies (ESCOs) with NH satellite offices). There are currently eight active projects including: Manchester City Hall; two projects at BAE Systems; four projects at education institutions, (including the Monadnock Regional School District, Rye Junior High School, and Southern NH University), and one at the Lakes Regional Community Service Federal Building.

## Category III, Improved Energy Efficiency and Reduce GHG Emissions in the Affordable Housing Sector[19]

**New Hampshire Community Loan Fund - $2 million.** The Community Loan Fund is providing deep energy efficiency retrofits in approximately 425 manufactured homes located in a

[18] Three case studies on graduates of this program are available at www.puc.nh.gov/Sustainable%20Energy/GHGERF%202009%20Case%20Studies.html.

[19] RSA 125-O:23, III and Puc 2603.01 provide that at least 10 percent of the moneys allocated from the GHGERF must be used to assist low-income residential customers to reduce total energy use including heating fuels and to foster the development and retrofitting of highly efficient and affordable housing.

score of resident-owned communities (ROCs) throughout the state. GHGERF funds (leveraged with funding from the United States Department of Energy) are allowing, for the first time, the replacement of roofs on manufactured homes that will greatly enhance energy efficiency. In addition, this funding has provided training to the state's six Community Action Agencies on basic rehabilitation and energy efficiency measures for manufactured homes.

The first three months of the program were used to promote the program and to recruit and train Energy Advocates. Energy Advocates are ROC residents who explain the value of the program to their neighbors and assist them in pursuing the program. Two Advocates from each ROC co-op were trained by Community Loan Fund staff about the program and process. Advocates also received training from the CAP agency auditor about the goals of the program, the process, and measures of success for weatherization. To date, the program has weatherized, or is in the process of weatherizing 71 manufactured homes in the Concord/Allenstown area The Community Loan Fund plans to extend the programs next to the Rochester area and then on to other areas of the State. It is estimated that annual savings will average about $660 per home per year at current energy prices.

**New Hampshire Housing Finance Authority (NHHFA) - $2 million.** The NHHFA and its partners in this project, the state's six Community Action Agencies, are implementing the Greener Homes Program (GHP) to provide rigorous energy audits, and energy efficiency upgrades for low-income apartment units in New Hampshire. The program includes energy audits performed by qualified third-party energy consultants to establish a baseline and provide cost-effective recommendations for equipment and building envelope upgrades.

Audits are followed by a detailed energy analysis using the Weatherization Assistance Program approved modeling software to allow for more accurate and comprehensive savings. The annual target of the GHP is to upgrade the energy efficiency to approximately 785 low-income units, particularly "at-risk" affordable housing (publically financed affordable housing at, or nearing, the end of the time period that they are committed to affordable rental rates) to foster the extension of affordability restrictions for an additional 20 years in exchange for funding of energy efficiency upgrades. As of June 30 NHHFA has audited 439 units in 12 projects around the state. Each of these projects is "in the pipeline": some are under full construction; some are out to bid; and, others are refining the scope of work as informed by the initial energy audit and related Energy Reduction Plan.

## Summary of Revenue and Allocations of the GHGERF.

Revenue and allocations and expenses of the GHGERF are summarized in Table 5 below.

**Table 5: Summary of Revenues and Allocations/Expenses of the GHGERF**

| Description | Revenue | Allocation/ Expense | Resulting Balance in GHGERF |
|---|---|---|---|
| FY 2010 Balance Forward | $ 7,556,950 | | $ 7,556,950 |
| Total Auctions From FY 2011 | $ 8,082,385 | | $ 15,639,335 |
| Total Interest From FY 2011 | $ 12,899 | | $ 15,652,234 |
| FY 2011 Admin Costs (PUC, DES & RGGI, Inc. dues) | | $ 527,074 | |
| FY 2011 Grants/Awards Paid | | $ 5,785,130 | |
| FY 2011 Total Expenses | | $ 6,308,161 | $ 9,344,071 |
| FY 2011 Encumbered Grants | | $ 3,364,597 | $ 5,979,476 |
| September Auction (FY 2012) | $ 498,744 | | $ 6,478,220 |
| FY 2012 Admin. Budget + Consult. | | $ 441,784 | |
| FY 2012 Grants/Awards | | $ 6,953,995 | |
| Total FY 2012 Allocations | | $ 7,395,779 | $ (917,559) |
| FY 2013 Allocations (Grants/Awards + Consultants) | | $ 2,901,416 | |
| **Available for Grants/Awards (Uncommitted)** | | | **$ (3,818,975)** |

The administrative costs are consistent with and pursuant to the legislatively approved budgets for the PUC and DES and in accordance with RSA 125-O:23, I.

## Proposed Federal $CO_2$ Cap and Trade Program Impacts

The states set out to establish a program that could serve as a working model for national legislation and RGGI has done that. Near-term national legislation now appears unlikely. In order to implement the Clean Air Act requirements and to avoid further litigation, EPA has entered into a settlement agreement[20] to pursue federal regulatory, rather than legislative, means of addressing the climate change problem. EPA is continuing the process of adopting a New Source Performance Standard (NSPS) regulation to limit greenhouse gas emissions from power plants. Rather than comply with a mandated requirement, power plants may prefer a more flexible alternative compliance program like RGGI. Power plants are familiar with similar programs for other pollutants. If the RGGI states are successful in convincing EPA[21] to accept RGGI as an alternative to the NSPS, then other non-RGGI states may seek to implement RGGI,

[20] See www.epa.gov/airquality/pdfs/settlementfactsheet.pdf.

[21] The EPA has indicated that it "believes it is important to recognize and account for the emission benefits resulting from EE/RE policies and programs in" state implementation plans for compliance with various Clean Air Act requirements. "EE/RE policies and programs" refer to energy efficiency and renewable energy programs such as the RGGI funded Greenhouse Gas Emissions Reduction Fund, renewable portfolio standards, and regulated utility energy efficiency programs. For more information see www.epa.gov/airquality/eere.html.

as well, rather than implement a mandated NSPS. Thus, the geographical area for RGGI could be expanded, consistent with the original intent of RGGI.

Should you have any questions or need further information regarding the issues discussed in this report please feel free to contact us: Robert Scott, Air Resources Division Director (271-1088, robert.scott@des.nh.gov), Michael Fitzgerald, Air Resources Division Technical Services Bureau Administrator (271-6390, michael.fitzgerald@des.nh.gov), Joe Fontaine, Air Resources Division Trading Programs Manager (271-6794, joseph.fontaine@des.nh.gov), or Jack Ruderman, PUC Sustainable Energy Director (271-2431, Jack.Ruderman@puc.nh.gov).

Sincerely,

Robert R. Scott
Director, Air Resources Division, NHDES

Jack Ruderman
Director, Sustainable Energy Div., NHPUC

Attachments: RGGI Fact Sheets
Market Monitor Report for Auction 13

cc:

| | | |
|---|---|---|
| Rep. Frank Holden | Rep. James Devine | Rep. Naida Kaen |
| Rep. William Remick | Rep. Robert Introne | Rep. William Panek |
| Rep. Jacqueline Cali-Pitts | Sen. Jeb Bradley | Sen. Amanda Merrill |
| Sen. John Gallus | Sen. Sylvia Larson | Sen. Bob Odell |

DES Commissioner Thomas S. Burack
PUC Chairman Thomas B. Getz
Air Resources Council Chairman Robert Duval

# Regional Greenhouse Gas Initiative

an Initiative of the Northeast and Mid-Atlantic States of the U.S.

## Fact Sheet: The Regional Greenhouse Gas Initiative (RGGI)

- **What is RGGI?**
  The Regional Greenhouse Gas Initiative (RGGI) is the nation's first mandatory, market-based program to reduce emissions of carbon dioxide ($CO_2$), the principal human-caused greenhouse gas.

  The ten states participating in RGGI have established a regional cap on $CO_2$ emissions from the power sector and are requiring power plants to possess a tradable $CO_2$ allowance for each ton of $CO_2$ they emit.

- **What does RGGI do?**

  **RGGI reduces $CO_2$ emissions** by establishing a regional cap on the amount of $CO_2$ that power plants can emit through the issuance of a limited number of tradable $CO_2$ allowances. This approach allows market forces to determine the most economic means of reducing emissions and creates market certainty needed to drive long-term investments in clean energy.

### RGGI Quick Facts

**Ten Participating States:** CT, DE, MA, MD, ME, NH, NJ, NY, RI, VT

**Coverage:** Fossil fuel-fired power plants 25 megawatts or greater in size (currently 209 facilities region-wide)

**Initial $CO_2$ Emissions Cap:** 188 million short tons per year for the 10-state region

**Timing of $CO_2$ Reductions:** 2009-2014, cap stabilizes emissions at 188 million tons annually; 2015-2018, cap declines by 2.5 percent per year for total reduction of 10 percent

**$CO_2$ Allowance Auctions:** Regional, held quarterly, open to all who qualify

**Compliance Period:** Three years, first compliance period January 1, 2009 – December 31, 2011

**$CO_2$ Emission Offsets:** Qualifying GHG reduction projects outside the electricity sector. Currently, power plants may use offsets to meet 3.3 percent of their compliance obligation (limit on use increases to 5–10 percent of compliance obligation under specified conditions)

**Auction Proceeds**: $900.5 million through September 2011. Overall, 80% invested in consumer benefit programs, including energy efficiency, renewable energy, direct energy bill assistance and other greenhouse gas reduction programs

**RGGI lays the foundation for a North American carbon market.**
The RGGI program has created the infrastructure for a market-based approach to regulating $CO_2$ emissions with strong market oversight**.** The RGGI emissions allowance tracking system and independent market monitor reports allow the public to view, customize and download reports of $CO_2$ allowance market activity and RGGI program data.

**RGGI re-invests in the clean energy economy.** The RGGI participating states have each chosen to auction nearly all $CO_2$ allowances and to invest proceeds in consumer benefit programs to build a clean energy economy. Overall, participating states are investing 63 percent of RGGI auction proceeds in programs to improve end-use energy efficiency and accelerate the deployment of renewable energy technologies. These investments reduce greenhouse gas emissions and generate important consumer benefits, including lower energy bills, greater electric system reliability, and more jobs.

**RGGI provides a model for other programs to reduce $CO_2$ emissions.** RGGI demonstrates that programs to reduce $CO_2$ emissions can benefit both the environment and the economy. Innovative aspects of RGGI, including allowance auctions and strategic reinvestment of auction proceeds, are influencing the development of other cap-and trade programs, including the

Western Climate Initiative (WCI) and the European Union Emissions Trading Scheme for $CO_2$ (EU-ETS).

- **Why do the RGGI states auction $CO_2$ allowances?**
  Auctioning $CO_2$ allowances ensures that all parties have access to $CO_2$ allowances under uniform terms. At the same time, auctioning allowances, rather than distributing them for free, realizes the value of the $CO_2$ allowances for reinvestment in strategic energy programs that save consumers money and create jobs.

- **What is the RGGI cap?**
  The RGGI cap is the total number of $CO_2$ allowances issued by participating states, and establishes a regional budget for $CO_2$ emissions from the power sector. From 2009 to 2014, the RGGI cap is 188 million short tons of $CO_2$ per year. Beginning in 2015, the cap will decrease by 2.5 percent per year, for a total reduction of 10 percent by 2018.

- **Will RGGI affect retail electricity prices?**
  The cost of $CO_2$ emissions allowances is a very small part of overall electricity bills. On average, the cap on $CO_2$ emissions accounted for 0.24 to 0.61% of average residential electricity bills across the 10-state region in 2010. Based on typical household electricity usage, that translates into 46 cents per month for residential consumers. This very small increase is offset by strategic reinvestment of $CO_2$ allowance proceeds in energy efficiency measures which reduce demand for electricity and give households and businesses control over their energy bills.

- **How can market participants obtain $CO_2$ allowances?**
  Market participants can obtain $CO_2$ allowances in quarterly $CO_2$ allowance auctions or through various secondary markets, including the Chicago Climate Futures Exchange (CCFE) and the Green Exchange.

- **How do power plants comply with RGGI?**
  RGGI compliance occurs in three-year control periods. At the end of each control period, each regulated power plant must submit one $CO_2$ allowance for each ton of $CO_2$ emitted over the preceding three years. The first control period began on January 1, 2009, and extends through December 31, 2011.

- **What role do offsets play in RGGI?**
  An *offset* represents project-based greenhouse gas emissions reductions or carbon sequestration achieved outside of the capped electricity sector. Offsets provide compliance flexibility for regulated power plants, and create significant environmental and economic co-benefits for offset project sponsors (such as landfill operators or farmers). RGGI participating states currently allow regulated power plants to use a carefully chosen group of qualifying offsets to meet up to 3.3 percent of their $CO_2$ compliance obligation. Examples of eligible offset project categories include projects that capture or destroy methane from landfills or through agricultural manure management operations. Both of these projects reduce emissions of the potent greenhouse gas methane.

- **To learn more about how RGGI works and how states are investing in the clean energy economy visit the RGGI website at: http://www.rggi.org**

RGGI Inc.

# MARKET MONITOR REPORT FOR AUCTION 13

**Prepared for:**

**RGGI, Inc., on behalf of the RGGI Participating States**

**Prepared By:**

POTOMAC ECONOMICS

September 9, 2011

This report was prepared by Potomac Economics (the contractor) in the course of performing work contracted for and sponsored by RGGI, Inc. on behalf of the RGGI Participating States (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont). The opinions expressed in this report do not necessarily reflect those of RGGI, Inc. or any of the Participating States, and reference to any specific product, service, process, or method does not constitute an implied or expressed recommendation or endorsement of it. Further, RGGI, Inc., the Participating States, and the contractor make no warranties or representations, expressed or implied, as to the fitness for particular purpose or merchantability of any product, apparatus, or service, or the usefulness, completeness, or accuracy of any processes, methods, or other information contained, described, disclosed, or referred to in this report. RGGI, Inc., the Participating States, and the contractor make no representation that the use of any product, apparatus, process, method, or other information will not infringe privately owned rights and will assume no liability for any loss, injury, or damage resulting from, or occurring in connection with, the use of information contained, described, disclosed, or referred to in this report.

The Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort by participating states to reduce emissions of carbon dioxide ($CO_2$), a greenhouse gas that causes global warming.

RGGI, Inc. is a non-profit corporation created to provide technical and administrative services to the $CO_2$ Budget Trading Programs of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

# MARKET MONITOR REPORT FOR AUCTION 13

As the Market Monitor for the RGGI $CO_2$ allowance market, Potomac Economics monitors the conduct of market participants in the auctions and in the secondary market to identify indications of market manipulation or collusion. We also review the administration of the auctions by World Energy Solutions. This report summarizes our findings regarding RGGI Auction 13, which was held on September 7, 2011.

We observed the auction as it occurred and have completed our review and analysis of its results. Based on our review of bids in the auction, we find no material evidence of collusion or manipulation by bidders.

A large number of bidders participated in the offering of $CO_2$ allowances for the current control period (with a 2010 and 2011 vintage year). Thirty-one entities submitted bids to purchase 18 percent of the available supply of allowances, resulting in a clearing price equal to the reserve price of $1.89 per ton. Compliance entities or their affiliates purchased 94 percent of the allowances in the offering. There was no indication of barriers to participation in the current control period offering.

A small number of allowances were auctioned for a future control period (with a 2014 vintage year), although no bids were submitted to purchase these allowances. There was no indication of barriers to participation in the future control period offering.

Based on our review of the administration of the market, we found that:

- The auction was administered in a fair and transparent manner in accordance with the noticed auction procedures and limitations.
- The auction results were consistent with the market rules and the bids received.
- Sensitive information was treated appropriately by the auction administrator.
- There were no indications of issues with the auction platform such as hardware or software problems, communications issues, or security breaches.

In summary, the results of our monitoring of RGGI Auction 13 raise no material concerns regarding the auction process, barriers to participation in the auction, or the competitiveness of the auction results. The appendix provides additional information about the market for RGGI $CO_2$ allowances and outcomes of the auction.

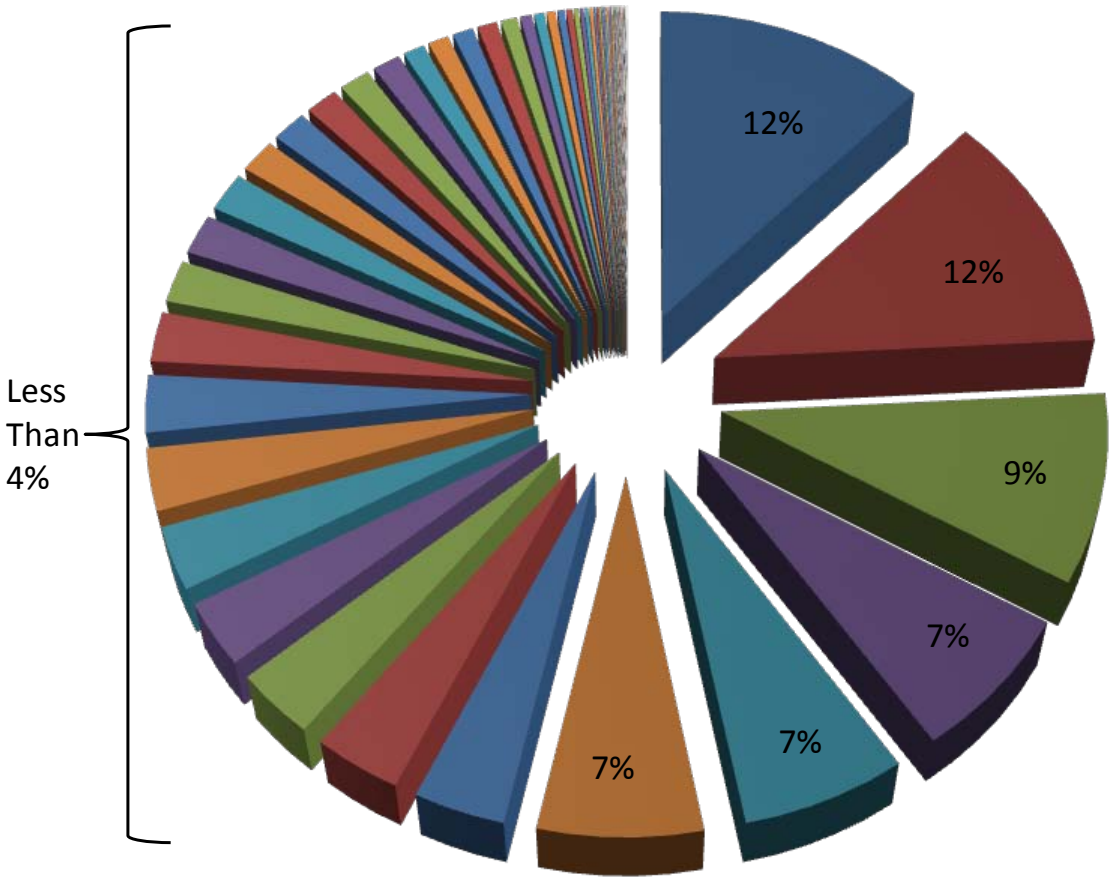
# APPENDIX

## A. DISPERSION OF PROJECTED DEMAND

*The wide dispersion of projected demand for RGGI allowances across compliance entities facilitates the competitive performance of the auction.*

The following figure shows the relative shares of projected demand for RGGI allowances by compliance entity in the current control period. The largest compliance entity represents only 12 percent of the total projected demand for allowances. Almost half of the projected demand is composed of entities that each account for less than 4 percent of the total demand. Participation by a large number of entities facilitates the competitive performance of the auction.

**Figure 1: Projected Demand for RGGI Allowances**
**Shares by Compliance Entity**



## B. Dispersion of Bids in Auction 13

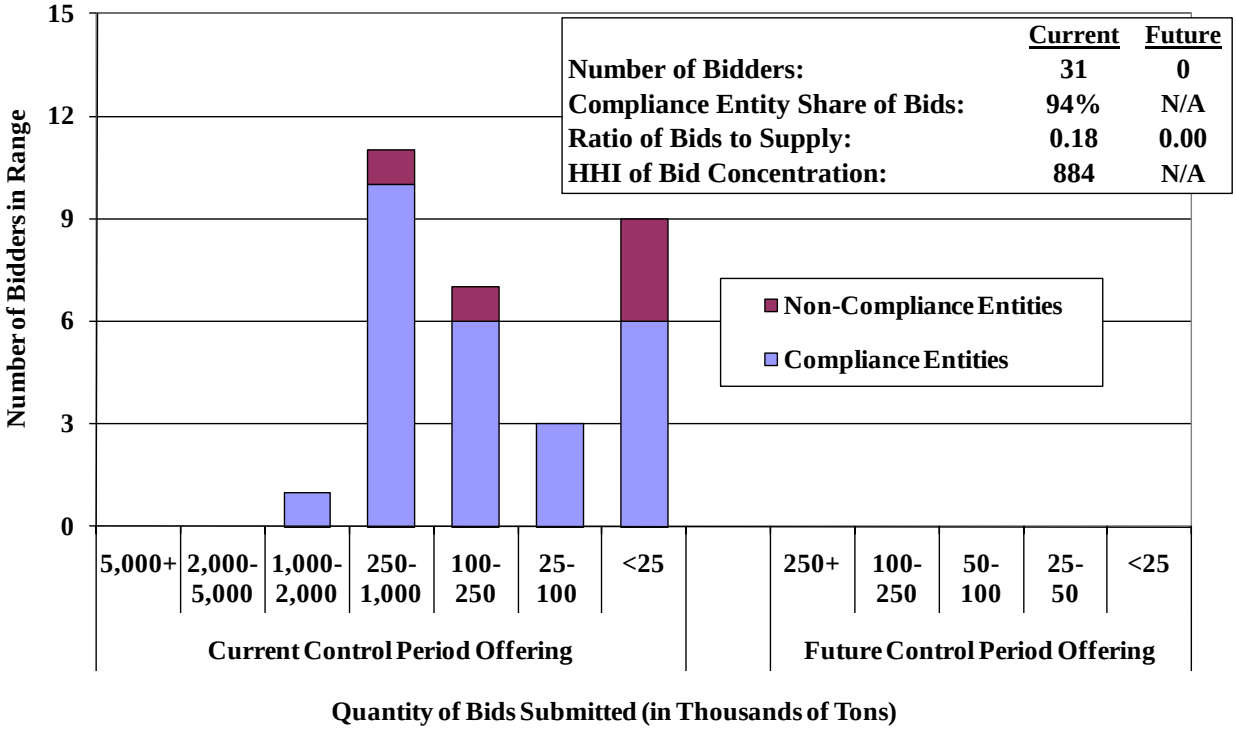
*In the offering of current control period allowances, bids were submitted by a large number of compliance entities and several non-compliance entities. A small number of allowances were also auctioned in advance for a future control period, although no bids were submitted in this offering. In our review of the bids and the qualification process, we found no material evidence of anti-competitive conduct or significant barriers to participation.*

The following figure summarizes the quantities of allowances for which bids were submitted in the two offerings. In the offering of current control period allowances, just one compliance entity submitted bids for a large quantity of allowances (e.g., at least 1 million tons or 2.5 percent of the available supply). Overall, compliance entities accounted for 94 percent of the quantity of allowances for which bids were submitted in the offering of current control period allowances. The quantity of allowances for which bids were submitted decreased to 0.18 times the available supply in Auction 13 from 0.30 times the available supply in Auction 12 and 1.1 times the available supply in Auction 11.

In the offering of future control period allowances, no bids were submitted. This decreased from 0.57 times the available supply in Auction 12 and 1.4 times the available supply in Auction 11.

The bid quantities were widely distributed among the 31 bidders in the offering of current control period allowances. The concentration of bids, using the Herfindahl-Hirschman Index ("HHI"), was relatively low at 884. The HHI is a standard measure of concentration calculated by squaring each entity's share and then summing the squares across all entities (hence, the index ranges from 0 to 10,000).

**Figure 2: Quantity of Bids Submitted by Entity**
**By Type of Entity and Quantity Bid**



## C. Summary of Purchases of Allowances in Auction 13

*In the offering of current control period allowances, awards were widely distributed across 31 bidders with one bidder purchasing one million tons or more and twelve bidders purchasing 250,000 tons or more. Compliance entities or their affiliates purchased 94 percent of the allowances in the offering of current control period allowances.*

The share of allowances purchased and several other quantities are reported for each of three types of entities:

- *Compliance Entities*: This includes all compliance entities and their affiliates. In this report, affiliated firms are firms that: (i) have a parent-subsidiary relationship with a compliance entity, (ii) are subsidiaries of a parent company that has a large interest in a compliance entity, (iii) have substantial control over the operation of a budget source and/or responsibility for acquiring RGGI allowances to satisfy its compliance obligations.
- *Environmental/Individuals*: This includes non-compliance entities describing themselves as "Environmental Groups" or "Individual Person" in their qualification application.
- *Other Non-Compliance Entities*: This includes all other non-compliance entities.

The following statistics summarize the purchases and holdings of allowances by compliance entities and their affiliates under the RGGI program:

- In Auction 13, compliance entities and their affiliates purchased 94 percent of the current control period allowances sold.
- In the first thirteen RGGI auctions, compliance entities and their affiliates purchased:
  - ✓ 85 percent of the current control period allowances sold,
  - ✓ 92 percent of the future control period allowances sold, and
  - ✓ 85 percent of all allowances sold.
- Compliance entities and their affiliates will hold 97 percent of the allowances in circulation following the settlement of allowances sold in Auction 13.

The following table shows the quantity of allowances purchased by each bidder. The identity of each bidder is masked, and the bidders are ranked according to the amount of allowances awarded, from largest to smallest.

**Table 1: Quantity of Allowances Awarded by Bidder**

| Bidder | Number of Current Control Period Allowances Awarded |
|---|---|
| Bidder 1 | 1,550,000 |
| Bidder 2 | 900,000 |
| Bidder 3 | 670,000 |
| Bidder 4 | 500,000 |
| Bidder 5 | 500,000 |
| Bidder 6 | 348,000 |
| Bidder 7 | 337,000 |
| Bidder 8 | 300,000 |
| Bidder 9 | 261,000 |
| Bidder 10 | 252,000 |
| Bidder 11 | 250,000 |
| Bidder 12 | 250,000 |
| Bidder 13 | 232,000 |
| Bidder 14 | 200,000 |
| Bidder 15 | 200,000 |
| Bidder 16 | 170,000 |
| Bidder 17 | 150,000 |
| Bidder 18 | 109,000 |
| Bidder 19 | 100,000 |
| Bidder 20 | 51,000 |
| Bidder 21 | 38,000 |
| Bidder 22 | 32,000 |
| Bidder 23 | 20,000 |
| Bidder 24 | 18,000 |
| Bidder 25 | 12,000 |
| Bidder 26 | 10,000 |
| Bidder 27 | 10,000 |
| Bidder 28 | 8,000 |
| Bidder 29 | 7,000 |
| Bidder 30 | 1,000 |
| Bidder 31 | 1,000 |

## D. Summary of Bid Prices in Auction 13

*The distribution of bid prices submitted in the auction indicates that the demand for allowances was relatively elastic, which is a signal that the results were competitive.*

The following table reports several statistics regarding the bid prices for bids submitted in Auction 13. The median and mean bid prices are weighted by the quantity of each bid.

| | Current | Future |
|---|---|---|
| **Bid Prices:** | | |
| **Minimum** | **$1.89** | **N/A** |
| **Maximum** | **$5.18** | **N/A** |
| **Average (Median)** | **$1.94** | **N/A** |
| **Average (Mean)** | **$2.05** | **N/A** |
| **Clearing Prices:** | **$1.89** | **N/A** |

## E. NAMES OF POTENTIAL BIDDERS IN AUCTION 13

In accordance with Section 2.8 of the Auction Notice for $CO_2$ Allowance Auction 13 on September 7, 2011, the Participating States are releasing the names of Potential Bidders in Auction 13. The states defined potential bidders as: "Each Applicant that has been qualified and submitted a complete *Intent to Bid*." The list of 41 Potential Bidders is as follows:

Adirondack Council Inc.
AES Eastern Energy, LP
Aircraft Services Corporation
Astoria Generating Company, LP
Barclays Bank PLC
Berkshire Power Company, LLC
Brooklyn Navy Yard Cogen Partners, LP
Caithness Long Island, LLC
Carbon Lighthouse Association
Castleton Power, LLC
Chambers Cogeneration, LP
ConocoPhillips Company
Consolidated Edison Comp. of NY, Inc.
Constellation Energy Commodities Group
Dominion Energy Marketing, Inc.
Empire Generating Co., LLC
EquiPower Resources
GenOn Energy Management, LLC
Green Mountain Power Corporation
Indeck-Corinth Limited Partnership
Indeck-Oswego Limited Partnership
Indeck-Yerkes Limited Partnership
J-Power USA Development Co., Ltd.
Kleen Energy Systems, LLC
Logan Generating Company, LP
Millennium Power Partners, LP
Morgan Stanley Capital Group, Inc.
National Grid Gen. dba National Grid
New Athens Generating Company, LLC
North American Energy Alliance, LLC
NRG Power Marketing, LLC
Power Authority of the State of New York
PSEG Energy Resources & Trade, LLC
Public Service Company of New Hampshire
RBC
Rochester Gas and Electric Corporation
Selkirk Cogen Partners, LP
Sterling Planet, Inc.
Sunoco Power Generation, LLC
Verso Paper Corp.
Wallingford Energy, LLC