PROGRAM PLANNING COMMITTEE
OF THE
NEW YORK STATE
ENERGY RESEARCH AND DEVELOPMENT AUTHORITY

Minutes of the 77th Meeting
Held on June 9, 2011

Pursuant to a Notice and Agenda dated May 26, 2011, the 77th meeting of the Program Planning Committee ("Committee") of the NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY was convened at 10:30 a.m. on Thursday, June 9, 2011, at the Albany College of Nanoscale Science and Engineering, 255 Fuller Road, Albany, New York.

The following members of the Committee were present:

George F. Akel, Jr., Committee Chair
Vincent A. DeIorio, Esq., Authority Chair (ex officio)
Kevin Burke
Robert B. Catell
David D. Elliman
Elizabeth W. Thorndike, Ph. D.

Mark Willis did not attend.

Also in attendance were Authority Board Member Joseph Martens; Robert G. Callender, Vice President for Operations and Energy Services; Janet Joseph, Vice President for Technology and Strategic Planning; Jeffrey J. Pitkin, Treasurer; Hal Brodie, General Counsel; and Valerie S. Milonovich, Senior Counsel and Secretary to the Committee; and various other members of the Authority staff.

Chairman Akel called the meeting to order, noted the presence of a quorum, and stated that a Notice of the meeting (see Exhibit A) was mailed to Committee members and the press on May 26, 2011. Each of the Committee members introduced themselves.

The first agenda item concerned the approval of the minutes of the 76th meeting of the Committee held on April 4, 2011. Upon motion duly made and seconded, and by unanimous voice vote, the minutes of the 76th meeting of the Committee were approved.

Mr. Akel introduced the Authority's Chairman, Mr. DeIorio, who offered a brief welcome and extended his thanks to the Committee and the Board for their involvement in the Strategic Plan, which he characterized as a roadmap that describes the Authority's statutory mandates and assists the Board in the discharge of its responsibilities. He also congratulated the Authority's technical and administrative staff and thanked them for their energy and efficiency in developing the new Strategic Plan.

2011-2014 Strategic Plan Presentation

Mr. Akel introduced Janet Joseph, Vice President for Technology and Strategic Planning, who provided an overview of the 2011-2014 Strategic Plan. Ms. Joseph acknowledged the great opportunity to host the meeting at the NanoTech facility that is now employing thousands of people in a knowledge-based industry. She mentioned the Authority's support for a Clean Energy Incubator at the facility and $5 million in NYSERDA co-funding leveraged with federal funding to be used for photovoltaic development.

Ms. Joseph described this meeting as an important milestone in the Authority's planning process as it is the meeting where the priorities are presented for NYSERDA programs over the next three years. These priorities are informed by discussions at quarterly meetings of the Committee and reflect a range of inputs and planning activities conducted throughout the year including external program reviews, market and technology assessments, program evaluations, stakeholder feedback, and State and federal policy guidance and directives.

The Strategic Plan highlights NYSERDA's mission, vision, and target outcomes. It presents a comprehensive set of clean energy programs and strategies that work in an integrated fashion to achieve the Authority's mission to advance innovative energy solutions in ways that improve New York's economy and environment.

Ms. Joseph described a new structure for the Strategic Plan that reflects more customer-focused program portfolios. These new portfolios better align with NYSERDA's mission outcomes and a new NYSERDA-wide communication strategy to increase awareness and understanding of NYSERDA's programs. The Plan characterizes the landscape, identifies barriers and opportunities, and presents priorities for each of the following portfolios:

- Energy Efficiency and Renewable Energy - increases the market penetration of commercially available technologies in New York;
- Energy Technology Innovation and Business Development - creates new energy options and grows clean energy businesses in New York;
- Energy Education and Workforce Development - builds a workforce and a generation of New Yorkers ready to lead in the delivery and adoption of clean energy solutions;
- Energy and the Environment - strives to understand and minimize the impact of energy production and use on the environment; and
- Energy, Data, Planning, and Policy - provides objective information for decision-making.

Other changes mentioned by Ms. Joseph, some of which are in response to requirements under the Public Authorities Law, include: reworking the introductory chapters to address the thematic focus on the mission, vision, and performance outcomes and better delineate the influences on program development; a clearer articulation of NYSERDA's value proposition; presentation of the Authority's accomplishments relative to its target outcomes; and an expanded treatment of the Authority's many varied funding sources and how they advance State energy goals and achieve the Authority's mission.

Committee Member Catell inquired as to the method for allocating resources among programs, particularly with regard to business and technology development efforts. Ms. Joseph

explained that, for the bulk of the Authority's funding, it is allocated pursuant to the rules set by the entity funding the program and NYSERDA must work within the objectives set for each of the programs.

Reports on Priorities for the Three-Year Planning Horizon

Energy Efficiency and Renewable Energy Programs

Karen Villeneuve, Director of the Residential Energy Services (RES) Program presented information on deployment programs that serve the residential buildings sector, stressing the ongoing coordination and consolidation of program offerings, internal collaboration, and leveraging of common resources. She cited an example of collaboration between the commercial, industrial, multifamily, and R&D staff, as well as with external stakeholders. This collaboration accelerates the adoption of emerging technologies and practices through wide-scale demonstrations. This effort identifies promising technologies, delivers wide-scale demonstrations, overcomes market barriers, and educates the market in order to transition the technologies and practices into more common use in new construction or renovations.

Ms. Villeneuve stated that in order to reach the aggressive energy efficiency and renewable resource goals established in New York, the use of emerging or under-used technologies and practices should be encouraged and facilitated. Examples include integrating renewable energy systems into core whole-building energy efficiency programs by helping builders and contractors expand their capabilities and capacities and facilitating strategic partnerships with other businesses.

Ms. Villeneuve described one future effort to increase outreach and education at the community level. Staff will work with local businesses, government, not-for-profits, and the building owners using local ties to educate community members about opportunities. Working at the community level will allow NYSERDA to look beyond building efficiency and energy resources and toward the integration of efficient transportation and smart grid applications. These efforts will also serve to combine resources with others in the community to further rehabilitate buildings for low-income households, helping consumers become more aware of their energy use and the impact on the environment.

Ms. Villeneuve reported that staff of the Authority's deployment programs has been working together to improve operations and customer service by upgrading data systems and coordinating more closely on regulatory and funding issues. She also reported that quality assurance work has been consolidated into a single program within the residential program that monitors quality assurance processes and issues across all residential programs.

Committee Member Burke inquired as to performance metrics and the reduction of greenhouse gases, pointing out that the focus on emerging technologies rather than readily-available technologies was likely to garner fewer greenhouse gas reductions. Ms. Villeneuve responded by stating that staff is looking at ways to better integrate under-used technologies to bridge the gap. She also mentioned that this is one area in which workforce development efforts can be helpful.

Tom Barone, Director of the Energy Efficiency Services (EES) Program discussed a paradigm shift in how new buildings are designed by building owners and their design teams. Examples of new building features included daylighting, operable windows, building shape, and radiant heating and cooling. Given this shift, Mr. Barone portrayed the role of EES to more aggressively pursue energy savings and to increase building performance (to achieve 25% better than Code for major renovations and 40-50% better than Code for new construction), both of which will lead to increased bill savings for building owners.

Mr. Barone suggested that programs should strive to move toward zero-net energy. He provided an example of a 220,000 square foot National Renewable Energy Laboratory Research Support Facility located in Golden, Colorado that has achieved Leadership in Energy and Environmental Design (LEED) Platinum status, despite also housing a data center. The facility is cost-competitive with typical new construction and is also a zero-net energy site by virtue of a photovoltaic power purchase agreement, proving that highly energy-efficient and marketable net-zero buildings can be built cost-effectively. To further illustrate the value of this project, Mr. Barone pointed out that the building is five times as efficient as the State's overall building stock, and four times more efficient than NYSERDA's building.

With regard to operations, Mr. Barone reported that NYSERDA currently has several disparate databases that do not communicate very well, making operations less efficient than they could otherwise be. He reported that EES has a new operations department working to develop a new data warehouse, while also creating an outward facing website to allow customers and contractors direct electronic access to program information. On-line applications are one example of the type of efficiencies than can be expected as a result of this effort, saving staff time, fostering better communication internally and with customers, and improving reporting accuracy and timelines.

Mr. Burke offered the New York City benchmarking effort as an example of a data-based program that is underway, and that certain municipalities are now offering data to customers.

Michael Colgrove, Director of the New York City Office reported that upcoming efforts are to further improve service to the multifamily housing sector and to better position multifamily programs to meet the goals of EEPS. This will be accomplished by targeting new audiences to expand the reach of the programs, including owners and management companies that have traditionally not taken advantage of the opportunities offered through the Multifamily Performance Program (MPP). Exploring ways to better reach tenants and residents and encourage energy efficient behavior within the apartments, increasing awareness of building operations and performance, and working more closely with the Workforce Development team to increase training and certification opportunities, were also cited as areas of future focus.

Mr. Colgrove reported that another future effort will be to explore the feasibility of deep energy retrofits (savings greater than 65% of building usage). MPP program efforts have shown that cost-effective energy reductions on the order of 20-25% are possible using off-the-shelf technologies. Mr. Colgrove pointed out that one of the initiatives proposed under the System Benefits Charge (SBC) Technology and Market Development Operating Plan will demonstrate that even deeper energy savings are achievable in multifamily buildings and staff will work to help identify the barriers that might be preventing cost-effective adoption across the market sector.

Mr. Colgrove also highlighted the increased coordination and collaboration between staff from the Authority's deployment groups and the Energy Analysis Program in their work in a variety of venues including: the Energy Efficiency Portfolio Standard (EEPS) Implementation Advisory Group; EEPS Program Administrator collaborations; and various working groups that address issues such as measure cost-effectiveness and the impact of new lighting standards.

Mark Torpey, Director of Clean Energy Research and Market Development, presented information on efforts in the transportation and power sectors. He began with a discussion of both the Main and Customer-Sited Tiers of the Renewable Portfolio Standard (RPS) and described future efforts as: diversifying the resource mix; validating economic benefits; completing probabilistic analysis on meeting the RPS goals; complementing the voluntary renewable energy market; and ramping up overall RPS activity. Mr. Torpey discussed plans to examine the past three years of initial economic development data to assess accomplishments to date. He also described efforts with regard to the voluntary market, perhaps including the design of a hedging-type product as an example.

Mr. Catell pointed out the differences between connecting renewable technologies to the main power grid as compared to the implications for installing renewable energy at the customer level, which also has implications for smart grid technology.

Mr. Burke inquired as to how much funding is provided for the Main Tier and the Customer-Sited Tier. Mr. Torpey responded that for attributes procured through the Main Tier costs are approximately 2 cents per kilowatt hour and the Customer-Sited Tier involves an incentive structure that depends on the technology and those costs are significantly higher. He also added that RPS goals are energy-based, rather than capacity-based, and that absent major issues (such as siting), staff is optimistic that the goals will be met.

Mr. Torpey continued with a discussion of transportation issues and stated that this sector accounts for 91% of petroleum use in New York. About 75% is consumed as gasoline in light-duty vehicles. He mentioned a joint project solicitation with New York State Department of Transportation, efforts to reduce institutional barriers, and new ideas to provide consumers with choices at the gasoline pump.

Mr. Burke is concerned that 40% of greenhouse gas emissions come from the transportation sector and that is expected to grow. He also suggested that much progress that is being made in other energy-using sectors could ultimately be offset by the growth in emissions from the transportation sector and more funding for this sector is something that the State should reconsider.

Mr. Catell mentioned that there are options other than electric vehicles, such as natural gas vehicle fleets and these should be considered if one wants to make a noticeable impact.

Chair DeIorio stated that there is much more that can be done in the transportation area and cited a project using compressed natural gas distribution trucks in the Bronx as a successful example that works well. He also offered that improving the health and safety of truck drivers is a real concern of the industry and an added benefit of this type of energy-saving project.

Mr. Catell stated that when gasoline prices are as high as they are currently, real opportunities exist to make energy efficiency progress in this sector.

Board Member Martens mentioned the Transportation Climate Initiative and the challenges of partnering with other states when national transportation funding is at stake.

Sandy Hwang, Assistant Project Manager, described the Joint Data Center Collaborative between the Authority and Con Edison. Data centers are very energy intensive, representing about 2- 3% of total US electricity consumption, and New York has the second highest concentration of data centers in the country. A large number of the data centers in New York are located in Con Edison's service territory and are associated with the finance, higher education, and healthcare sectors.

Ms. Hwang explained that the program is designed to provide "one-stop shopping" for customers to eliminate competing programs, and to take advantage of synergies for processing applications and marketing efforts. Two program launches, one in New York City and one in Westchester County, were well-attended, and approximately 40 applications have been received to date. Future plans are to develop case studies as projects are completed and to continue refining the program to find deeper energy savings as data is collected throughout 2011.

Thus far, program benefits include: lessening customer confusion; maximizing the number of projects; a more efficient use of staff and resources; and leveraged technical and outreach resources from both organizations.

Energy Technology Innovation and Business Development

Peter Douglas, Director of End-Use Applications and Innovation, presented future priorities for advanced buildings. Efforts include reducing the cost of deep retrofits in existing buildings including new building envelope methods and systems to lower energy costs. He also mentioned a new focus on labor-reducing steps for re-insulating a building shell that can lead to smaller, more efficient heating plants.

Mr. Douglas mentioned increasing performance in new residential construction so that new homes exceed ENERGY STAR® and construction code standards. He stated that tighter envelopes and smaller mechanical systems integrated with storage for renewable energy will be emphasized. The challenge will be to accomplish this without adversely impacting net costs.

Another future effort will be to increase load flexibility for demand response and customer interaction in order to overcome poorly controlled building appliance and lighting loads that contribute to peak demand. Smart Grid viability is partially dependent on the ability of customers to interact with the grid, so future projects will continue to focus on lowering the cost of remote monitoring and load control. Mr. Douglas suggested that demonstrations of these efforts in multi-family and commercial buildings will be necessary to build market demand.

Mr. Douglas presented future industrial efforts as including support for innovation in manufacturing process technology, assisting in the scale-up of clean energy manufacturing methods, and promoting the adoption of under-used manufacturing technologies through the EEPS programs.

Future efforts in business development will include the establishment of "Proof of Concept" Centers in New York technical universities. Technical universities hold great potential for wide range of clean energy relevant new products, yet core ideas produced by researchers require additional refinement to be suitable for introduction to the market. The Proof of Concept Centers will establish on-campus support for evolving new ideas into forms that are sufficiently vetted and articulated so as to attract venture capital and other sources of private funding. The objective is to create productive relationships between university technology transfer offices, researchers, and the private sector to accelerate the transfer process.

Another new area to be pursued is "stage-gate methodology" to manage technology selection and funding levels. Stage gate methodology provides an increase in the structure and assessment capability of each stage of the commercialization process. A major portion of current R&D efforts provides necessary funds for prototypes and early stage development of new technology, which can sometimes overlook validation of the business case. Emphasis will be placed on key factors that influence the evolution of an idea, its protection (intellectual property, for example), and subsequent commercialization. This is critical to increasing the odds of success, as it is anticipated that the future will yield greater levels of funding commitments to fewer projects.

Future efforts will also emphasize manufacturing incentives for the production "scale-up" stage and support capacity building for clean energy products. The focus will be on helping businesses and start-ups already located in New York to develop new, more energy-efficient manufacturing processes, particularly at the initial scale-up stage.

Mr. Douglas also spoke of product and market development efforts, stating that many technologies supported by NYSERDA have unique market barriers that impede broader applications. Often the current form of the product does not quite fit the requirements of all market segments. Citing combined heat and power as an example, Mr. Douglas pointed out that large systems (larger than 2MW) can tolerate the costs of customization, utility interconnection, and government agency approvals. However, for smaller systems (less than 2MW), these added costs discourage expansion of the market. NYSERDA will work with developers and manufacturers to create modular, pre-engineered units, transforming both the product and the market.

Mark Torpey, Director of Clean Energy Research and Market Development, presented future plans for clean energy research and market development. In particular, strategic technology development will focus on "end-to-end" systems perspectives, where utilities will serve as the technology proving ground. Building on coordination with key stakeholders, Mr. Torpey stated that innovation will be in technology, business, and on the regulatory front.

Mr. Torpey described an interaction between advancing clean power (which furthers the availability of RPS technologies), and Smart Grid efforts (involving storage activities), and transportation efforts (that lead to smart charging technologies) – all of which lead to the power grid of tomorrow.

John Saintcross, Energy Markets and Power Delivery Program Manager, described Smart Grid and Energy Storage efforts. To date, NYSERDA has invested nearly $40 million in about 80 projects with about 50 industry and 14 academic partners. Private-to-public funding is

leveraged at about $3 to $1. Mr. Saintcross reminded the Committee that the Authority has been instrumental in the start-up of the New York State Smart Grid (NYSSG) and the New York Battery Energy Storage (NYBEST) consortia. NYSERDA Program Staff anticipates further collaboration with both consortia, the New York State Department of Public Service and the federal Department of Energy as programs evolve.

With regard to smart grid research, efforts revolve around three pillars:

- Converting the current electrical grid from an electromechanically controlled system to a digitally controlled system by using advanced sensing, communications and automation to increase efficiencies. This effort is primarily to provide the customer advanced visibility and control, as well as the ability to use new technologies.

- Using technology to address the variable output of renewable resources upstream on the grid and downstream at the customer, as well as address electrification of the transportation sector. This effort is about improving the environment and reducing carbon.

- Fully integrating customer load and resources (such as PV and smart appliances) into grid and market operations. In this arena, the customer (or building) has advanced technology that, when coupled with utility technology, enables it to respond to market stimulus and control load and generation to its own and the utility provider's advantage.

In addressing energy storage efforts, Mr. Saintcross presented three types of storage media under study: compression and injection of air into a vessel or containment and expansion to release stored energy; electro-chemical reactions to charge and discharge electricity (batteries); and energy storage in a heavy mass (1 and ¼ tons) rotating in a frictionless space (flywheels). He pointed out that although each approach stores energy, each also has specific applications for operating and cost efficiencies which will be addressed in future program offerings.

Mr. Saintcross concluded his presentation with specific project examples including one that produces about 20 megawatts of electricity by using flywheels that is expected to be in full operation by the end of June 2011, and others using batteries in various demonstration and product development applications.

Mr. Burke and Mr. Elliman inquired as to applications for compressed gas storage and compressed air storage. Mr. Saintcross provided several examples of the types of projects underway and their status. Mr. Catell inquired as to the availability of federal funding. Mr. Saintcross pointed out that funding is currently leveraged at $1 of private funding for every $3 of federal funding. A brief discussion was had regarding a large demonstration project involving the New York State Electric and Gas Company that is primarily federally-funded.

Energy Education and Workforce Development

Adele Ferranti, Residential Energy Services Program Manager, presented the Committee with information on how the Authority is educating consumers about advanced technologies,

energy use, energy choices, and modifying energy-using behavior. Specific examples included the compact fluorescent lighting (CFL) marketing campaign and the Home Performance media campaign.

Additional priorities include providing high-quality curriculum, trained instructors and training equipment for Workforce Development efforts planned for future. Other goals include updating training and certification segments, and providing equipment for hands-on learning. Ms. Ferranti further described training opportunities, stating that the Center for Energy Efficiency Building Science (CEEBS) provides training at 18 locations across the State, offers flexible schedules including weeknights and weekends, and that on-line training options are under development. Ms. Ferranti also addressed opportunities offered through these program efforts for new and emerging workers with regard to certifications and the associated examinations.

Ms. Ferranti explained that NYSERDA has 14 Career Pathway Energy Efficiency Training partners across the State, and new efforts will focus on developing Career Pathways for renewable energy. She provided several examples of ongoing efforts to address training needs for energy efficiency employment and some which offer "stackable credentials" (such as a General Equivalency Diploma and a National Worker Readiness Credential) to prepare workers for technical training and jobs.

Career development in middle and high schools is also a priority for the next few years. Ms. Ferranti mentioned the partnership between Ballston Spa High School and Hudson Valley Community College at TEC-SMART as an example where high school students receive hands-on classes at the TEC-SMART facility, college and high school credits, and internships with STEP tenants.

Ms. Ferranti also mentioned that coordination with the New York State Department of Labor (DOL) for career services and job placement will continue, as well as the partnership with DOL and its Career One-Stop Centers to implement video conferencing network for training, education, and outreach.

Saratoga Technology + Energy Park

Bob Callender, Vice President for Operations and Energy Services, provided an update on the Authority's continued development, build-out, and marketing of STEP by reviewing the four program priorities, including: encouraging new developers to build at STEP; supporting the current tenants; attracting new clean energy and high tech businesses; and pursuing additional sources of private and public economic development opportunities to support the future growth of STEP.

With regard to working with new developers, the Authority signed a ground lease with the Jersen Group to develop, build, finance, and manage a $6.5 million dollar, 89,000 square foot, LEED-rated, office, manufacturing, and assembly multi-tenant facility at STEP. Construction of the building will begin shortly, and it is anticipated that the building will be ready for occupancy in the first quarter of 2012. A groundbreaking event is planned for this summer.

The STEP team is launching a new campaign this summer to attract new businesses from across the country to STEP. The campaign will target companies working in photovoltaics, battery and energy storage technologies, lighting, the semiconductor industry, and other related clean energy and energy efficient technologies. The STEP team will also launch an effort to attract new commercial developers from across the country to build at STEP, while continuing to work with existing tenants and assist in their business growth.

Mr. Callender reported on NYSERDA's continued work with Hudson Valley Community College at its TEC SMART facility, as well as with local high schools to attract and educate students, teachers, administrators, guidance counselors, and parents on the clean energy classes that will be offered at the TEC-SMART facility this fall and in the future. During the last three months a total of 1,500 educators, administrators, college and high school students, and parents from across the capital region toured the TEC-SMART facility to learn more about green job opportunities and the clean energy classes offered at TEC-SMART. The Authority continues to work with current STEP tenants including nfrastructure, Lockheed Martin, and GLOBALFOUNDRIES on an internship program for the college and high school students that attend TEC SMART.

Mr. Catell spoke very favorably about the program targeted toward high school students and said he would like to see it replicated across the State, particularly on Long Island. Mr. Callender offered that currently curriculum materials are shared in the Capital Region and that he would look into expanding that effort Statewide.

Mr. Elliman inquired as to how large a budget might be needed to expand this program to other schools. Mr. Callender agreed to reach out to the participating school for that information.

Energy and the Environment / Planning & Analysis

John Williams, Energy Analysis Program Director, presented programmatic priorities for the 2011-2014 period which address the two NYSERDA program portfolios for Energy and the Environment and Energy Data, Planning and Policy.

Regarding priorities for environmental policy development, Mr. Williams identified new Authority-wide efforts to better focus the Authority's activities with respect to federal government policy development. These activities will help the Authority be a resource for the Governor's Office policy formation, as well as help to identify potential funding opportunities with the Department of Energy and other federal agencies. With respect to regional priorities, Mr. Williams identified future efforts that include continued participation in the Regional Greenhouse Gas Initiative, the Low Carbon Fuel Standard, and the Transportation and Climate Initiative. New and continued activities will be pursued on several State initiatives include a focus on the new Cleaner, Greener Communities program, as well as completing work for the Climate Action Plan and pursuing additional environmental monitoring and environmental protection program opportunities.

With respect to the Energy Planning portfolio, Mr. Williams mentioned current efforts on an Energy Assurance Plan that is funded through an American Recovery and Reinvestment Act (ARRA) grant. Information learned from this process will help inform future statewide energy system contingency planning activities. In addition, Mr. Williams identified emerging concerns

regarding cutbacks in federal government data collection activities that may impair the State's ability to have the most accurate data and develop insightful market intelligence. This could also impact future energy planning activities.

With regard to the next cycle of the State Energy Plan, Mr. Williams explained that the final Plan is due in March 2013 and will involve various policy scenario analyses, including a post "45 by 15" clean energy potential analysis.

Mr. Williams also commented on NYSERDA's policy and program development priorities for the coming three years, which will include a RGGI Program Review as well as a new Market Research Program, pending approval of the Authority's T&MD proposal currently before the Public Service Commission.

Mr. Catell inquired as to how the New York Energy Policy Institute (NYEPI) fits into all of the efforts as described, using Marcellus shale as an example. Mr. Williams responded that NYSERDA will work with staff at the NYEPI to craft a solid work plan. One area for consideration is the possibility of a gap analysis on current energy policies and programs to help inform the 2013 State Energy Plan.

Mr. Burke offered thoughts on an increased focus on the Indian Point nuclear facility. Mr. Williams stated that Energy Analysis Program staff is engaged in those activities, and that scenario analysis examining the impacts of decisions on Indian Point would likely be a subject for the 2013 State Energy Plan.

Regional Greenhouse Gas Initiative Operating Plan

David Coup, Energy Analysis Program Senior Project Manager, presented proposed changes to the Regional Greenhouse Gas Initiative (RGGI) Operating Plan. Mr. Coup began by providing a brief summary of the activities which began in 2009 that led to the formation of the Operating Plan. The effort is the first mandatory, market-based effort in the United States to reduce greenhouse gas emissions, and the participating Northeastern and Mid-Atlantic states have capped and will reduce carbon dioxide (CO_2) emissions from the power sector by 10% by 2018.

NYSERDA is responsible for overseeing the sale of New York's CO_2 allowances and using the proceeds for eligible programs. The RGGI Operating Plan is amended annually and approved by the NYSERDA Board. Approximately $313 million has been collected to date and these funds support efforts such as Green Jobs/Green New York, Statewide photovoltaic efforts and residential green buildings. Mr. Coup stated that NYSERDA takes a conservative approach when budgeting for upcoming activities.

Mr. Coup provided a summary of the process undertaken for developing the most recent changes to the Plan, including guidance from the Executive Chamber and partner agencies such as the New York State Departments of Environmental Conservation, Public Service, Transportation, and Agriculture and Markets. He also described coordinated efforts with the SBC planning process that is currently underway, a RGGI Advisory Group meeting held in May, and the receipt of written comments from stakeholders in response to the proposed changes.

Estimated average auction proceeds of $10 million per quarter during 2011 (last year of the first compliance period) and $20 million per quarter during the second compliance period (2012 through 2014) results in proposed three-year budget of $178.7 for program implementation. Mr. Coup reviewed the guiding priorities for program efforts as: reducing CO_2 emissions; empowering communities; reducing the use of petroleum fuels; stimulating economic growth; and collaborating with Regional Economic Development Councils. The funding priorities for 2011 were presented as:

- Cleaner, Greener Communities ($94.7 million). This effort has three components (outreach, planning, and implementation) and will strive to create regional plans to ensure infrastructure investments move communities toward a more environmentally-sustainable future.

- Industrial Process Improvements and Development ($36 million). This effort will accelerate the adoption of emerging technologies that improve energy efficiency. It will also enable efficient mass production of clean energy technologies and provide financial support to leverage private investment in early-stage and expansion-stage clean energy companies.

- Residential Space and Water Efficiency Program ($33 million). The goal of this effort is to mitigate the high cost of heating oil with special emphasis on low- and moderate-income homes. It will also create a Recharge NY Energy Efficiency Program that will provide incentives for advanced electric-saving products, such as LED lights, and advanced power strips.

- Competitive Greenhouse Gas Reduction Pilot ($15.0 million). This effort includes market-ready projects that reduce greenhouse gas emissions from the power sector. It will include competitive selection based on technical merit, replication potential, and cost of delivering GHG reductions.

An expansion plan is included in the proposed changes to the Operating Plan to accommodate any new funding beyond that estimated by staff.

Mr. Burke inquired as to how these efforts address the high price of petroleum. Mr. Coup offered that, although the RGGI program efforts do not directly impact the high price of petroleum, funding is directed to help with oil energy efficiency efforts in order to lessen the impact of higher prices on the end-user.

The NYSERDA Value Proposition: 2011-2014

Janet Joseph, Vice President for Technology and Strategic Planning, provided an overview of the financial resources to be invested over the 2011-2014 timeframe. She mentioned that the project funding identified in the Strategic Plan includes both approved multiyear allocations, such as the RPS, as well as funding sources that are currently under deliberation, such as EEPS and SBC. She also explained that for planning purposes an assumption was made that these programs continue into the future, but the funding that actually

becomes available will drive the degree to which NYSERDA can accomplish the goals and objectives presented in the Plan.

Ms. Joseph provided information that indicated about $3 billion of new contract commitments over the three-year period, with about half of the projected funds to be invested in power supply and delivery, driven by the RPS. She also pointed out that transportation sector activities are underinvested relative to the impact that transportation has on energy use and the environment.

In examining the projected investments on the basis of stage in the energy innovation chain, the vast majority (about 89%), of NYSERDA's funding is focused on market adoption and expansion, *i.e*. deploying commercially available technology in New York. About 10% of the funds are directed at technology innovation, business development, and market development. This small but strategically significant investment is highly dependent on the SBC which is currently under review.

Ms. Joseph stated that future accomplishments over the three-year period begin with providing energy solutions that reduce energy consumption and increase the energy efficiency of New York's residents and businesses. Based on past performance, these savings are on top of additional savings which could be of equal magnitude related to moderating wholesale prices. In terms of the diversification of New York's portfolio of energy resources by growing renewable energy and distributed generation and reducing petroleum use, NYSERDA expects to deliver between $5 billion and $7 billion in Statewide economic benefits based on the proposed three-year investment.

With regard to the Authority's clean energy economy objective to catalyze economic growth by supporting technology and business innovation and by developing a skilled clean energy workforce, the Authority expects to increase gross state product by a half a billion dollars, develop two dozen new and improved energy products, assist over 300 clean technology companies, and train over 15,000 educators and clean technology practitioners. She added that these programs will also deliver substantial environmental benefits.

Ms. Joseph also thanked the Board and Committee Members and other partners for their support in pursuit of this mission.

Chair Akel thanked the Authority Staff for its efforts on the 2011-2014 Strategic Plan, calling it impressive.

Committee Member Elizabeth Thorndike described the plan as fresh and, as the first major overhaul in format in years, it recognizes today's realities. She added that in terms of funding dollars, less than 5% is allocated for research, education and policy initiatives, and suggested that adjustments be made to increase that amount to 10%. Dr. Thorndike also suggested that comparative statistics be added to metrics discussions so that the reader would have a New York State context in order to better understand progress or funding constraints. With regard to the discussion on the value proposition, she offered that energy use has the single largest impact on our environment, thus it is important to incorporate a sustainable approach into energy policy and programmatic initiatives.

Resolution

The next item on the agenda was to consider and act upon a resolution recommending approval of the Multi-Year Program Plan entitled *"Toward a Clean Energy Future - A Three-Year Strategic Outlook 2011-2014."* Based on all the reports and discussions regarding the Plan as presented, upon motion duly made and seconded, and by unanimous voice vote, the Committee recommended that the full Board adopt the Resolution approving the Plan. A copy of said resolution is attached hereto as Exhibit B.

Chair Akel then thanked the Committee members for their commitment, time, and the input they provided to the NYSERDA team throughout this year's strategic planning process. He also thanked the Board Members who participated at the meeting and provided their insightful comments and suggestions. Mr. Akel concluded by thanking everyone for their hard work and their commitment to NYSERDA's Strategic Program planning process.

Mr. Akel asked if there was any other business before the Committee. There being none, upon motion duly made and seconded, and by unanimous voice vote of the Members, the 77th meeting of the Program Planning Committee was adjourned.

Respectfully submitted,

Valerie S. Milonovich

Valerie S. Milonovich
Secretary to the Program Planning Committee

Exhibit A
New York State Energy Research and Development Authority
Vincent A. DeIorio, Esq., *Chairman*
Francis J. Murray, Jr., *President and CEO*
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NOTICE OF MEETING AND AGENDA

May 26, 2011

TO THE MEMBERS OF THE PROGRAM PLANNING COMMITTEE:

PLEASE TAKE NOTICE that a meeting of the Program Planning Committee (the 77th meeting) of the New York State Energy Research and Development Authority will be held at the Albany College of Nanoscale Science and Engineering, NanoFab South Auditorium (Building 255), 255 Fuller Road, Albany, New York, on Thursday, June 9, 2011, commencing at 10:30 a.m., for the following purposes:

1. To consider and act upon the minutes of the Program Planning Committee held on April 4, 2011.

2. To receive an overview from the President and CEO on NYSERDA's multi-year strategic program plan entitled *Toward A Clean Energy Future - A Three Year Strategic Outlook 2011-2014*.

3. To receive reports on the priorities of NYSERDA's efforts for the three-year planning horizon.

4. To receive a report on revisions to the plan entitled *Operating Plan for Investments in New York Under the CO_2 Budget Trading Program and the CO_2 Allowance Auction Program*.

5. To consider and act upon a resolution recommending approval of the multi-year program plan entitled *Toward A Clean Energy Future - A Three Year Strategic Outlook 2011-2014*.

6. To transact such other business as may properly come before the Committee.

Members of the public may attend the meeting. In accordance with guidance from the Office of Taxpayer Accountability, the Authority will be posting a video of the meeting to the web within two business days of the meeting. The video will be posted at http://www.nyserda.org/governancemeetings2.asp.

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Exhibit B

Resolution No. ____

RESOLVED, that the multi-year program plan for the Authority's energy, economic environmental program priorities and strategic vision entitled "Toward a Clean Energy Future: A Three Year Strategic Outlook (2011-14)," submitted to the Members for consideration at this meeting with such non-substantive, editorial changes and supplementary schedules as the President, in his discretion, may deem necessary or appropriate, is adopted and approved as the Authority's updated multi- year program plan.

BE IT FURTHER RESOLVED, that the Authority's Mission Statement and Performance Measurements for the year ended March 31, 2011, as contained in the multi-year program plan, are approved for submission as required by Section 2800 of the Public Authorities Law.