

New York State Energy Research and Development Authority (NYSERDA)

Fiscal Year Ended March 31, 2010

Operations and Accomplishments Annual Report

Pursuant to Public Authorities Law Section 2800(1)

NYSERDA

New York State Energy Research and Development Authority (NYSERDA) is a public benefit corporation created in 1975 under Article 8, Title 9 of the State Public Authorities Law. NYSERDA is governed by a board consisting of 13 members, including the Commissioner of the Department of Transportation, the Commissioner of the Department of Environmental Conservation, the Chair of the Public Service Commission, and the Chair of the Power Authority of the State of New York, who serve ex officio. The remaining nine members are appointed by the Governor of the State of New York with the advice and consent of the Senate and include, as required by statute, an engineer or research scientist, an economist, an environmentalist, a consumer advocate, an officer of a gas utility, an officer of an electric utility, and three at-large members.

MISSION AND VISION

NYSERDA's mission is to:

Advance innovative energy solutions in ways that improve New York's economy and environment.

NYSERDA's vision is to:

Serve as a catalyst – advancing energy innovation and technology, transforming New York's economy, empowering people to choose clean and efficient energy as part of their everyday lives.

NYSERDA strives to facilitate change through the widespread development and use of innovative technologies to improve the State's energy, economic, and environmental wellbeing. NYSERDA's programs and services provide a vehicle for the State to work collaboratively with businesses, academia, industry, the federal government, the environmental community, public interest groups, and energy market participants.

OPERATIONAL CHANGES AND NEW INITIATIVES

Executive Re-Organization

NYSERDA's by-laws were amended to revise the name and responsibilities of its two vice presidents. In January 2010, the Board changed Mr. Robert Callender's title from Vice President for Programs to Vice President for Operations and Energy Services making him responsible for the Authority's operations and administration of the Authority's energy efficiency deployment and services programs. The following departments report to Mr. Callender: Energy Efficiency Services, Residential Efficiency Affordability,

Saratoga Technology + Energy Park (STEP), NYC Regional Office, Human Resources, and Administrative Services (Facilities).

In addition, the Board renamed the position of Vice President for Administration to Vice President for Technology and Strategic Planning and changed the position's responsibilities. This change more accurately reflects both the Authority's responsibilities and the priority that the Governor and the NYSERDA Board have assigned to technology and long-term planning. The Board appointed Ms. Janet Joseph as Vice President for Technology and Strategic Planning. The following departments report to Ms. Joseph: Energy Efficiency Research, Clean Energy Research and Market Development, and Energy Analysis.

Energy Efficiency Portfolio Standard (EEPS)

As part of a Statewide program to reduce New Yorkers' electricity usage 15% of forecast levels by the year 2015, with comparable results in natural gas conservation, the New York Public Service Commission (PSC) established the Energy Efficiency Portfolio Standard (EEPS) proceeding. Through the EEPS proceeding, the PSC approved 22 NYSERDA programs (*i.e.*, 11 electric programs, 10 gas programs and a workforce development program) with a total funding level of \$ 441.4 million through 2011.

Regional Greenhouse Gas Initiative (RGGI)

RGGI is a multi-state initiative with the goal of reducing carbon dioxide ("CO₂") emissions from power plants by 10 percent by 2018. This is accomplished through the auction of CO₂ allowances. The proceeds from these auctions are used to fund energy efficiency and renewable energy programs with significant carbon reduction potential.

Green Jobs - Green New York Act (GIGNY)

The Green Jobs - Green NY legislation created a Statewide program, funded with \$112 million from the proceeds of selling CO₂ allowances under RGGI, to promote energy efficiency and the installation of clean technologies to reduce energy costs and greenhouse gas emissions. The program will support sustainable community development, create opportunities for green jobs, and establish a revolving loan fund to finance energy audits and energy efficiency retrofits or improvements for residential, multifamily, small business, and not-for-profit property owners.

American Recovery and Reinvestment Act (ARRA)

NYSERDA has been granted ARRA funding for five program areas: (1) the Energy Efficiency and Conservation Block Grant Program ("EECBG") which provides grants to U.S. local governments, states, territories, and Indian tribes, to fund projects that reduce energy use and fossil fuel emissions, and improve energy efficiency; (2) the State Energy Program ("SEP") which provides funds to states from the U.S. Department of Energy (DOE) for the state to support energy efficiency and renewable energy programs and initiatives; (3) State Energy Efficient Appliance Rebate Program, the "*Great Appliance Swap Out*", to provide cash rebates to New York residents who purchase high-efficiency appliances; (4) an Energy Assurance Planning grant to strengthen and expand State and local government energy assurance planning and resiliency efforts by incorporating response action for new energy portfolios and smart grid applications; and (5) a Clean Cities grant which supports a partnership with five clean Cities coalitions and 40 vehicle fleets to deploy alternative fuel vehicles and infrastructure sites.

Clean Air Interstate Rule (CAIR)

The CAIR Program provides funding for the New York Battery and Energy Storage Technology (NY-BEST) Consortium in the amount of about \$24 Million. NYSERDA's Board approved the CAIR Operating Plan at its April 2009 meeting.

PROGRAM ACCOMPLISHMENTS

Energy Efficiency Services (EES) Program

NYSERDA's EES Program promotes energy efficiency, sustainability, and informed decision making by serving New York's non-residential customers including: business and industry, agriculture, institutions, municipalities, and State government. EES Programs are primarily funded through the New York System Benefit Charge (SBC) and EEPs. EES program funding has recently been supplemented by ARRA and RGGI funds. During calendar year 2009, EES programs collectively delivered 451 GWh in energy savings and 116 MW in reduced summer peak demand. A sampling of additional EES program accomplishments is listed below:

- In 2009, the **Existing Facilities Program** (EFP) assisted a total of 1,400 customers through various energy projects from energy efficiency, demand response, and combined heat and power projects and achieved approximately 160 GWh and 167 MW in reduced summer peak demand.
- In 2009, the **New Construction Program** (NCP) completed 121 projects totaling 12 million square feet and was working with applicants and their design teams on another 500 projects totaling roughly 50 million square feet. The completed projects are estimated to deliver 55 GWh in annual energy savings and 14.6 MW in reduced summer peak demand.
- The **FlexTech Program** helped more than 1100 customers in 2009 identify energy-efficiency improvements and achieved approximately 267 GWh in energy savings and 37 MW in reduced summer peak demand.
- In 2009, EES administered over \$74 million of **American Recovery and Reinvestment Act (ARRA)** funding for competitive grants to the municipal, public university, K-12 schools and hospital/not-for-profit (MUSH) sectors. In the first two rounds of the program, NYSERDA received 730 proposals requesting over \$220 million for various types of energy projects. NYSERDA selected close to 250 MUSH projects accounting for over \$65 million in ARRA funds for energy efficiency, renewable, and clean fleet projects. Some examples of ARRA projects include \$2.7 million for the City of New York photovoltaic installations on City owned buildings, \$14,000 street lighting upgrade for the Town of Henrietta, to \$360,000 lighting upgrade at Crouse Health Hospital. Additionally, EES manages over \$6 million of ARRA funds to improve the Energy Conservation Construction Code of New York (Energy Code) by providing technical assistance and local compliance support.
- The **Wastewater Energy Efficiency Program** (WWEP) was created in 2009 by NYSERDA and the New York State Environmental Facilities Corporation (NYSEFC) to coordinate RGGI climate change goals and funding from ARRA that is administered by NYSEFC. During 2009, the designs for 25 capital projects with an estimated project cost of \$421 million were analyzed and compared to baseline

standard practices by NYSERDA's FlexTech consultants. More than 16,100,000 kWh/year and nearly 53,000 MMBTU/year in savings were identified. The NYSEFC used the findings of these energy evaluations to secure over \$98,000,000 of additional ARRA funds to support implementation of these projects.

- The **Alternative Fuel Vehicle Program** supported deployment in FY 2009-10 of 16 public E85 fueling facilities and the installation of storage and loading capacities at four terminals for 30,000 gallons of B100 biodiesel and 834,000 gallons of E100 ethanol. Additionally, 97 electric charging facilities, four CNG fueling facilities, four propane fueling facilities, one E85 firefighter training program, and one AFV maintenance training course are planned. Nearly 120 projects are active with \$39 million committed in funding.
- The **Commercial Lighting Program** has grown to include 66 Distributor and Contractor partners, 41 Designer partners, and 19 ESCO partners. The Commercial Lighting Program has improved lighting efficiency in 4,315,169 square feet of building space; reduced energy use by 24,179 MWh and reduced peak demand by 6.9 MW.
- The **Focus on Commercial Real Estate (CRE) Program** is currently providing dedicated account management for 17 of the largest commercial real estate owners and managers in the State. These firms control 253 buildings representing over 135 million square feet of commercial floor space (There is an estimated 500 million square feet of floor space statewide). In FY 2009-10, the initiative successfully solicited 99 new NYSERDA projects in 57 separate buildings impacting 48 million square feet. The Program is responsible for developing a number of tools for the commercial market, including Energy Efficient Lease Guidance for new leases; an excel-based Lease Analysis Tool to assist with capital planning; a Benchmarking Toolkit that serves as an overlay to the EPA's Portfolio Manager; a suite of marketing materials targeted to the commercial sector; case studies of success stories; and an Account Manager Toolbox for NYSERDA's use, including research and whitepapers as well as client screening and messaging guidance.

Residential Efficiency and Affordability Program (REAP)

NYSERDA's residential programs encourage the adoption of market-ready energy-efficient products, provide energy services, and educate energy consumers to reduce energy use and lower peak energy demand. REAP programs also increase the availability of energy-efficient products and improve the delivery of energy services to the residential sector. Overall, programs serve tenants and owners of single and multifamily buildings, community-based organizations, educators, building professionals, and trade allies. The programs specifically help to reduce the energy cost burden on the State's low-income households. During calendar year 2009, REAP programs collectively delivered 114 GWh in energy savings and 19 MW in reduced summer peak demand. A partial listing of some of the REAP 2009 accomplishments is provided below:

- With the support of NYSERDA's **New York ENERGY STAR[®] Homes Program**, 2,171 New York ENERGY STAR[®] homes were built throughout the state, representing approximately 26 percent of all new single-family homes built in the SBC territory during the 2009-10 program year. These homes will collectively save their owners nearly 5.9 million kWh of electricity and 92,141 MMBtu of fossil fuels every year.

- NYSERDA's **Home Performance with ENERGY STAR® Program** completed 6,473 projects in the 2009-10 program year. Participants in the Program are saving approximately \$685 a year on their utility bills. The low-income component of the Home Performance with ENERGY STAR® Program accounted for approximately 26 percent (1,656) of all 2009-10 projects. This program offers enhanced subsidies to New York households with income levels at or below 80 percent of State Median Income or Area Median Income, whichever is higher.
- **EmPower New YorkSM** provided electricity demand reduction and home energy performance improvements to over 11,604 low-income households in FY 2009-10. The estimated annual energy cost savings is \$250 per household with an average investment of \$1,521 per household. Through EmPower New YorkSM, 880 energy and financial management workshops were conducted and attended by more than 11,248 people.
- The **Multifamily Performance Program**, through the New Construction and Existing Buildings components, addresses all combinations of market-rate and low-to moderate-income projects. During FY 2009-10, the program supported 477 existing building projects in 2,963 buildings with 77,907 units and also supported 149 new construction projects in 159 buildings with 8,791 units.
- The **Center for Energy Efficiency and Building Science (CEEBS)**, a division of Hudson Valley Community College's (HVCC) Workforce Development Institute (WDI), partnered with ten educational institutions creating a network of strategically located Learning Centers that are providing enhanced training in building sciences. HVCC added two additional Learning Centers for a total of 12 by the end of 2009. To date, over 5,150 students have been trained through the CEEBS, with over 1,810 participants completing residential energy efficiency training in 2009.
- **Renewable Energy Technology Training** - NYSERDA is working with 32 training entities (and negotiating contracts with four additional entities) across New York to provide training in solar water heating, small and large wind, geothermal, fuel cells, PV, and anaerobic digestion. To date, NYSERDA has trained approximately 3,000 installers, designers, builders, and architects on renewable energy technologies. In 2009 alone, NYSERDA funding has supported approximately 1,650 renewable energy training participants.

Clean Energy Research and Market Development (CERMD)

The CERMD program strives to accelerate the development and commercial introduction of emerging clean energy technologies in New York. These include wind, solar, biomass, marine, energy storage, advanced transportation technology, and environmental pollution control. The Program has evolved from its early technology-focused mission to its current multi-faceted approach which addresses innovation in business and finance, as well as innovation in technology – all necessary ingredients for creating new clean energy industries. The program also supports research to better understand and mitigate the environmental effects of energy production, including climate change. The CERMD Program is delivered through four integrated program elements: Environmental Research, Energy Resources, Energy and Environmental Markets, and Transportation and Power Systems. The program supports a wide range of technology development, business development, and market development activities. A partial listing of some of the CERMD 2009 accomplishments is provided below:

- **Product Sales** - In 2009, sales of products developed with support from NYSERDA's Clean Energy Research and Market Development program were over \$169 million.

ENERGY RESOURCES

- **Clean Energy Business Development** - NYSERDA's commitment to building the clean energy economy continued in FY 2009-10 with 5 projects funded in the Manufacturing Incentive Program and 13 projects funded under the Business Growth and Development Program.

With assistance from NYSERDA's Manufacturing Incentive Program, SpectraWatt, Inc. relocated its headquarters from Oregon to Hopewell Junction, and established a 60 MWp (Megawatt Peak refers to the maximum energy obtained when the sun is strongest) advanced silicon solar cell manufacturing facility there in April 2009. SpectraWatt also received Business Growth and Development funding in November 2009, enabling it to raise expansion capital totaling \$41.4 million.

Four clean energy business incubators that were selected in FY 2008-09 commenced operations in the Summer of 2009. By the end of FY 2009-10, the four incubators had signed on 19 companies employing 77 persons full time, and helped them to raise some \$4 million in private early-stage investment.

- **Biofuels Roadmap** - In their February 2008 report, the Governor's Renewable Energy Task Force recommended that a Renewable Fuels Roadmap and Sustainable Biomass Feedstock Study for New York be developed. In FY 2009-10, the Roadmap analysis was completed, drafts were circulated for comment, stakeholder meetings were completed, and editing was finalized. Public comments will be accepted through July 15, 2010. Two annual updates are planned for 2011 and 2012. The Roadmap assessed critical environmental, capacity, technology, efficiency, and economic issues for renewable fuels. It is designed to provide policy makers with a better understanding of the possible impacts that increased use of renewable fuels might have on economic development, energy supplies and diversity, the environment, and public health.

ENERGY & ENVIRONMENTAL MARKETS

- **Renewable Portfolio Standard (RPS):** During FY 2009-10 NYSERDA staff prepared the following for PSC and DPS staff use: a comprehensive RPS program cost study, a comprehensive "New York Renewable Portfolio Standard Evaluation Report"¹, and an assessment entitled Customer-Sited Tier Program Market Potential, Program Expectations and Funding Considerations (2010-2015). NYSERDA also submitted formal written comments on RPS proceedings and participated in several RPS PSC workshops in FY 2009-10. During FY 2009-10 NYSERDA also successfully completed two competitive Main Tier solicitations resulting in 460 MW of new capacity from 12 facilities including: 4 wind farms, 4 hydroelectric upgrade projects, 1 landfill to electricity project, 2 projects that will use 100% sustainable biomass, and 1 project that will co-fire biomass and fossil fuels. To date the Customer Sited Tier RPS program areas have processed over 2,000 applications for 30.5 MW of capacity capable of providing of 88,700 MWh. Of these applications, 563, or more than 25%, were processed during FY 2009-10, representing 7.4 MW of new capacity capable of providing 13,100 MWh annually.

¹ The Evaluation Report relied in turn on the reports of two NYSERDA contractors: KEMA, New York Main Tier RPS: Impact and Process Evaluation (March 2009) and Summit Blue Consulting, New York Renewable Portfolio Standard: Market Conditions Assessment – Final Report (February 19, 2009).

- **Regional Greenhouse Gas Initiative (RGGI):** NYSERDA successfully managed NY's participation in 4 quarterly RGGI auctions during FY 2009-10. In doing so, NYSERDA qualified more than 70 bidders, approved financial security submissions, and reviewed and approved each auction outcome. For FY 2009-10 auctions, New York proceeds totaled more than \$125 million from the sale of more than 53 million allowances. These proceeds will help advance key initiatives and programs designed to capture emission reductions and stimulate the green energy economy, as outlined in the RGGI Operating Plan.
- **Clean Air Interstate Rule (CAIR):** Pursuant to regulations regarding the CAIR, NYSDEC allocated 10% of the CAIR NOx allowances to NYSERDA to be made available for sale in the existing NOx allowance market place. Allowances sold in FY 2009-10 included 9,327 tons for the Ozone Season Program (3,109 tons each year for the 2009 through the 2011 allocation period) for total gross revenues of \$473,351. After accounting for brokerage fees, the net proceeds were \$403,973. Net proceeds from the sale of allowances have been allocated to the NY-Battery Energy Storage Technology consortium (NYBEST) program.

ENVIRONMENTAL RESEARCH

- **Climate Research** –The development of New York State greenhouse gas abatement cost curves is ongoing and the technical data for greenhouse gas mitigation options have been incorporated into New York's Climate Action Plan process. NYSERDA continues to identify and evaluate potential New York-specific vulnerabilities to climate change, to create risk-based climate information for key impact variables, and to develop and assess adaptation strategies across eight State sectors: agriculture, communication infrastructure, ecosystems, energy generation and delivery infrastructure, ocean coastal zones, public health, transportation infrastructure, and water resources.
- **Mercury in the Environment** - A major NYSERDA sponsored research project has culminated in a new report entitled "Mercury in Adirondack Wetlands, Lakes and Terrestrial Systems". This multi-institutional effort developed a better understanding of the behavior of mercury in watersheds. Researchers produced an integrated mathematical model that simulates the terrestrial, wetland and in-lake processes that influence the levels of mercury in fish. This model will be useful to policy makers in evaluating how different mercury emission scenarios can be expected to influence mercury movement through Adirondack ecosystems and its bioaccumulation in aquatic organisms, such as fish.

TRANSPORTATION AND POWER SYSTEMS

- **New York Battery and Energy Storage Technology Consortium (NY-BEST)** - The NY-BEST Consortium was announced by Governor Paterson in 2009 to help position New York as a global leader in energy storage technology for heavy-duty transportation, electric grid, and other applications. This industry-driven consortium is being seeded with approximately \$25 million by NYSERDA from New York's CAIR proceeds.

Since April 2009, when the first NY-BEST stakeholder meeting was held and the NYSERDA Board approved the CAIR Program Plan, significant progress has been made to create the Consortium. Throughout summer and fall 2009, working groups helped to lay the foundation by developing membership criteria, a research solicitation, and a testing needs and capabilities analysis. In January 2010, NY-BEST was incorporated as a non-profit organization and in March 2010, the members met

for their first annual meeting to elect a Board of Directors (17 members representing industry, the research community, end users, and government partners), review progress during the past year, and discuss future priorities. NY-BEST currently has 53 members from large and small companies, end users, and the research community.

A key goal of NY-BEST is developing technologies that will have significant value added in New York through R&D, design, engineering, and/or manufacturing. The first NY-BEST R&D solicitation was issued, and in response to overwhelming demand, nineteen project awards were announced in March 2010 totaling approximately \$15 million, with \$8 million contributed by NYSERDA in CAIR funding.

- ***Kinetic Hydro Turbine Development and Demonstration*** - With support from NYSERDA since their start in 2002, Verdant Power's Roosevelt Island Tidal Energy (RITE) Project in New York City's East River is recognized globally as the leading project in the application of marine and hydrokinetic (MHK) tidal current technologies. The 9,000 turbine operation hours and ~70 MWh of grid-connected electricity delivered to Con Edison's customers through the RITE Project Phase 2 proof-of-concept demonstration set the standard for the MHK industry. In 2009, Verdant advanced their Kinetic Hydropower System (KHPS) to a Generation 5, commercial-class system, ready for a proposed pilot demonstration comprised of 30 turbines in the east channel of the East River as Phase 3 of the RITE Project. This effort will demonstrate the commercial viability and widespread application potential of the KHPS, which will be manufactured in New York to a significant degree.
- ***Plug-In Hybrid Electric Vehicles (PHEVs)*** - NYSERDA continues to evaluate the challenges and opportunities that plug-in vehicles create. In 2009, NYSERDA teamed with Chrysler in their successful bid for DOE (ARRA) funding for a 3-year national PHEV demonstration. This \$97 million project will build 140 PHEV pickup trucks, with 14 allocated to NYSERDA for placement with fleet partners in New York. NYSERDA has enlisted support from National Grid and Central Hudson and together will provide up to \$3.5 million of support for infrastructure, operating costs and data collection.

Energy Efficiency Research Program (EERP)

The Energy Efficiency Research Program supports research and development in three program areas: Electric Power Transmission and Distribution, Buildings, and Industry. The Transmission and Distribution program facilitates delivery of renewable resources, improving grid performance, reliability and security, and enabling customer/utility interaction. The Industry program helps New York manufacturers become more resilient to competition through modernization of production processes, increases penetration of CHP applications, increases productivity in new product development, and reduces carbon and the environmental footprint of manufacturing operations. The Buildings program develops and applies technologies that allow new and retrofit construction to achieve significant load reduction and increase the use of on-site and renewable energy resources.

- ***Product Sales*** - In 2009, sales of products developed with support from NYSERDA's Energy Efficiency research program were over \$98 million.

ELECTRIC POWER TRANSMISSION AND DISTRIBUTION

- The **New York State Smart Grid Consortium** was incorporated in July 2009 as a 501(c)(6) corporation. The Consortium represents a key public private partnership to promote broad Statewide implementation of a safe, secure, and reliable smart grid. NYSERDA is a founding member of the Consortium and is represented on the executive committee. The Consortium coordinates the collective efforts of key energy stakeholders from all facets of the energy sector including, generators, utilities, end-use consumers, government, industry, and academia to ensure the phased deployment of a smart grid that:
 - accommodates a diverse supply of generation resources;
 - enhances overall grid performance; and
 - enable customers to simultaneously reduce cost, energy consumption, and environmental impacts.

These smart grid components provide New York with the foundation for a broad range of public benefits and create economic development opportunities for local and regional businesses. The formation of the Smart Grid Consortium aided New York in receiving approximately \$261 million in federal funding in 2009 for smart grid projects including the nation's first flywheel energy storage and regulation facility (20 MW) and below ground advanced compressed air energy storage plant (150 MW).

BUILDINGS

- **Higher Efficiency Building Envelope** - Buildings account for more than 40% of New York's energy use, requiring thermal energy for space conditioning and hot water, and electricity to power appliances, motors, and lighting. Improving the performance of the building envelope would greatly reduce building energy use. With assistance from NYSERDA and in partnership with federal and industry partners a Building Envelope System Testing (BEST) facility has been established at Syracuse University. The BEST facility will enable researchers and industry partners to evaluate, develop and advance best practices and new insulating and air barrier materials.

Working with Newport Ventures, methods for attaching greater amounts of rigid foam insulation to exterior walls in commercial buildings have been developed and are under review by NYS Department of State for incorporation into the New York State and International Energy Codes.

NYSERDA's High Performance Residential Building Challenge has resulted in the design, construction, and testing of 14 high performance homes that are 30% to 40% more energy efficient than the typical Energy Star Home built in New York State. These exemplary high performance homes will serve as examples to the residential developer community and of specific features for consumer education.

INDUSTRY

- **Combined Heat and Power (CHP) Projects** – The five CHP projects listed below are a few of the more significant projects that commenced operation in 2009:

- **Syracuse University Green Data Center** - possibly the world's most efficient data center; dual-fueled system simultaneously produces AC electricity and DC electricity for the data servers, heating, and cooling; winner of Northeast Energy Efficiency Program's 2010 Business Leaders Recognition Award; named one of the 2010 Green 15 by GDC's InfoWorld;
- **Faxton-St. Luke's Healthcare/Utica College Burrstone Project** - allowed the use of "private wires" for a CHP system in New York;
- **Schwab House Cooperative at 11 Riverside Drive in Manhattan** - demonstrated an innovative business model in which the developer pays the upfront cost of building the CHP system and at any time the site can "buy-out" the contract and take full ownership;
- **New York-Presbyterian Hospital (NYPH)** - pioneered the use of a "fast fuse" interconnection device to compensate for a localized lack of robustness in the Con Edison electrical grid – this solution is now approved by Con Edison for others to similarly use; received the USEPA's Energy Star Partner of the Year Award for Sustained Excellence in Energy Management; and
- **Cornell University** - represents the largest operational CHP system (30 MW) in NYSERDA's portfolio, four times larger than NYPH which is the next largest, and demonstrates that there are still opportunities for projects of this magnitude.
- **Biomimicry Roadmap:** NYSERDA conducted a second conference on biomimicry to explore how design features found in plant and animal life, such as streamlined shape factors (*e.g.*, whale flippers as a model for wind turbine blades) and material resiliency properties (*e.g.*, high-strength fracture-resistant ceramics produced at ambient temperatures based on Mother of Pearl) can be exploited to improve the design and manufacture of products resulting in energy and environmental efficiency. NYSERDA has developed an approach to provide biomimicry-related technical assistance services to inventors and entrepreneurs.

Energy Analysis Program

The Energy Analysis Program provides timely, objective and credible data and analysis of energy issues to New York's energy policymakers and stakeholders. The Program: (1) provides energy market intelligence for all fuels and sectors of the economy; (2) conducts quantitative assessment of the State's energy, environmental, and economic policies, as well as NYSERDA programs; (3) identifies and evaluates policy alternatives for addressing vital public needs; (4) assists NYSERDA and other state agencies with public benefits program design, goals, incentives, operations, and evaluation; and, (5) supports other State responsibilities, including State energy planning, energy emergency planning and response, coordination of nuclear materials matters, and Low-Level Radioactive Waste reporting.

- **State Energy Plan** - Energy Analysis served as the focus for NYSERDA participation in the Governor's 2009 State Energy Plan, instituted in response to Executive Order No. 2. Energy Analysis coordinated and completed extensive electric and natural gas systems modeling, building a Statewide reference case for each of these fuels, analyzed the impact to energy supplies and system capabilities in several price forecast sensitivities, and assessed the impact of various policy scenarios on energy prices and availability as well as any contingency requirements. Energy Analysis also authored or contributed to 11 technical assessments, which examined the supply, demand and availability of energy fuels, and issue briefs, which looked at the various public policy issues with

respect to energy including climate change, economic development, and environmental justice. Energy Analysis was also responsible for coordinated public outreach, convening public hearings and final preparation and publication of the 2009 State Energy Plan.

- ***SBC and EEPS Plans and Reports*** – In accordance with PSC Orders and DPS requests, Energy Analysis: prepared and filed 13 program evaluation plans; supervised and coordinated the preparation and submittal of 22 EEPS program compliance filings; prepared and submitted annual and quarterly program status and evaluation reports on the public benefits programs.
- ***Patterns and Trends Report*** - Prepared and issued the 2009 Patterns and Trends report, a 15-year history of energy sources, uses, and prices in New York.

Saratoga Technology + Energy Park® (STEP®)

The Saratoga Technology + Energy Park® (STEP®) is a 280 acre parcel of land in Malta (Saratoga County), New York that is owned by NYSERDA, on behalf of the State of New York. In 2001, the site was designated as a business park devoted to the development of new, clean energy technologies.

- ***TEC-SMART*** - In March 2009, Hudson Valley Community College commenced site work and construction of its 43,000 sq. ft. Training and Education Center for Semiconductor Manufacturing and Alternative Renewable Technologies (TEC-SMART). Construction was completed in December 2009, with classes commencing in January 2010.
- ***LEED-silver Certification*** – In November 2009, the 107 Hermes Rd Building at STEP was awarded LEED-silver certification from the U.S. Green Business Council. The 107 Hermes Rd building is a 105,000 sq. ft. one- and two-story multi-tenanted structure constructed in 2007-2008 by The United Group of Companies, Inc.

West Valley Site Management Program

NYSERDA holds title on behalf of New York State to the Western New York Nuclear Service Center (Center), a 3,300-acre property located near the hamlet of West Valley in Cattaraugus County.

NYSERDA's activities at the Center are managed by the West Valley Site Management Program (WVSMP). The WVSMP's key responsibilities include managing NYSERDA's interests in the completion of the West Valley Demonstration Project (WVDP), a cooperative Federal and State project to decontaminate and decommission a former spent nuclear fuel reprocessing facility. The WVSMP also manages the State-Licensed Disposal Area, a shut-down radioactive waste disposal facility, and the balance of the of the Center property. NYSERDA has 11 dedicated staff members working at the Center on the scientific, technical, communication, and administrative tasks necessary to protect the environment and the health and safety of site workers and the public.

- ***Final Environmental Impact Statement/ SEQRA Findings Statement*** - In January 2010 NYSERDA and the U.S. Department of Energy (DOE) jointly issued the *Final Environmental Impact Statement for Decommissioning and/or Long-term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center* (FEIS). The FEIS identified and assessed three different cleanup alternatives (*i.e.*, Sitewide Removal, Close-in-Place, and Phased Decisionmaking) and recommended adoption of the Phased Decisionmaking alternative. Phase 1 of the cleanup will take about 10 years to complete at a cost of almost \$1 billion (New York's share is about \$183 million). It will include the removal of a number of highly contaminated facilities and the continued in-place

management of the State-Licensed Disposal Area. Additional scientific studies will also be conducted during Phase 1 to reduce technical uncertainties related to Phase 2 decisions on final decommissioning and long-term management of the site (*i.e.*, whether the remaining wastes will be exhumed in whole or in part, or managed in place). Phase 2 decisions will be made by May 2020. NYSERDA issued a Findings Statement under the State Environmental Quality Review Act (SEQRA) in May 2010, which formally adopted Phased Decisionmaking as the approach for continuing the West Valley cleanup.

- **Settlement Agreement** - NYSERDA and the DOE entered into a written agreement that resolves the majority of the claims in a 2006 lawsuit filed by NYSERDA and New York State against DOE and the Federal government. The lawsuit was intended to resolve longstanding disagreements between New York State and the Federal government in regard to financial responsibilities for the cleanup at West Valley. By mid-2010, the New York State Attorney General's Office is expected to file a motion in Federal Court requesting that the court approve the settlement agreement. The agreement was reached in October 2009.
- **Waste Treatment** - NYSERDA safely shipped 8,000 gallons of liquid radioactive and hazardous waste to a treatment facility in Tennessee. The liquid had been stored in a tank at the State-Licensed Disposal Area since 1991. The shipments were completed in November 2009.