Draft Operating Plan for Investments in New York Under the CO_2 Budget Trading Program and the CO_2 Allowance Auction Program

Advisory Group Meeting

March 6, 2009

The Operating Plan Development Process

David Coup
Energy Analysis

Background

NYSERDA's rule (Part 507.4(d)) states that proceeds from the sale of allowances will be used to:

"... promote and implement programs for energy efficiency, renewable or non-carbon emitting technologies, and innovative carbon emissions abatement technologies with significant carbon reduction potential."

Objective of the Operating Plan

The Plan summarizes and describes the individual programs to be supported by the RGGI auction proceeds. The Plan includes:

- program selection criteria
- descriptions of and budgets for the programs
- an anticipated schedule for implementation of the programs
- descriptions of the measurement, verification and evaluation methods
- a quantification of NYSERDA's costs for program administration & evaluation

Process and Anticipated Timing

Mid-November:	Held Advisory Group to receive feedback on the Concept Paper.
December 1st:	Received comments from stakeholders on the Concept Paper
January 26th:	NYSERDA Board Approved Early Action Plan
Late February:	Distributed draft Operating Plan to the Advisory Group, and posted it on NYSERDA's website.
March 6th:	Advisory Group meeting to receive feedback on the draft Operating Plan.
Early March:	Receive comments on Draft Operating Plan: **rggiprograms@nyserda.org**
Early-to-mid April:	Present final Operating Plan to NYSERDA's Board for approval
Spring:	NYSERDA Board Meeting

The Operating Plan
Vision and Context

John Williams
Energy Analysis

Vision of the Operating Plan

- Comprehensive Approach to Carbon Dioxide Emissions Reduction
  - Address all fuels accessed for energy use
  - Address each primary sector of the economy
- Greenhouse Gas Inventory Identifies Opportunities
- Deliver both Short-term and Long-term benefits to New York

Short-term:	Cost-effective CO2e Reductions Reduce Energy Costs for Consumers
Long-term:	Future Potential for CO2e Reductions Build Capabilities for Sustained Strategies

Context of the Operating Plan

- RGGI funded programs are designed to Supplement existing programs, not Supplant existing funding streams or program goals.

- RGGI funded programs may also help achieve new policy targets 45X15; Smart Growth

- Existing Programs:
  - SBC – Market Transformation, Low-Income Electric Efficiency
  - EEPS – Electric Energy Efficiency; 15X15
  - Natural Gas Efficiency – Utility-specific
  - Renewable Energy – RPS; LIPA/NYPA/Other programs
  - Weatherization Assistance Program
  - Congestion Mitigation and Air Quality Program

- Federal Stimulus Monies

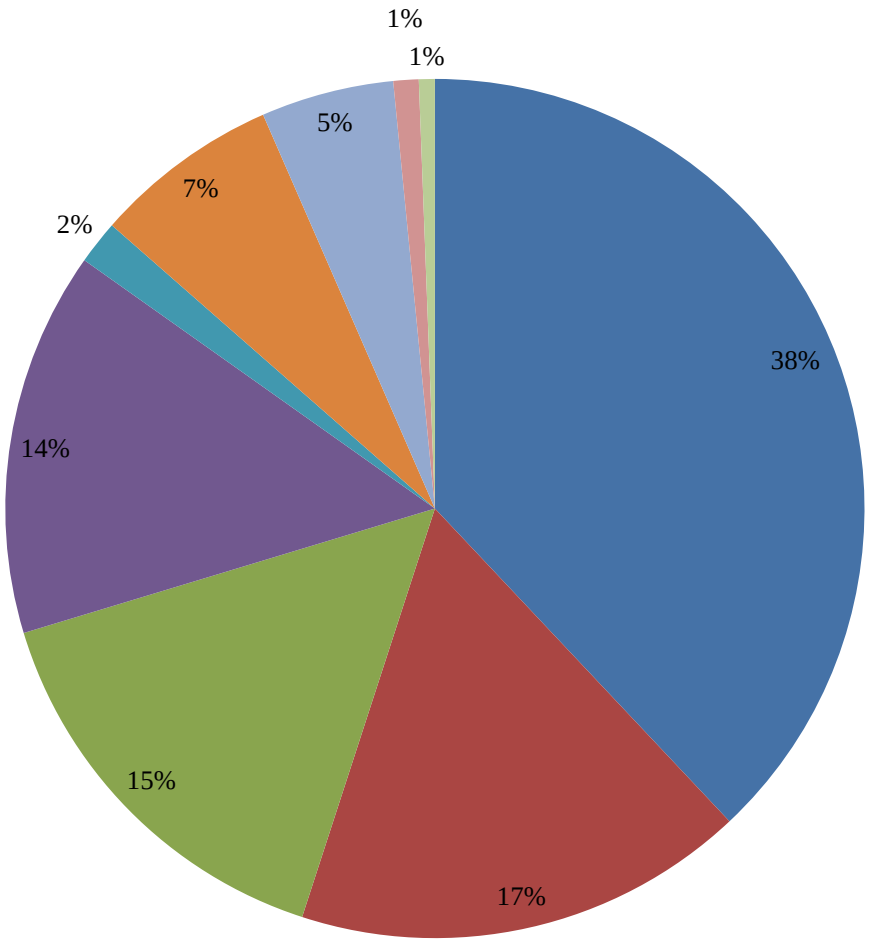
Portfolio Highlights

- Provide substantial consumer benefits through expanded energy efficiency and renewable energy activities that complement existing programs
- Invest in new technologies to reduce the carbon footprint of the electric power supply and delivery sector
- Create a new program and investment strategy designed to result in a transformed transportation system
- Stimulate a Clean Energy and Innovation Economy
- Build capacity for sustainable energy efficiency and emissions reductions programs in State, regional, municipal, and other government institutions
- Use new program strategies and ideas to develop innovative approaches to carbon reductions in the marketplace

Portfolio Benefits

- Energy Bill Savings: More than $1.27 billion (over life of measures)
- Energy Savings: 70 million MMBTUs (approx.)
  Additional 1.8 million MWhs
- Oil Demand: 6.4 million barrels displaced (approx.)
- Job Creation: 3,000 jobs (approx.)
- Greenhouse Gas Emissions Reductions:
  - CO_2 emissions reduced: 1.1 million tons over 3-year program
    (Equal to removing approximately 100,000 cars from the road)
  - 8.6 to 9.3 million tons CO_2 emissions removed over life of measures

Budget Breakdown ($000)



Three-year Total = $607,265

- Residential, Commercial & Industrial $230,620
- Power Supply and Delivery $103,400
- Transportation $93,000
- Multi-sector $87,979
- Sustainable Agriculture & Bioenergy $10,000
- Program Administration Costs $42,509
- Program Evaluation $30,363
- RGGI Adminstrative Costs $5,750
- State Cost Recovery Fee $3,644

Residential, Commercial and Industrial Sectors

Tom Barone
Energy Efficiency Services

Karen Villeneuve
Residential Efficiency and Affordability Program

Residential, Commercial and Industrial Sectors

Objective

Reduce greenhouse gas emissions by reducing energy end use through energy efficiency improvements and improved maintenance practices; increase use of clean energy technologies; and product development and demonstration

Programs

- Commercial and Industrial Efficiency
- Municipal and Institutional Climate Change Program
- Residential Space and Water Heating Efficiency
- Advanced Building Systems and Industrial Process Improvements

Commercial and Industrial Efficiency

Description:

- Portfolio of C/I initiatives to achieve cost-effective CO2 reductions.
  - •Technical Assistance
  - •Implementation Support

Three-year Budget: $84 million

Selection Criteria Met:

- Cost effectiveness
- Competitiveness, economic development, lowers operational costs of C/I sector

Estimated Benefits:

• Number of Participants:	1,760
• Energy bill savings (lifetime of measures):	$684 million
• Tons of CO_2e reduced (lifetime of measures):	4,730,000

Municipal and Institutional Climate Change Program

Description:

- Reduces barriers to energy-efficient and carbon mitigation implementation
  - Municipal and Institutional Climate Change Program
  - Revolving Loan Fund
  - K-12 Education
  - Municipal Water and Wastewater

Three-year Budget: $47.6 million

Selection Criteria Met:

- Cost effectiveness
- CO2 reduction
- Climate change awareness

Estimated Benefits:

- Overall Number of Participants: 85
- Water and Wastewater Energy bill savings (lifetime of measures): $102 million
- Water and Wastewater Tons of CO_2e reduced (lifetime of measures): 406,000

Residential Space and Water Heating Efficiency

Description: Builds on existing portfolio of market transformation programs to reduce heating fuel consumption and related emissions; expands use of clean energy technologies through two new initiatives.

Three-year Budget: $84 million

Selection Criteria Met:

- Cost effectiveness
- Reduce cost burden on low-income families and environmental justice communities
- Fills critical program gap by addressing oil, propane and renewables
- Creates jobs and supports skill development for long-term market transformation
- Provides health and safety measures

Estimated Benefits:

• Number of households served:	47,449
• Energy bill savings (lifetime of measures):	$329 million
• Tons of CO_2e reduced (lifetime of measures):	1,260,000

Advanced Building Systems & Industrial Process Improvements

Description:

Advanced Building Systems - Program will focus on enabling net-zero energy buildings. Specific activities include high performance thermal envelopes and windows; clean, bio-fuel heating technologies; micro-scale combined heat and power; higher efficiency heating and cooling systems; and advanced solar thermal systems.

Industrial Process Improvements - Program will focus on reducing fossil fuel use in New York manufacturing industries. Specific activities include increasing thermal efficiencies in existing processes; alternative processes; eliminate energy intensive destruction of by-products; changes in material inputs and process control.

Three-year Budget: $15 million

Selection Criteria Met:

- High greenhouse gas reduction potential in New York
- Economic development benefits including operating costs savings, new product development
- High replication potential

Estimated Benefits:

- 50% of funds will be invested in product development efforts in New York companies
- Each $1 is expected to yield $3 in gross state product
- 10 technology demonstrations at industrial settings having high potential for replication

Power Supply and Delivery

Mark Torpey
T&D and Exploratory Research

Electric Power Supply and Delivery Sector

Objective: The Electric Power Supply and Delivery (EPSD) Program is designed to reduce the carbon footprint of the electric power sector while simultaneously ensuring system reliability, safety, and security.

Programs:

- Statewide Photovoltaic Initiative
- Advanced Power Technology Initiative

RGGI Funding Criteria:

- Long-term potential to reduce GHG emissions
- Reduce compliance costs of the CO2 Budget Trading Program
- Promote economic development and environmental stewardship
- Reduce peak power production in EJ communities

Statewide Photovoltaic Initiative

Description: The Statewide Photovoltaic Initiative (SPVI) will provide incentives to reduce consumer capital costs and establish sustainable markets for solar energy throughout New York State.

Activities:

- Photovoltaic Incentive Program
- Photovoltaic Distribution System Integration
- Statewide Solar Power Naturally Program

Three-year Budget: $32.4 million

Estimated Benefits:

100 schools, 1,600 RCI customers, 2 utilities
CO_2e reductions (20-Year): 131,000 tons

Advanced Power Technology Initiative

Description: The Advanced Power Technology Initiative (APTI) will reduce greenhouse gas emissions in the long-term and support a diverse portfolio of projects relating to electric power generation, transmission and distribution, and direct carbon mitigation strategies.

Activities:

- Advanced Renewable Energy Systems
- Advanced Power Delivery Systems (Smart Grid)
- Carbon Capture, Recycle, and Sequestration

Three-year Budget: $71 million

Estimated Benefits:

- Broad range of projects
- Long-term CO2 reductions
- Mitigate technology risk
- Integrated program to maximize CO2 reductions at the lowest cost

Transportation

Richard Drake
Clean Energy Research and Market Development

Transportation Sector

Objective

The objective of the Transportation sector programs is to reduce greenhouse gas contributions from the transportation sector by reducing petroleum consumption, increasing the efficiency of electricity-based mass transit, and developing the next generation of low-carbon transportation options.

Programs

- Transportation Efficiency
- Electrified Rail Efficiency
- Advanced Transportation Development Program

Transportation Efficiency

Description: Program to deploy vehicle and system efficiency measures that reduce total vehicle miles traveled (VMT) and improve the vehicle efficiency. Initial elements include:

- Transportation Demand Management
- Electric Trailer Refrigeration
- School Bus coolant Heaters
- Heavy-duty Hybrid–electric vehicles

Three-year Budget: $34 million

Selection Criteria Met:

- Cost-effective GHG reductions
- Other co-benefits: decreased travel times, accident rates, and highway congestion, improved air quality, innovative infrastructure, and lower operating costs for public entities
- Environmental justice benefits: lower diesel pollution and improved public transportation
- Need for funds based on the lack of availability of other funding sources

Estimated Benefits:

• Gallons of petroleum saved (lifetime of measures)	33 Million
• Energy cost savings (lifetime of measures):	$86.6 Million
• Tons of CO_2e reduced (lifetime of measures):	310,000

Electrified Rail Efficiency

Description:

Program collaborating with NY utilities and transit authorities to improve efficiency in NY's electrified rail system through:

- Heater controls
- Insulator cleaning
- Traction power regeneration improvement
- High conductivity third rails

Three-year Budget: $44 million

Selection Criteria Met:

- Cost-effectiveness
- Other Co-benefits: Economic development benefits associated with NY manufacturing jobs
- Need for funds based on the lack of availability of other funding sources

Estimated Benefits:

- Energy bill savings (lifetime of measures): $42.3 Million
- Tons of CO_2e reduced (lifetime of measures): 462,000

Advanced Transportation Development Program

Description:

Program to commercialize improved transportation technologies, products, systems, and services that provide superior GHG reduction performance cost-effectively.

Three-year Budget: $15 million

Selection Criteria Met:

- Invest in technologies and systems with significant potential for reducing GHGs in NY
- Other co-benefits: air quality improvements and environmental justice
- Need for funds based on the availability of other funding sources

Estimated Benefits:

Further development of . . .

- Plug–in Hybrid Vehicles (PHEVs) and Infrastructure
- Electric Rail Efficiency
- Vehicle Efficiency
- Vehicle Miles Traveled Reduction

Sustainable Agriculture and Bioenergy

Jeff Peterson
Clean Energy Research and Market Development

Sustainable Agriculture & Bioenergy Sector

Objective

Reduce emissions from activities associated with agriculture and characterize the potential for carbon sequestration in New York's terrestrial ecosystem. Priorities will be guided by findings and recommendations from the ongoing *Renewable Fuels Roadmap and Sustainable Biomass Feedstock Supply Study for New York (Renewable Fuels Roadmap).*

Programs

- Sustainable Agriculture & Bioenergy
  - Technology and Process Development
  - Market, Policy, and Institutional Issues
  - Develop Performance Standards/Non-Food Feedstock Supplies
  - Outreach
  - Develop Tools/Models & Analysis, Demonstrations

Sustainable Agriculture & Bioenergy

Description: Develop sustainable biomass feedstock supplies, technologies/processes, and end-uses for bioenergy applications. Explore business strategies to overcome financial barriers and develop methods & performance-based standards to estimate costs/benefits for bioenergy systems. Develop methodologies to identify baseline inventories and opportunities for GHG reduction/mitigation on farms/forests and develop tools and models for the agricultural sector to participate in a market-based program for GHG reductions.

Three-year Budget: $10 million

Selection Criteria Met

Criteria 2: Invest in technology that has significant technical potential
Criteria 4: Other benefits, specifically addressing economic opportunities in rural areas

Estimated Benefits: The program is expected to provide benefits in the mid-to-long-term.

- Support sustainable bioenergy industry
- Create green jobs, particularly in rural upstate regions
- Create distribution networks and infrastructure
- Reduce fossil fuel use and carbon emissions

Multi-sector

Janet Joseph
Clean Energy Research and Market Development

Multi-Sector Programs

Objective

- *Leverage* investments and *build capacity* in NY to develop and implement new climate change mitigation and risk management solutions
- Move NY toward a *clean energy economy*

Programs

- Workforce Development
- Competitive Greenhouse Gas Reduction Bidding
- Clean Technology Industrial Development
- Climate Research and Analysis

Workforce Development

Description:

- Ensure a pool of qualified workers for all work
- Heating efficiency, solar thermal systems, carbon benchmarking
- Work with existing training partners, unions, industry, trade groups, and local organizations
- Target displaced, underemployed and disadvantaged workers

Three-year Budget: $9 million

Selection Criteria Met / Anticipated Benefits:

- Criteria 4: Other benefits: skill development for long-term market transformation
- Criteria 5: Support work in Environmental Justice communities
- Number of participants: 13,000

Competitive Greenhouse Gas Reduction Bidding

Description:

- Implement the lowest-cost CO_2 reduction strategies
- Statewide program, all fuels, generation efficiencies, abatement, transportation

Three-year Budget: $41 million

Selection Criteria Met:

- Criteria 1: Cost-effective CO_2 reduction strategies for large projects
- Criteria 3: Reduction in “cap and trade” costs from electric-use reductions
- Criteria 4: Other benefits: job creation, leveraged capital investments, economic development, and increased capacity of the electric grid

Anticipated Benefits:

- Lifetime CO_2 Reductions: Approximately 1.4 – 2.0 million tons
- Lifetime Unit Program Cost: Approximately $20 - $30 per ton

Clean Technology Industrial Development

Description:

- Accelerate commercialization of high potential GHG reduction technologies
- Lay the foundation in NY for new economic activity and growth in emerging clean energy markets
  - ➢ Clean Energy Advanced Research Center (CLEAR)
  - ➢ Clean technology business development
    - -- Risk capital for clean energy business expansion
    - -- Clean technology business assistance
    - -- Local cluster development

Three-year Budget: $29 million*

- $17 M CLEAR
- $12 M Clean tech business development

Selection Criteria Met:

- Criteria 2: Advance long-term potential for GHG reduction
- Criteria 4: Other benefits: promote economic development

Clean Technology Industrial Development (cont'.d)

Anticipated Benefits:

- Clean Energy Advanced Research Center ($17M)
  - Establish a world-class Research Center in Strategic Focus area
  - Leverage at least $50 million (federal, private) into NYS
  - Develop prospects for commercial products and several IP licenses
  - Develop highly skilled labor pool (training >100 engineers/scientists) to support related Clean Tech industrial activity in NYS

- Business Development ($12M)
  - Help create several spinoff companies
  - Provide risk capital to half dozen NY Clean Tech businesses for expansion
    → (jobs, revenue, new products)
  - Leverage up to an additional $100 million in funding for Clean Energy manufacturing projects in NYS
  - Provide in depth business assistance to more than 30 companies, as well as information services to several hundred

Climate Research and Analysis

Description:

- Build on NYSERDA–New York Academy of Sciences NYS climate research plan
- Focus on carbon offsets
- Impact assessments and risk management studies
- Analysis of mitigation options

Three-year Budget: $9 million

Selection Criteria Met / Anticipated Benefits:

- Criteria 3: Inform decisions related to reducing cost of achieving emission reduction goals of the CO2 Budget Trading Program
- Criteria 4: Other benefits: help NY better manage climate change risks
- Criteria 5: Guide initiatives to reduce EJ issues

Program Evaluation and Reporting

Jennifer Meissner
Energy Analysis

Evaluation Goals

- Provide a credible evaluation of the portfolio and individual programs
- Provide timely information to stakeholders on:
  - Progress toward program and public policy goals
  - Progress toward emission reductions, increased energy efficiency and greater use of renewable energy
  - Program efficiency and effectiveness

Evaluation Budget & Implementation

- Budget limited to no more than 5% of program funding includes:
  - Third party contractor assistance on evaluation design, planning, and reporting
  - Third party contractor evaluation implementation
  - NYSERDA (Energy Analysis group) management and coordination of activities
- Close coordination with evaluation of SBC and EEPS programs
  - Leverage other evaluation experience
  - Ensure separate tracking and allocation of RGGI evaluation funding

Evaluation Approach

- Impact Evaluation
  - Measure and verify outcomes and co-benefits attributable to the programs
  - Examine cost effectiveness
- Market Characterization & Assessment
  - Develop program logic models
  - Develop understanding of targeted markets and changes over time to inform program delivery
- Process Evaluation
  - Examine and improve program efficiency and effectiveness

Evaluation Reporting

Annual report to address:

- Summary description of program activities
- Evaluation of results and impacts
  - Results from independent contractor studies
- Accounting of all sales of CO2 allowances and funds generated
- Accounting of program administration costs and expenditures

Next Steps