

**NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT
AUTHORITY**

ENERGY EFFICIENCY PORTFOLIO STANDARD

WHITE PAPER

SEPTEMBER 10, 2007

TABLE OF CONTENTS

OVERVIEW	1
PUBLIC POLICY	2
GUIDING PRINCIPLES	2
CLEAN ENERGY COLLABORATIVE	4
Collaborative Role and Structure.....	6
Participants’ Roles and Responsibilities	6
POTENTIAL FUNDING RESOURCES	8
CENTRALIZED SERVICE PLATFORMS	9
Statewide Marketing	9
Centralized Data Gathering, Data Sharing, and Reporting.....	10
Evaluation	Error! Bookmark not defined.
Program Areas	10
Initiatives with Immediate Impacts — 2008-2009	10
<i>New York State Government Energy Management</i>	11
<i>Manufacturing</i>	11
<i>Resource Acquisition through Demand Response Initiatives</i>	11
<i>Research, Development, and Demonstration</i>	11
<i>Combined Heat and Power Systems</i>	12
<i>Technical Assistance</i>	12
<i>Financing and Loan Fund Activities</i>	12
<i>Market Development and Transformation — Moving Markets and Products to Higher Levels of Efficiency</i>	13
<i>Codes and Standards — Expanded Appliance Standards</i>	13
<i>Existing Multifamily Buildings and Retrocommissioning</i>	14
<i>Commercial and Industrial Performance</i>	14
<i>Commercial New Construction</i>	15
<i>Direct Installation, Audits, and Rebates</i>	15
<i>New York ENERGY STAR Labeled Homes</i>	15
<i>Energy Efficiency Improvements for Single Family Homes and Workforce Development</i> .	16
<i>Market Support for ENERGY STAR</i>	16
<i>Low-income Services and Weatherization Assistance</i>	17
Initiatives with Longer-Term Impacts — 2009-2012	17
<i>Financing for State Agencies</i>	17
<i>Data Centers</i>	17

Big-Box Stores..... 17
Energy Efficient Mortgages for ENERGY STAR Homes 18
Multifamily Performance Program 18
Enhanced Energy Code Activities 18
Requests for Proposals (RFPs) Targeting Industrial Energy Efficiency..... 18
Summary of Barriers and Issues 18

OVERVIEW

Successful achievement of Governor Eliot Spitzer's 15 by 15 goal will require focused attention and well-directed action by all the key stakeholders in New York's energy community. Coordination and cooperation among key parties are essential in designing a dynamic structure and processes that will ensure success.

In this White Paper, NYSERDA strives to clarify how the Efficiency Portfolio Standard (EPS) proceeding with its associated goals and outcomes can be integrated with other clean energy initiatives, via a coordinated collaborative structure, to achieve the 15 by 15 goal. It is recognized that an overarching, centralized statewide portfolio of comprehensive energy efficiency programs and services will benefit all New Yorkers and do so economically.

According to a recent Public Service Commission Order¹ in the Efficiency Portfolio Standard (EPS) proceeding:

"The purpose of the proceeding is to design an EPS to meet the targets for energy efficiency which, along with additional renewable resource development, and other programs, decreases the State's dependence on fossil fuel-based generation and imported fuels, and reduces its greenhouse gas emissions. An EPS should be designed ultimately to reduce customer bills, stimulate State economic development, and create jobs for New Yorkers."

NYSERDA is proposing a collaborative structure in which the roles of NYSERDA, the New York Power Authority (NYPA), the Long Island Power Authority (LIPA), Department of Environmental Conservation (DEC), the Dormitory Authority (DASNY), Department of State (DOS), other State agencies, utilities, and key stakeholders are assigned and coordinated to maximize their unique strengths and capabilities. Each program administrator would offer complementary programs with no duplication of effort or market confusion thereby simplifying administration and delivery of energy efficiency programs and services. Each administrator would be responsible for efficient and effective program administration such that investment of ratepayer and taxpayer funds for energy efficiency are economic, provide a return on investment and yield measurable results.

The Clean Energy Collaborative governance structure, proposed in this White Paper and presented in Illustration 1, should be viewed as providing the broad context for decision-making in the EPS proceeding. This collaborative structure allows for the implementation of a range of activities all designed to achieve the stated policy goals of 15 by 15, as well as the policy to create a clean energy economy for New York State. Thus, this collaborative structure, which also envisions the recreation of the State Energy Planning Board, also accommodates and places into context any proposed changes to building codes, efficiency and alternate fuel programs in the transportation sector, economic development programs designed to expand the infrastructure to support deployment of advanced energy technologies and attract manufacturing and R&D activities to New York, and other activities. This White Paper does not attempt to provide the full portfolio of activities which a re-constituted State Energy Planning Board may advance. Those policy and programmatic decisions will be advanced, discussed, debated and decided upon the future convening of the State Energy Planning Board, which would provide the primary energy policy guidance for the State. While

¹ Case 07-M-0548, *Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard*, Order Instituting Proceeding, issued and effective May 16, 2007, page 6.

the role of the State Energy Planning Board is important to understanding the many issues needing to be addressed in meeting the 15 by 15 goals, the achievement of the goal is not contingent upon creation of that body. Activities necessary to achieve the 15 by 15 goal can and will occur through the Commission's proceeding.

As stated above, a broad spectrum of activities should be employed to achieve the goals of 15 by 15. Some activities are under way and can be readily expanded. Others have not been fully developed but could contribute to the end goals. One challenge for this proceeding is for parties to take the broadest perspective of the range of activities for various participants. Merely looking at successful programs and duplicating those efforts may create unnecessary competition among programs, disrupt the development of sustainable energy efficiency markets and infrastructure, and possibly replace more worthwhile activities. For example, utility efforts should, in part, be steered toward finding efficiencies in the transmission and distribution system — such as use of SmartGrid technologies — so that the electricity systems can deliver more energy more efficiently, all while improving system reliability and improving response time to system disruptions. By implementing programs over the full spectrum, all activities thereby build from one another, further strengthening the reliability of the entire system. Natural gas utilities should be required to pursue similar investments and activities to improve their own transportation efficiencies.

The White Paper is organized as follows:

- Overview
- Public Policy
- Guiding Principles
- Clean Energy Collaborative
- Potential Funding Resources
- Centralized Service Platforms
- Program Areas
- Summary of Barriers and Issues

PUBLIC POLICY

Accomplishing the 15 by 15 goal presents unparalleled challenges to the State in ensuring that important public policy goals are met while also meeting electricity, system reliability, and resource acquisition goals. While resource acquisition goals, such as energy efficiency savings, improved grid reliability, and environmental and economic benefits are crucial to the success of the 15 by 15 initiative, the following public policy goals must also be met.

- Preserving equity among New York ratepayers,
- Improving energy affordability for low-income consumers and small businesses,
- Reducing fossil fuel dependency,
- Ensuring environmental justice, and
- Promoting economic development and job growth in the State.

The collaborative structure and processes described in this paper provide a system that addresses these public policy goals in concert with energy resource acquisition and system reliability goals.

GUIDING PRINCIPLES

Sustainable programs that will achieve a clean energy future for all New Yorkers must be grounded in a principled framework that serves as a touchstone and source of guidance to decision makers in undertaking courses of action. The following guiding principles present a framework for a successful statewide effort.

1. Clear Vision and Commitment with Flexibility

To achieve maximum participation by and support from stakeholders and program administrators, the 15 by 15 goal must be clearly articulated. Demonstrating the State's commitment to achieving the goal and providing consistency within the clean energy programs are crucial to attracting sufficient business and technical resources to build a sustainable energy efficiency services delivery infrastructure. Goals must be clearly articulated in concrete terms (*e.g.*, gigawatt hour reductions per year, tons of CO₂ reduced) from what they would have been absent program efforts. A clear vision and commitment by stakeholders must be tempered by flexibility and willingness to make mid-course corrections where necessary and indicated by feedback from participants and supported by performance measurement and evaluation results.

2. Coordination and Collaboration

In order to best serve the State's consumers, utilities, State authorities, State agencies, and program administrators should cooperate and collaborate, with each entity doing what it does best on behalf of consumers. Programs should include a full set of demand-side strategies and program approaches that avoid redundancy and embrace streamlined administrative functions. Programs and services should be complementary.

3. Objectivity and Neutrality

Credible objectivity and neutrality are needed to bring multiple parties and perspectives together to achieve the aggressive 15 by 15 goal. Hundreds of competing private-sector providers; fifteen to twenty regulated, and often competing, utilities; and several key state agencies and authorities will be involved. Inconsistencies and biases which do not follow economic, environmental, and energy policy objectives are inevitable, but can be minimized through rigorous emphasis on objectivity and neutrality. Fuel neutrality and fair, consistent incentives, reporting, and evaluation methods are needed. Except for lighting, most large efficiency opportunities involve cooling, heating, motor drives, and generation systems with technology and economic tradeoffs among fuels and fuel switching opportunities at end-use sites. Programs and administrators must strive to be fair third-party brokers of these complex issues during EPS planning and execution. Objective, neutral, stakeholder-driven programs and evaluation will be vital to the success and credibility of 15 by 15.

4. Responsiveness and Transparency

Discussions with stakeholders that are grounded in this principle are crucial to increasing the quality of programs and building stakeholder confidence and support. The concerns of ratepayers should be understood and addressed while recognizing that increases in State and ratepayer supported investments in efficiency provide important social benefits and will be required. Care must be taken to ensure that support for planning functions such as administration, outreach, measurement and verification, evaluation, and reporting are cost effective by limiting duplication and expanding opportunities for stakeholder participation.

5. Centralized, Consistent Evaluation and Monitoring and Verification

Regular rigorous evaluation protocols and methodologies should be designed and administered across all programs. The conduct of regular evaluation activities should periodically demonstrate progress toward the State's energy policy goals including the 15 by 15 goal. Evaluation must be both prospective and retrospective to ensure that program designs are consistent with the goals of each program and the portfolio of programs, and that the programs successfully accomplish their goals. Evaluation and performance measurement systems should be consistent, collaborative, sufficiently funded, and integrated with program planning and implementation activities, similar to the manner in which NYSERDA currently conducts evaluation and reporting for the **New York Energy \$martSM** public benefits program. Reporting and oversight should be the responsibility of an independent third party, similar in

function to the current System Benefits Charge Advisory Group. Appropriate tracking of project performance must incorporate protocols to measure and assess impacts on the environment, as well.

6. Enhanced System Reliability

Enhanced system reliability should be an important element of a successful EPS. Among the methods that can be used to enhance reliability are: (1) recognizing the value of structural hard-wired efficiency improvements and weather sensitive projects; (2) building upon the successful track record of programs coordinated among NYSERDA, the New York Independent System Operator (NYISO), and the transmission owners; (3) facilitating synchronous interconnections for distributed generation systems so they may operate in cases of interruptions of grid supplied power; (4) expanding demand response participation in existing programs and for use as spinning reserves and voltage support; and (5) support for improved transmission and distribution through expanded customer SmartGrid opportunities.

7. Environmental Benefits

Care must be taken to ensure that the activities, measures, and services pursued in support of the EPS have positive environmental benefits. Strategies that provide long-term, persistent benefits with reduced environmental impacts should be specifically targeted, and funding for distributed generation should be limited to clean distributed generation. Distributed generation for demand response must comply with New York State Department of Environmental Conservation (DEC) regulations.

8. Promote and Support New Technologies and Opportunities

New York will need to focus on new technologies, those nearing commercialization, and those newly commercialized with, as yet, little market penetration. Marketing and technical and financial assistance must be provided for deployment of technologies within buildings and manufacturing entities, for example, in building system improvements and manufacturing process improvements. Assistance must also be provided to New York manufacturers of emerging technologies through financial, technical, and marketing support and development of intellectual capital.

In specific applications, focusing on open protocol technologies and communications media for metering, demand response, and SmartGrid applications should be emphasized, as should vigorous outreach and support for hourly pricing and demand elasticity. Particular attention should be paid to lost opportunities and weather sensitive loads in the context of new construction, retrofitting major cooling systems, and encouraging major retrofit opportunities at end-of-lease and end-of-service life for selected equipment.

CLEAN ENERGY COLLABORATIVE

A significant collaborative effort is required to plan, implement, and evaluate the EPS. In addition, the EPS needs to be coordinated with several other State initiatives, including:

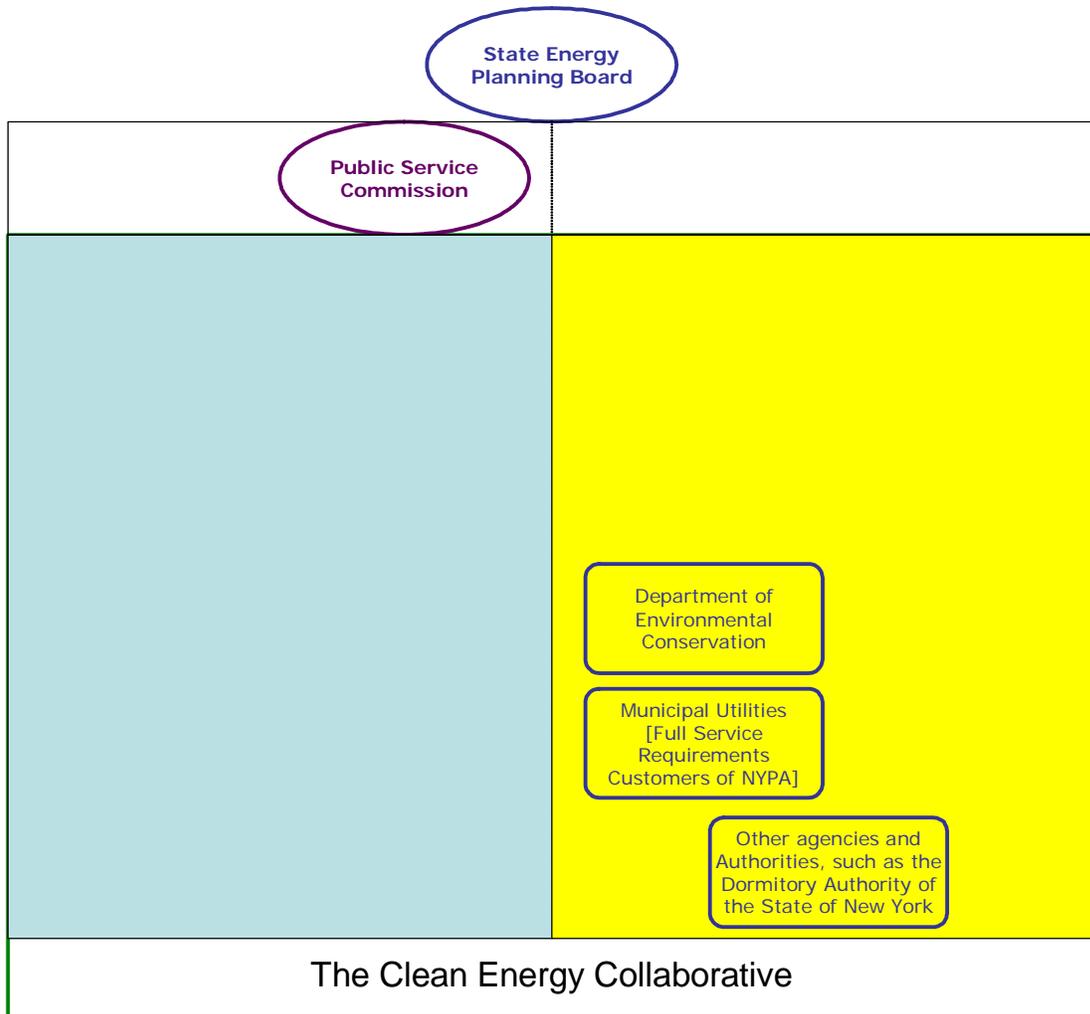
- **New York Energy \$martSM** System Benefits Charge Program
- Renewable Portfolio Standard Program
- Regional Greenhouse Gas Initiative (RGGI) CO₂ allowance proceeds
- Clean Air Interstate Rule (CAIR) funds
- NYPA Energy Services public benefits program
- LIPA Clean Energy Initiative public benefits program
- Electric and natural gas utility system investments and demand management programs
- Department of State's (DOS) Energy Code development and implementation, and implementation of State energy efficiency appliance standards
- State agency energy programs pursuant to EO 111

- Saratoga Technology + Energy Park (STEP)

Collectively, these programs and funds make up New York’s Clean Energy (CE) program, covering most fuels and end use sectors. NYSERDA recommends a broad and inclusive collaboration model to coordinate and collaboratively guide planning for implementing programs and services and evaluating and reporting on the electricity, peak demand, natural gas and other fossil fuel savings, and renewable energy resource development resulting from deployment of CE programs. The proposed collaborative model of the CE programs, in which all participants retain their autonomy, but agree to work together to achieve a coordinated and comprehensive clean energy program, is depicted in Illustration 1. The model ensures openness and transparency and provides opportunities for all interested parties to be represented in a collaborative process. At the same time, no party would forego the right to formally participate in regulatory and administrative proceedings through participation in the collaborative.

A coordinated and comprehensive effort is required to meet the 15 X 15 goal. New funding is required, electric and gas utilities must take an active role in improving system performance

Illustration 1



and reliability through advanced technologies, State authorities should consider expanding their public benefits programs, and other parties, including retail service providers, the Department of State, the Division of Housing and Community Renewal, and municipal utilities must contribute.

Collaborative Role and Structure

The role of the Collaborative would be to identify, discuss, and help guide energy efficiency and renewable energy planning, implementation, and evaluation in the State's clean energy programs. The Collaborative would be a deliberative body working toward general consensus on these and related issues. Unanimity is not required, as each entity involved in the Collaborative has its own interests and responsibilities and makes its own decisions. All parties involved in the Collaborative would be free to participate in regulatory and administrative proceedings advocating on behalf of their organizations and constituents, independent of their roles as Collaborative members. Likewise, each utility, retail service provider, NYISO, and State agency and authority has to work through its own decision making process with respective management and Boards. Nonetheless, the Collaborative would be expected to cooperate and resolve many issues that might otherwise be contentious and help inform decision making.

Early work of the Collaborative should focus on identifying and quantifying the energy efficiency reductions that the State agencies and authorities reasonably can expect to achieve at current funding levels — including savings from updating the building code and adopting more stringent appliance efficiency standards in New York, savings expected from the Weatherization Assistance Program (WAP), NYPA, LIPA, NYSERDA, and Executive Order 111 (E.O. 111). The remaining reductions needed to achieve the 15 by 15 goal can then be assessed and the Collaborative can begin identifying appropriate roles and responsibilities of selected program administrators. In addition, the Collaborative can coordinate planning and implementation activities of program administrators and develop a common evaluation and performance measurement plan for tracking and reporting program progress. NYSERDA and DPS could serve as facilitators. Possible roles and responsibilities of Collaborative members are described in more detail below.

Participants' Roles and Responsibilities

As depicted in Illustration 1, NYSERDA is suggesting that all parties cooperatively plan, implement, and evaluate energy efficiency and renewable energy (clean energy) programs. The CE Collaborative would consist of the following parties at a minimum:

- Public Service Commission
- Department of Public Service
- NYSERDA
- CE Advisory Group
- Electric, Gas, and Steam Utilities
- Retail Service Providers
- NYPA, LIPA, and Municipal Utilities
- Department of Environmental Conservation
- Dormitory Authority of the State of New York
- New York State Department of State
- New York State Division of Housing and Community Renewal
- Lieutenant Governor's Office
- Executive Order 111 Advisory Council

- State Energy Planning Board² - if and when reconstituted
- Other organizations and parties

Roles and responsibilities are described in detail below.

Public Service Commission. The Commission will be responsible for approving program funding and budgets for electric and gas utility energy efficiency programs and the SBC and RPS programs, as currently configured and as expanded to achieve the 15 by 15 goal. The Commission will participate in the collaborative by overseeing the administration and implementation of programs, and by its receipt and review of performance measurement and evaluation reports of the clean energy programs under its jurisdiction, to help meet the 15 by 15 initiative. The collaborative should develop a single statewide clean energy program plan for all programs, including those under the jurisdiction of the Commission, and approved by the Commission for those programs under its jurisdiction. The Plan should be updated every three years, and include separate budgets and program plans for each program administrator. Plans should be presented at either the program area level (*e.g.*, by sector, including commercial, institutional, residential, and low-income) or by program type (*e.g.*, marketing, awareness, technical assistance, resource acquisition, and market transformation). The broad program plans will be approved by the Commission, where required, with specific implementation activities undertaken by program administrators and coordinated by the Collaborative as described herein.

Department of Public Service will co-facilitate the Collaborative along with NYSERDA. DPS will coordinate and work closely with electric and gas utilities, retail service providers, and the NYISO. DPS and NYSERDA will jointly call meetings of the Collaborative, set agendas, preside over meetings, and oversee development of budgets, programs and plans. DPS and NYSERDA will also oversee development of evaluation plans and reports to the Commission (and SEPB if and when reconstituted).

NYSERDA will co-facilitate the Collaborative along with DPS. NYSERDA will coordinate and work closely with NYPA, LIPA, DEC, DASNY, DOS, and DHCR. NYSERDA and DPS will jointly call meetings of the Collaborative, set agendas, preside over meetings, and oversee development of budgets, programs, and plans. NYSERDA and DPS will also oversee development of evaluation plans and reports to the Commission (and SEPB if and when reconstituted).

Clean Energy Advisory Group would be modeled after the SBC Advisory Group created by the Memorandum of Understanding between the Commission, DPS, and NYSERDA, and be composed of representatives of energy and environmental industry and associations, building trade associations, relevant State agencies, utilities, consumer and equipment and product manufacturer groups, and other relevant groups. The CE Advisory Group would also serve as the Independent Program Evaluator, ensuring that all program administrators are evaluating programs and reporting results consistently and regularly. Each administrator would be responsible for overseeing and conducting evaluation of their programs using third-party

² The State Energy Planning Board (SEPB) would be responsible for statewide energy planning and policy development similar to the role and responsibilities of the former Energy Planning Board under the now-expired Article 6 of Energy Law. The former State Energy Planning Board was composed of the President and CEO of NYSERDA, the Chairman of the Commission, and the Commissioners of DEC, DOT, and ESD. The SEPB would be responsible for helping guide and direct the efforts of the State authorities and State agencies, entities that fall outside the regulatory oversight and jurisdiction of the Public Service Commission but nonetheless have a significant role to play in helping the State meet its energy and environmental policy objectives. Likewise, the SEPB will help guide the efforts of DOS in updating the State's energy conservation construction code and appliance standards and guide DHCR's administration of the Weatherization Assistance Program. The SEPB will also coordinate with DASNY¹ in bonding to finance energy efficiency and clean energy projects in State facilities.

evaluation contractor services hired competitively. NYSERDA, NYPA, LIPA, and Con Edison currently evaluate their programs in this manner. The CE Advisory Group will ensure that all program results can be aggregated and reported on a statewide basis. This framework ensures that evaluation is integrated with program planning, design, and implementation for greater program efficacy and efficiency.

Electric, Gas, and Steam Utilities would participate in the collaborative by, at their option or by order of the Commission, administering, designing, implementing, and evaluating programs to help meet the 15 by 15 initiative, in cooperation with the State Authorities and one another. Utility programs which result in efficiency gains through system improvements, such as SmartGrid technologies, should be emphasized.

Retail Service Providers would participate in the collaborative, administering, designing, implementing, and evaluating clean energy programs to help meet the 15 by 15 initiative, as necessary and deemed appropriate by the Commission.

NYPA and LIPA (and municipal full-service-requirements customers of NYPA) would develop plans and budgets to expand their existing public benefits programs in cooperation with NYSERDA, the utilities, and other program administrators. NYPA, LIPA, and the municipal utilities would serve their own customers.

Department of Environmental Conservation, would oversee compliance with the recently incorporated regional organization, RGGI, Inc. to stabilize and ultimately reduce carbon dioxide emissions from electricity generation sources in the ten Northeastern States area, as well as efforts undertaken pursuant to the Clean Air Interstate Rule (CAIR), and participate in the collaborative by ensuring that strategies and actions undertaken are consistent with the State's environmental policy goals and consistent with DEC regulations.

Dormitory Authority of the State of New York would participate in the collaborative and continue to provide financing and construction services for the energy efficient and sustainable building efforts undertaken by public and private universities, not-for-profit healthcare facilities and other institutions which serve the public.

Department of State would update the State energy building construction code, setting the baseline or minimum energy efficiency standards for buildings and building systems. DOS would also continue to set appliance standards. Updated codes and standards would set the baseline for energy efficiency financial incentives offered through the programs delivered by program administrators.

Division of Housing and Community Renewal would continue to administer the Weatherization Assistance Program (WAP) in coordination with other energy efficiency program services offered by administrators.

Lieutenant Governor's Office would participate and would report on Task Force recommendations for clean energy initiatives and projects in cooperation with NYSERDA and the State's authorities, working in cooperation with all program administrators.

Executive Order 111 Advisory Council. State agencies represented on the EO 111 Advisory Council would participate in the Collaborative and interested non-State agency Council members would be represented on the CE Advisory Group.

POTENTIAL FUNDING RESOURCES

Collectively, the funds for energy efficiency and renewable energy programs listed above comprise the State's clean energy fund. The clean energy fund could serve as an administratively efficient means of promoting, developing, investing, and otherwise

implementing current and future energy and environmental initiatives in the State. The virtual fund would be comprised of current revenue streams (such as designated State appropriations, public benefits funds, federal grants, and legal settlement funds) designated for their intended purposes and any potential future revenue streams earmarked for energy and environmental initiatives. Individual examples include:

- Statewide system benefits charges for electricity and gas
- Renewable portfolio standard public benefit funds
- Utility demandside management funding
- Sales of allowances under the RGGI program
- State appropriations
- Federal funds

CENTRALIZED SERVICE PLATFORMS

Accomplishing the 15 by 15 goal presents unparalleled challenges to the State. Meeting this challenge will require a strategic but immediate and aggressive approach to program implementation. To ensure near-term and immediate impacts, policy makers and regulators must ensure funding for expansion of existing successful programs to meet demonstrated demand within existing capacities while pursuing the development and funding of additional programs with longer term impacts. In addition to these short and near-term program efforts, two centralized service platforms should be immediately developed to support the entire clean energy initiative. Specifically, a statewide marketing platform and a centralized data gathering and reporting platform need to be implemented. These centralized service platforms, along with the near-term and long-term program efforts all of which are described below, are needed to make the 15 by 15 goal a reality.

Statewide Marketing

For early and continued success in reaching the 15 by 15 goal, a statewide energy efficiency outreach, education, and marketing program must be a priority. Statewide marketing is essential for providing visibility and a consistent message to New Yorkers.³ The statewide marketing and awareness programs would be developed by a statewide administrator and the collaborative and would build on existing programs offered by entities including NYSEERDA, NYPA, LIPA, and the utilities. The program would feature common messaging and branding. A focus of the effort would be increasing awareness of the critical importance of reducing energy use and improving the environment, and information and assistance would be disseminated to enable all New York's citizens to take meaningful action on their own and through energy programs.

The centralized, consistent, actionable message would be a component of all outreach, education, and marketing activities carried out by program administrators. Program administrators, including utility, municipal, and retail energy providers, would be required to create customer awareness and recruitment plans using the message established by the statewide administrator of marketing and awareness programs. Regardless of the location of utility service providers and customers, information and resources regarding energy efficiency and conservation and renewable energy must be easily accessible, contain clear and consistent messages, and include information on such topics as incentives, technical assistance, participating businesses, product guides, and case studies.

³ A coordinated statewide effort can be more easily and cost-effectively disseminated across a broad audience in many geographic locations and will minimize confusion among businesses and residents with respect to the opportunities available to improve energy efficiency and affordability, as opposed to having several campaigns target different utility service areas with overlapping marketing and, perhaps, inconsistent messages.

The central message should include an easy-to-understand brand and logo and be supported by such items as retail promotions, an easily accessible website, an electronic newsletter, educational materials, and specific advertising and marketing efforts. The customer awareness and recruitment plans should be consistent and make use of customer relationship information originating and housed at the utilities and competitive load serving entities (LSEs). Utilities and LSEs would be required to gather and share with the statewide administrator and other program administrators' customer-specific information such as rate class, business type, and energy use data. The program administrators could use this information to tailor and target marketing campaigns.

Centralized Data Gathering, Data Sharing, and Reporting

Along with statewide marketing, statewide data gathering and sharing is equally essential to successfully meeting the 15 by 15 goal. Statewide data gathering and sharing among program administrators would enable delivery of coordinated services and prevent inefficiencies.

Evaluation

As noted in the Program Guidelines, centralized evaluation protocols are essential to delivering a successful statewide energy portfolio standard program.

Evaluation activities should be designed, overseen, directed, and managed by an objective central organization and conducted by independent evaluation contractors. In addition to conducting evaluation activities, the team of independent contractors would prepare periodic evaluation reports to provide arms-length, objective reviews of program impacts and accomplishments, customer satisfaction, program efficiency, and progress toward goals.

Program sponsors and evaluation contractors would agree to follow the American Evaluation Association's Guiding Principles for Evaluators, which address systematic inquiry, competence, integrity and honesty, respect for people, and responsibilities for general and public welfare. These steps should define the evaluation process: overarching planning, program-specific planning, design, preparation, implementation, communication, and follow-up. Program evaluation protocols, elements, and budgets would be consistent for all program administrators, and program administrators would be responsible for providing program data and evaluation results to aggregate stakeholders.

Comprehensive, statewide portfolio-level program evaluation reports, individual program reports, and comparative program-to-program reports would be prepared to serve the information needs of multiple stakeholders, such as regulators, administrators, sponsors, implementers, and advocacy organizations. Procedures for tracking evaluation recommendations and the responses of administrators to the recommendations would be established.

A central advisory committee, analogous to the SBC Advisory Group, should be established with responsibility for providing oversight of all components of the evaluation program, possibly with subcommittees serving individual program categories (*e.g.*, commercial new building construction), customer sectors (*e.g.*, low income), and evaluation activities (*e.g.*, impact assessment).

PROGRAM AREAS

Initiatives with Immediate Impacts — 2008-2009

NYSERDA suggests that following initiatives could offer immediate energy efficiency savings if fully implemented and provided with adequate financial resources and professional support.

The following suggestions are direct results of NYSERDA's experience administering the statewide SBC program.

New York State Government Energy Management

New York State government should assume a leadership role in energy efficiency and lead by example. By comprehensively managing the energy use of State facilities, and acquiring accurate data through the use of web-enabled metering technologies, the State can achieve energy savings through low-cost or no-cost improvements in the near term. A concerted program to assist State facilities with such short-term projects, including necessary energy audits, will also enable facilities managers and decision makers to identify future capital-intensive energy efficiency projects. NYPA, DASNY, and other New York State agencies can serve important functions in this area by increasing funding and expanding their energy services to all State facilities, public schools, and municipalities.

Manufacturing

Substantial untapped energy efficiency resources can be acquired through the development and deployment of energy efficient manufacturing process improvements. Process improvements in this sector result in extensive economic development and other benefits that go well beyond energy savings and include: productivity gains, water savings, waste reduction, reduced environmental impacts, and job creation and retention. Existing R&D risk-sharing programs that target innovative product and technology applications could be expanded to complement NYSERDA's manufacturing resource acquisition program. Performance-based incentives for process improvements would be provided directly to manufacturers for measured and verified energy savings. Additional funding would enable NYSERDA to substantially increase incentive caps and reach additional customers. NYSERDA would build on its strong resource acquisition, industrial, and R&D expertise to assist New York manufacturers. NYSERDA's network of credible manufacturing process engineering consultants would work with manufacturers and NYSERDA staff to identify and implement cost-effective process improvements.

Utilities are responsible for critical supply, reliability, and power quality issues that affect risk and investment decisions by manufacturers. Primarily through account representatives and economic development departments, utility staff can be involved with identifying potential projects and referring customers.

Resource Acquisition through Demand Response Initiatives

For several years, NYSERDA, NYISO, NYPA, LIPA, and Con Edison have delivered successful demand response programs that could and should be expanded. However, while such programs are vitally important for supporting system reliability, their contribution toward meeting the 15 by 15 goal might be minor. Demand response integrated with energy efficiency technologies such as controllable ballasts and appliances offers significant cost-effective opportunities. Demand response program participants represent an extensive, knowledgeable pool of businesses ripe for participation in energy efficiency programs. Demand response programs should be institutionalized within utilities and retail service providers as a core service offering to their customers. NYSERDA can assist with this effort.

Research, Development, and Demonstration

Applied research and development (R&D) seeks to solve pressing technology improvement and manufacturing challenges, and successful R&D supports New York's industrial sector. Advanced technologies can spur process improvements that lead to energy savings and other benefits. Providing New York industries with funding and technical assistance can accelerate

commercialization of next-generation energy efficient products and services invented and manufactured in New York. NYSERDA has demonstrated numerous successful technologies and sizable opportunities exist for additional pre-commercial demonstrations. An expanded technology transfer program would help to cost-effectively identify other feasible projects.

R&D is needed to augment and support NYSERDA's manufacturing resource acquisition programs with international expertise and process improvements. Developing and deploying innovative technologies can be risky, and highly rewarding. Engineering and prove-out costs are expensive for early adopters who bear some risk that the technology will not work. But, if successful, early adopters benefit from enhanced energy savings, reduction in operating costs, higher productivity, increased yield, and reduced waste. Sharing the knowledge from such pioneering activities then benefits next-wave adopters.

Combined Heat and Power Systems

Combined heat and power systems (CHP) can increase efficiency, reduce emissions, and dramatically decrease load on the electric grid. NYSERDA could immediately expand its existing CHP program to service consumers. NYSERDA has considerable experience with CHP through long-term demonstration programs that have identified certain systems that are ready for commercialization and has recently introduced and is offering a program solely in the Con Edison service territory. A statewide program would provide performance-based incentives for efficient, environmentally clean, and commercially available CHP. Expanding this performance-based incentive program to the rest of the State would generate increased activity in the marketplace, increase overall energy efficiency, and reduce the cost of energy for commercial, institutional, and industrial customers. Expanded efforts through the demonstration program can accelerate qualification of additional systems.

Technical Assistance

Objective technical assistance, whether in the form of energy audits or full-blown technical feasibility studies, will be essential to identifying, defining, and delivering the energy savings projects that will support the 15 by 15 goal. NYSERDA's current technical assistance program supports both incentive programs and individual customers. NYSERDA could use additional funding to immediately and significantly expand these services, focusing on manufacturing, universities, hospitals, and large commercial real estate holders. Higher program caps would enable campus and multi-site facilities to comprehensively pursue energy efficiency and productivity opportunities. The extensive range of essential services includes: long-term energy management planning; implementation assistance for on-site energy managers including developing and reviewing Requests for Proposals; energy procurement; and support for Leadership in Energy and Environmental Design (LEED®) evaluation and certification. NYSERDA's current program averages 150 sites per year and, with additional funding, could increase by 50 percent, to 225 in 2008, and double by 2011. Building on existing networks of contractors, NYSERDA could quickly add 10 to 12 contractors to the existing 44 and increase penetration rates in key resource acquisition sectors, particularly manufacturing.

Financing and Loan Fund Activities

NYSERDA works with more than 80 lenders and leasing companies in the state to make low-interest capital available for energy efficient equipment and process improvements. This approach could be fruitfully expanded to the nonprofit institutional and municipal sectors. Increased resources for project management support and application review could yield a 50 percent increase in activity in the short term (*i.e.*, 2008-2009) and a doubling of activity thereafter. NYSERDA could also explore other avenues for financing projects including non-traditional lenders, pension funds, and investment trusts to make energy project financing

available to governmental and municipal facilities, schools, and healthcare institutions and to address lender concerns over the ability to sell **New York Energy \$martSM** loans on the secondary market. In addition, DASNY has announced a program to issue bonds to finance energy efficiency and renewable energy projects in State facilities and colleges and universities.

In addition, the implementation by the utilities of PAYS, an on-bill financing option, would benefit residential and small commercial customers and increase implementation rates.

Market Development and Transformation — Moving Markets and Products to Higher Levels of Efficiency.

Commercial Real Estate in New York City. NYSERDA offers specialized programs that target improving building performance. Staff are currently working with the ten largest real estate portfolios in New York City that represent more than 40 percent of office space in the metropolitan area. NYSERDA's goal is to deliver reductions of 300 gigawatt-hours and 60 megawatts of capacity. Con Edison provides billing and direct interval metering information for the properties, and measurement and verification activities are included. A doubling of resources would increase account management and technical support and provide deeper savings at a faster pace. For example, working with top 25 building portfolios would expand access to roughly 60 percent of the office space New York City.

Lighting Technologies. New efforts with significant energy savings potential are being planned. A major initiative involves the replacement of outdated lighting technologies in New York City. As of January 2006, more than 50 percent of the lighting in the United States consisted of T12 lamps with magnetic ballasts, and stakeholders from New York City believe the percentage is much higher in New York City. Similarly, one-third of the lighting used in commercial buildings is provided by incandescent lights. On a per unit basis, lighting is a tremendously effective means to achieve cost effective energy savings and partnerships among such groups as NYSERDA, Con Edison, New York City, New York Energy Consumers Council, and the Building Owners and Managers Association can drive substantial change to more efficient lighting technologies.

Reducing Plug Load. Reducing plug-load is a fruitful area for energy savings and can be addressed through technological fixes and increased consumer awareness. NYSERDA has conducted extensive pilot projects in this area and could quickly bring new resources to bear. According to the U.S. DOE Energy Information Administration (EIA), the fastest growing locus of energy use in the commercial sector is energy use by personal computers and office equipment, referred to as plug load. In 2006, EIA estimated that energy used by personal computers may grow as much as 3 percent annually and energy use by other office equipment may grow up to 4.1 percent. U.S. DOE also estimates that plug load use for electronics equals half the use of lighting in offices and one-third the use of lighting in schools. In colleges and universities, plug loads can account for up to 10 percent of total campus electric use⁴.

Codes and Standards — Expanded Appliance Standards

Appliance standards offer significant opportunities for additional statewide kilowatt and kilowatt-hour savings in the mid and long-range time horizons. Significant energy and peak demand savings can be achieved by ramping up activities including establishing state level standards and leveraging national and regional organizations to expedite future Federal appliance standards rulemakings. Additional staff at NYSERDA and DOS would be required to accommodate a more expeditious, streamlined approach to rulemaking and to effectively

⁴ For example, the SUNY system has 64 campuses with more than 417,500 students, most of whom own and use personal computers.

enforce state standards. Staff would be required to process information from manufacturers needed for certification of products. Additional financial and staff resources would be necessary to provide technical assistance and analysis to develop standards and to conduct outreach to consumers and manufacturers as standards become effective.

An advisory committee consisting of stakeholders from government, industry, utilities, consumer, and environmental and efficiency advocates was established in 2006 to provide feedback to NYSERDA and DOS with respect to recommended product standard levels that NYSERDA and DOS are authorized to establish at the state level. A possible new role for utilities would be conducting preliminary market analyses of products that are ready for standard setting. Additional legislation will be submitted to authorize the State to set standards for additional product classes, *e.g.*, furnaces, hot tubs, bottle dispensers, and walk in freezers.

Existing Multifamily Buildings and Retrocommissioning

NYSERDA provides technical assistance and access to measure-based incentives for equipment and products in existing multifamily buildings, including high-rise apartment buildings. In addition, NYSERDA has implemented a comprehensive services program for low-income multifamily buildings that provides gap-funding for approved work scopes. However, NYSERDA recently revised its approach to multifamily buildings by establishing a whole-building, performance-based program with a set schedule of incentives, with the goal of reducing energy consumption by 20 percent. Low income buildings receive higher incentive payments. Through the multifamily performance program, services are delivered by participating partners, and verification of energy savings is required one year after project completion. Because many of the partners participating in the program previously provided services through previous programs, the program is off to a quick start. Many buildings participating in this program will have work completed within the next two years. Increased funding will result in a like increase in the number of buildings receiving services, and a comprehensive approach enables evaluation of cost-effectiveness based on a bundled approach, ensuring savings are not left on the table.

Retrocommissioning existing commercial facilities can improve and sustain energy performance and help instill an energy efficiency ethic among facility engineers, custodial staff, and tenants. Increased interest in green buildings and LEED® certification for existing buildings will lead to expanded demand for retrocommissioning activities and financial incentives to support retrocommissioning. Funding for a statewide retrocommissioning initiative would be used to expand cost-sharing, training, and whole building energy efficiency optimization.

Commercial and Industrial Performance

NYSERDA's commercial and industrial program can increase activities by private sector energy services companies (ESCOs) while continuing to achieve valuable energy and demand savings. Expanded efforts would require increased financial incentives and raise project caps to allow large facilities with large energy projects to participate. Performance-based incentives for combined heat and power systems that are now available only to Con Edison customers should be expanded statewide. Additional funding would allow customers to receive performance-based incentives. Marketing efforts could be facilitated by using existing outreach project consulting firms and technical assistance contractors and partnering with utilities. Special efforts would be designed to meet the unique needs and increase penetration of downstate customers. Because of direct access to customer billing and energy use data, utilities can target critical energy users and partner with stakeholders to make referrals in their service territories. Utilities can also support deployment of advanced metering technologies that will

allow customers access to metering data to more efficiently manage and control their energy use.

Commercial New Construction

Commercial buildings are an important sector in terms of fuel use and environmental emissions, especially downstate. Current new construction programs can expand to increase resource acquisition and reduce demand throughout the state. Currently, NYSERDA reaches about 12 percent of the potential new construction and renovation market. Within one year, penetration could be increased by about 50 percent, to total 18 percent of the potential market. By 2011, the overall market penetration could reach 24 percent. Achieving these goals would require doubling the number of technical assistance service providers from 14 to 28 and adding outreach project consulting services in New York City. Incentive caps would be increased into the \$3 to \$5 million range, capturing additional savings in very large projects and encouraging developers to take advantage of program services in projects with construction budgets in the \$300-700 million dollar range. Utilities would be important conduits to identify projects in their early development stages and provide direct marketing through their Account Representatives who deal with individual customer groups and large users. Small projects could potentially benefit from on-bill financing of measures beyond the direct incentives provided by NYSERDA.

Direct Installation, Audits, and Rebates

Audits. As part of the increased effort to achieve energy efficiency resources across the State, the role of utility companies should be reassessed. Utilities maintain local representatives, contacts, and knowledge needed to reach and serve specific customer classes. This local knowledge and familiarity with the customer base would allow a walkthrough audit program, administered by utilities on a large-scale, to focus on the unique needs of these customers, for example, the need for implementation assistance.

Direct-Install for Small Commercial Customers. An enhanced approach would be a direct-install program that would build on the energy audit findings and be implemented using local pre-qualified contractors. Direct install programs provide immediate benefits to the customer and result in greater implementation rates. Direct-installation programs could be augmented with financial incentives.

Rebates. When well structured, rebates can result in energy savings. Under selected circumstances, such as when tied to other efficiency measures, utilities could offer rebates in their service areas by providing commercial and industrial customers with menu-driven incentives for the installation and use of energy efficient equipment.

Financing. The implementation by the utilities of PAYS, an on-bill financing option, would benefit small commercial customers and increase implementation rates.

New York ENERGY STAR Labeled Homes

NYSERDA has a network of builders and home energy raters in place and completing an average of nearly 200 new one-to-four-family ENERGY STAR homes each year. This number can be readily expanded with additional marketing, which drives demand for this program.

Energy Efficiency Improvements for Single Family Homes and Workforce Development

Private sector contractors accredited by the Building Performance Institute⁵ (BPI) are completing an average of 250 comprehensive projects each month on existing one to four-family homes through NYSERDA's home performance program. Although the program currently offers the homeowner low-cost financing, enhancement of this program could drive installation of very high efficiency equipment that exceeds ENERGY STAR criteria, especially among lower-income households (60 – 80 percent of the state median income.) Under the program, income-eligible households receive a subsidy of 50 percent of the cost of the approved scope, up to \$5,000. Additional funds targeting high-efficiency gas equipment could increase that subsidy to 60 percent. Demand for program services will grow with expanded marketing made possible by increased funding.

Additional resources are required to expand workforce development training, to supplement current incentives to contractors, and to expand homeowner financing. Additional resources are required to (1) expand workforce development training, (2) supplement current incentives to contractors, and (3) expand homeowner financing. In addition, demand will grow with expanded marketing.

Workforce Development and Training. In addition to certification of additional contractors and raters, training is needed to support new technologies and underused products in areas such as PV, solar thermal, and heat pump systems.

Market Support for ENERGY STAR

NYSERDA currently seeks to increase the availability and sales of residential ENERGY STAR appliances, lighting, and home electronics products by expanding partnerships with manufacturers and retailers of energy efficient products and building consumer demand through outreach and marketing. NYSERDA provides training, materials, and co-op promotional incentives to mid-stream partners. Campaigns have included "Change a Light, Change the World" and "Wash a Load, Save a Bundle," in addition to general ENERGY STAR marketing and education.

A successful campaign, Keep Cool, provided a bounty to participants for turning in and replacing their old, inefficient, working room air conditioners with new ENERGY STAR models. More recently, through-the-wall air conditioners, common in apartment buildings, have been targeted. These efforts could be expanded with additional funding for marketing, recycling, incentives, and implementation. Additional resources would allow for expansion of the current initiatives and development of a new initiative to replace old, inefficient refrigerators with ENERGY STAR models. Unlike rebate programs, which could encourage an increase in load by enabling the purchase of a second refrigerator or additional air conditioning units, a replacement program ensures the old unit is removed from the system and immediate decreases in load are realized. Utilities could implement such bounty programs in collaboration with NYSERDA's ENERGY STAR products program, using the program infrastructure to support the bounty initiative.

Low interest financing, perhaps offered in coordination with retailers and utilities, could help drive the installation of ENERGY STAR appliances and lighting products. This marketing can also promote the State's adoption of more stringent appliance efficiency standards and smart energy choices when buying appliances and electronic equipment, as well as new buildings

⁵ The Building Performance Institute (BPI) is a private-sector, nonprofit organization that supports development of a professional building performance industry through individual and organizational credentialing and a rigorous quality assurance program.

and homes.

Low-income Services and Weatherization Assistance

NYSERDA, NYPA, LIPA, and New York State utilities offer programs that serve low-income households. Within NYSERDA, most low-income programs are variants of programs for residential homeowners. NYSERDA currently administers a program that provides electric reduction measures and limited weatherization services to low-income householders who are referred to the program by utilities, Offices for the Aging, and community-based sources. The number of households served by this program, which works closely with the Weatherization Assistance Program discussed below, is steadily increasing. The program has been expanded in response to NYSERDA's administration of natural gas efficiency programs and to serve more households. Increased funding will enable the program to quickly reach more households. NYSERDA also delivers a multifamily program that serves low-income consumers.

The New York State Division of Housing and Community Renewal (DHCR) administers the federally funded Weatherization Assistance Program and weatherizes more than 12,000 units each year. DHCR is also responsible for the New York State HOME Program which provides funds for the development and rehabilitation of single and multifamily housing. DHCR, working in cooperation with utilities and NYSERDA's low-income and residential programs, could expand weatherization services and reduce the long waiting list for services.

Initiatives with Longer-Term Impacts — 2009-2012

The initiatives discussed below would require development and would have impacts in the mid-term.

Financing for State Agencies

NYSERDA helps State agencies select energy services companies to obtain energy performance contracts and lease financing. Demand for these services currently surpasses availability. Expanding these services would rely on expanded administrative and technical resources rather than financial incentives and significant increases in energy savings therefore could be achieved economically. Developing these projects to maturity can take a year or more and an expanded program would become fully functional and operational in the mid and long term periods.

Data Centers

In 2006, energy use by data centers and servers accounted for roughly 1.5 percent of total U.S. electricity use and is projected to almost double by 2011. Existing technologies and strategies could reduce energy use by 25 percent and statewide efforts, providing information and technical assistance, should be conducted in New York, especially in the booming downstate area. In the mid-term, advanced technologies should be available for commercialization that will reduce energy use beyond the 25 percent envisioned in the short term. These technologies should be vigorously promoted in this important, energy intense area.

Big-Box Stores

The number of big-box retailers and large grocery stores has increased significantly in the past decade. The large size of these stores and long run-hours result in high energy use. Several retailers, including Wal-Mart, Home Depot, and Whole Foods, have recently adopted energy efficiency policies and goals. Important cost-effective energy efficiency improvements are available. For example, for big box retailers, lighting typically represents 30 to 50 percent of energy use and could be reduced by 50 percent or more. In addition to supporting existing

programs that reduce lighting loads, New York should vigorously support U.S. DOE when it begins implementation in 2008 of its Commercial Lighting Initiative that will target this sector.

Energy Efficient Mortgages for ENERGY STAR Homes

NYSERDA currently assists with construction of 200 energy efficient homes per year. In the near future, demand for energy efficient homes could be spurred by offering homeowners better mortgage interest rates. To this end, NYSERDA is working with several other states to develop an energy efficient mortgage with features that will be attractive to lenders, investors, and borrowers.

Multifamily Performance Program

NYSERDA offers financial incentives and technical assistance for new construction and retrofitting of existing buildings for market-rate and low-income buildings. Many of these projects take years to plan, design, and implement, and significant program growth in these areas will require ongoing efforts.

Enhanced Energy Code Activities

New York's Energy Code could be used to increase savings in the commercial building sector by adopting more current ASHRAE⁶ standards, streamlining the code adoption process, and providing more training for code officials, architects and engineers. Additional staff could be added to the New York State Department of State, and contractors could be selected to deliver approximately 100-150 training courses that would be required each year to reach more than 6,000 code officials in New York who currently receive minimal training. Enforcing code provisions for large commercial buildings could be stepped up by increasing training for code inspectors and developing necessary compliance tools. Incentives could also be offered to local governments to bolster their enforcement activities. Additional staff resources will be necessary for NYSERDA to provide technical support with respect to the effect and coordination of energy codes. New York should streamline the code approval process and separate the Energy Code process from the Statewide Uniform Fire Prevention and Building Code. New York should also align closely with the International Code Process and Schedule while continuing to incorporate enhancements that work well in New York State and in our markets.

Requests for Proposals (RFPs) Targeting Industrial Energy Efficiency

RFPs could be issued that would encourage development of innovative energy efficiency projects for large industrial and institutional customers, individually and aggregated. Solicitations administered by utilities could seek proposals from public and private entities such as ESCOs and facilities managers.

SUMMARY OF BARRIERS AND ISSUES

As noted above, intelligent, aggressive collaboration among stakeholders within New York will be necessary for successful achievement of the 15 by 15 goal. Extensive intellectual and financial resources will be required as all stakeholders are faced with the need to dramatically expand and enhance existing activities at significant cost. In addition to financial resources, competition for skilled and experienced professionals will present a tremendous challenge. NYSERDA is committed to helping the State achieve Governor Spitzer's 15 by 15 goal and is working with all stakeholders collaboratively to overcome barriers to investment in energy efficiency.

⁶ American Society of Heating, Refrigerating, and Air-Conditioning Engineers.