

New York State Energy Research and Development Authority

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# NYSERDA Technology & Market Development Program

Semi-Annual Report Through December 31, 2012

Final Report  
March 1, 2013





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NYSERDA RECORD OF REVISION

Document Title
New York State Energy Research & Development Authority (NYSERDA) Technology & Market Development Program Semi-Annual Report March 1, 2013

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# 1 INTRODUCTION

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## 1.1. Public Policy Context

The System Benefits Charge (SBC) Program was established by Order of the New York State Public Service Commission (PSC) in 1998. The PSC established the ratepayer-supported SBC and designated the New York State Energy Research and Development Authority (NYSERDA) as the Administrator of the program. The program was re-authorized in 2001 and again in 2006 for five-year terms. For the period 2006 through 2011, program funding was \$154 million per year, of which approximately half focused on energy efficiency resource acquisition/deployment activities and half on technology and market development activities.

In its September 20, 2010 petition to the PSC to continue the SBC, NYSERDA proposed some modifications to the program, including consolidating and transferring the resource acquisition and deployment activities within the Energy Efficiency Portfolio Standard (EEPS) program and making a request to extend the current SBC program six months to coincide with the December 31, 2011 conclusion of the current EEPS program. The petition also summarized the history and accomplishments of the SBC program and described a proposed Technology and Market Development (T&MD) portfolio to serve as the next iteration of the SBC Program.

The PSC issued a Notice of Proposed Rulemaking on October 6, 2010 (Case 10-M-0457) and asked for comments on NYSERDA's proposal to be submitted by November 22, 2010. NYSERDA and the Department of Public Service (DPS) also conducted a Technical Conference on November 4, 2010 to provide stakeholders and interested parties with more information on the potential uses of SBC funds for the T&MD Program. The PSC issued an Order on December 30, 2010, which "reaffirmed its high level commitment to the continuation of SBC programs and to the important State policy goals they support."<sup>1</sup>

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<sup>1</sup> Case 10-M-0457 and Case 05-M-0090. *Order Continuing System Benefits Charge Funded Programs*. Issued and effective December 30, 2010.

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The December 30, 2010 Order continued SBC funding through the end of 2011, but deferred a decision on the proposed T&MD Program, pending a more robust stakeholder input process and submission of an Operating Plan.

NYSERDA submitted the T&MD Operating Plan on May 16, 2011, and on June 8, 2011, the Commission issued a Notice of Proposed Rulemaking requesting public comment on the Operating Plan by July 25, 2011 with reply comments due August 15, 2011. The Operating Plan requested average annual program funding of \$70 million for seven Initiatives, plus \$15 million for an incremental Combined Heat and Power (CHP) Initiative.

In a PSC Order issued on October 24, 2011, the Commission approved the T&MD Operating Plan, including a CHP initiative, for five years (January 1, 2012 - December 31, 2016), at an average annual funding rate of \$93.8 million, representing \$80 million in program costs and \$13.8 million for administration, evaluation and New York State Cost Recovery Fees.<sup>2</sup> This included \$65 million in program costs (\$76.2 million total) for NYSERDA's "base" T&MD initiatives and \$15 million in program costs (\$17.6 million total) for a CHP Initiative. Of the \$15 million for CHP, \$5 million in SBC funds was approved in the Order to be used for the CHP Aggregation and Acceleration Program, and, at NYSERDA's option, for feasibility studies. The remaining \$10 million for the CHP Performance Program was to be derived from a source or sources other than the SBC funds approved in the October 24, 2011 Order. NYSERDA was directed to submit a plan for funding the balance of the CHP Initiative by March 31, 2012. Additionally by March 31, 2012, NYSERDA was also directed by the Order to submit an accounting of SBC3 funds that were uncommitted as of December 31, 2011 with the option to submit a proposal for use of those funds, as well as SBC3 that may become uncommitted in the future.

A revised T&MD Operating Plan was filed with the PSC on December 22, 2011, updating NYSERDA's May 16, 2011 submittal to comport with the October 24, 2011 Order.<sup>3</sup>

On March 9, 2012, NYSERDA submitted a full accounting of uncommitted SBC3 funds as directed in the October 24, 2011 Order. On March 30, 2012, NYSERDA submitted a petition proposing ways to allocate

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<sup>2</sup> Case 10-M-0457 – *In the Matter of the System Benefits Charge IV*, issued and effective October 24, 2011.

<sup>3</sup> NYSERDA, Technology and Market Development Program Operating Plan for 2012-2016, System Benefits Charge, December 22, 2011. <http://www.nyserdanyc.gov/en/Publications/~media/Files/General/System%20Benefits%20Charge/final-tmd-operating-plan.ashx>



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those uncommitted SBC3 funds among three primary activities: To develop and implement programs to reduce solar photovoltaic (PV) balance-of-system (BOS) costs and support priority PV technology development (\$10 million); provide cost-sharing support to a Brookhaven National Laboratory (BNL) proposal to the U.S. Department of Energy (DOE) solicitation for a New York State Energy Storage Innovation Hub (\$10 million, with \$2.5 million allocated to the New York Battery and Energy Storage Technology Consortium (NY-BEST)); and expand the T&MD Advanced Buildings Program (\$5.76 million, including \$3 million for an Advanced Buildings Consortium and \$3.76 million for a deep energy savings initiative in commercial buildings). NYSERDA also requested applying \$1.75 million in uncommitted SBC3 funds to New York State Cost Recovery Fee assessments applicable to SBC3. In addition, NYSERDA requested approval to allocate uncommitted SBC3 funds to projects committed as of December 31, 2011. A notice inviting comments was issued on May 11, 2012 and requested comments by August 3, 2012.

In addition, on March 30, 2012, NYSERDA submitted petitions to provide funding for the CHP Program and to provide continued funding and expansion of NYSERDA's workforce development initiatives as directed in the October 24, 2011 Order.<sup>4</sup> The PSC issued a Notice of Proposed Rulemaking on May 9, 2012 and requested comments by August 3, 2012.

On September 13, 2012, the PSC issued an Order and approved, with modifications, NYSERDA's requests in its petition regarding uncommitted SBC3 funds.<sup>5</sup> The PSC approved the reallocation of SBC3 funds into the T&MD portfolio to support T&MD solar PV activities (\$10 million) and Advanced Buildings activities (\$5.76 million) as well as NYSERDA's support of the BNL proposal and NY-BEST (\$10 million, with \$2.5 million allocated to NY-BEST).<sup>6</sup> The PSC also approved NYSERDA's allocation of SBC3 funds to New York State Cost Recovery fee assessments. The PSC did not approve NYSERDA's request to reallocate uncommitted SBC3 funds to projects committed as of December 31, 2011 in advance, but directed NYSERDA to submit, for review and approval, any proposals separately. The Order directed NYSERDA to submit, within 60 days, a supplemental revision to its T&MD Operating Plan to account for the approved initiatives. A revised T&MD Operating Plan was filed with PSC on November 13, 2012 to comport with the September 13, 2012 Order. This plan included \$75.15

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<sup>4</sup> Petitions related to adjusting the goals and funding for EEPs programs were also submitted on this date.

<sup>5</sup> Case 10-M-0457 – *In the Matter of the System Benefits Charge IV*, issued and effective September 13, 2012.

<sup>6</sup> Should the BNL proposal not be selected by US DOE, NYSERDA will submit a proposal to PSC on how those funds should be reallocated.

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million in average annual Program funding plus \$12.06 million in average annual funding for administration, evaluation and cost recovery.

The PSC issued an Order on December 17, 2012 and approved, with modifications, the requests described in the balance of NYSERDA's March 30, 2012 petitions.<sup>7</sup> In this Order, the PSC approved NYSERDA reallocating \$35.9 million from the Benchmarking and Operations Efficiency and the Electric Reduction in Master-Metered Buildings Energy Efficiency Portfolio Standard (EEPS) programs and \$22.7 million in uncommitted EEPS-1 funds to support the T&MD CHP Initiative. In addition, the Order approved NYSERDA reallocating \$24 million in EEPS-1 funds (\$12 million in electric funding and \$12 million in natural gas funding) to support T&MD workforce development initiatives. The PSC also directed NYSERDA to submit by February 15, 2013, a supplemental revision to its T&MD Operating Plan to comport with the December 17, 2012 Order.<sup>8</sup>

Once supplemental revisions to the T&MD Operating Plan have been filed, NYSERDA's T&MD semi-annual reports will comport with the December 17, 2012 Order (*i.e.*, the June 2013 semi-annual report will reflect the February 2013 filing pursuant to the December 17, 2012 Order). Until that time, this report will be based on the October 24, 2011 Order.<sup>9</sup>

## **1.2. T&MD Program Mission and Objectives**

The mission of the T&MD Program is to test, develop and introduce new technologies, strategies and practices that build the statewide market infrastructure to reliably deliver clean energy to New Yorkers.

Specifically, objectives designed to support this mission include:

- Moving new/under-used technologies and services into marketplace to serve as a "feeder" to help achieve EEPS & RPS goals;

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<sup>7</sup> Case 07-M-0548 - *Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard* and Case 10-M-0457 - *In the Matter of the System Benefits Charge IV*, issued and effective December 17, 2012.

<sup>8</sup> NYSERDA was also directed to submit a supplemental revision to its EEPS Operating Plan by February 15, 2013.

<sup>9</sup> Note the financial adjustments approved in the Order were considered effective immediately. Thus, the financial data presented in this report aligns with the December 17, 2012 Order.

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- Validating emerging energy efficiency, renewable, and smart grid technologies/strategies and accelerate market readiness in New York State;
  - Stimulating technology and business innovation to provide more clean energy options and lower cost solutions, while growing New York State's clean energy economy; and
  - Spurring actions and investments to achieve results distinct from incentive-based programs.

The eight initiatives that comprise the T&MD portfolio will be assessed based on their ability to support the objectives listed above. Future evaluation reports will present these findings as programs are assessed.

Achievement of T&MD portfolio goals is dependent on long-term or multi-phase investments and for this reason several of the T&MD initiatives build on the experience and success of programs funded by previous rounds of the SBC Program or other funding sources. While this desired and necessary continuity of effort makes it difficult to attribute performance results and outcomes to a specific phase of funding, NYSERDA recognizes the importance of attempting to clearly delineate progress made in the T&MD portfolio from earlier or alternate funding sources. Toward this end, NYSERDA intends to count outputs and outcomes supported at least in part by T&MD funds toward T&MD performance milestones and results. Where prior SBC or other funded activities are foundational to the success of the T&MD program and illustrative of potential future expectations for the T&MD portfolio, they are highlighted to help convey a more complete picture of possible program benefits, but these achievements will not be tallied toward the T&MD goals unless they have received T&MD funds.

The majority of T&MD activities undertaken in 2012 were dedicated to issuing solicitations, selecting and launching projects, meeting with stakeholders and scoping programs. Results from foundational SBC3 programs (e.g., Smart Grid, Advanced Clean Power, Clean Energy Business Development, Environmental Monitoring, Evaluation and Protection, etc.) continue to accrue and are reported in more detail in the SBC3 annual report. Commercialization benefits from projects started in 2012 will take a few years to materialize and will be reflected in these reports accordingly.

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### **1.3. Organization of the Report**

This semi-annual report, filed pursuant to the October 24, 2011 PSC Order, describes how the T&MD Portfolio is progressing toward its mission and objectives. The report is divided into the following sections:

Section 1 – Introduction

Section 2 – Portfolio-Level Reporting

Section 3 – T&MD Initiatives

Section 4 – T&MD Program Evaluation Activities

As all the T&MD programs become fully operational and mature, the content of these semi-annual reports will expand and evolve to reflect the activities undertaken within each of the initiatives and how accomplishments to date relate to the Portfolio's mission and the output and outcome metrics established in the Operating Plan.

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## **2 PORTFOLIO-LEVEL REPORTING**

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### **2.1. Portfolio Level Progress**

To establish and implement the T&MD portfolio, NYSERDA has engaged in an intensive outreach process with stakeholders, developed and released competitive solicitations to implement the initiatives within the portfolio, and conducted activities to operationalize the T&MD initiatives. A description of each of these activities is outlined in the following sections.

#### ***2.1.1. Stakeholder Engagement***

To comply with the PSC's December 30, 2010 Order, NYSERDA engaged its stakeholders to collect input and advice on the T&MD portfolio. For example, 22 outreach meetings were conducted throughout New York State in 2011 with approximately 225 organizations participating in these meetings. During these meetings, NYSERDA received input on its initial ideas for the T&MD program objectives, priority criteria, and proposed portfolio. In addition, a dedicated webpage was posted on NYSERDA's website to disseminate periodic updates on the portfolio. Lastly, a Technical Conference, open to the public, was held in March 2011. During this meeting, NYSERDA management and staff discussed stakeholder feedback and the preliminary program framework and engaged the attendees in a discussion about the future uses of the T&MD funds.

Stakeholder input will continue to be a critical component as the T&MD initiatives are implemented. A T&MD Advisory Committee was established and held its first meeting in November 2012 to discuss the status of the portfolio and future activities. See Appendix A for a listing of Advisory Committee members.

Focused stakeholder meetings have been conducted for most of the initiatives supported by the T&MD portfolio. These meetings, as well as future meetings, will assist in providing additional direction and guidance to these initiatives. Stakeholder meetings, workshops and discussions have already been held for the following:

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- Smart Grid and Electric Vehicle Infrastructure
  - Clean Power Technology Innovation
  - Commercial/Industrial Emerging Technology/Accelerated Commercialization (ETAC)
  - Multifamily ETAC
  - Residential ETAC
  - Advanced Buildings Technology Development
  - Advanced Buildings Consortium
  - Advanced Energy Codes and Standards
  - Workforce Development and Training and Career Pathways
  - Seed Funding for Start Up (Clean Tech) Companies
  - Innovation/Entrepreneurial Capacity Building
  - Environmental Monitoring, Evaluation, and Protection (EMEP)

Future semi-annual reports will continue to track these activities and the input they provide to individual initiative plans. Lastly, as directed in the PSC's October 24, 2011 Order, NYSERDA will make a progress presentation to the Commission following the submission of its 2013 annual report.

### ***2.1.2. Solicitations Released***

In the past six months of the T&MD Program<sup>1</sup>, NYSERDA staff has been actively engaged in developing competitive solicitations to acquire implementation contractors, trade allies and customers to support each T&MD initiative. Table 2-1 presents solicitations released, release date, and proposal due date or open enrollment end date. Note that solicitations released prior to July 1, 2012 were included in the prior semi-annual report and are omitted from this table.

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<sup>1</sup> Solicitations released during the first six months of 2012 were listed in the semi-annual report filed in August 2012.

**Table 2-1. Solicitations Released from July 1, 2012 through December 31, 2012**

Solicitation Number	Solicitation Name	Solicitation Release Date	Solicitation Closing Date
PON 1219	Existing Facilities Programs/Demand Response*	09/06/12	12/31/15
PON 2485	Implementation Contractors for the NYSERDA Commercial Midstream Market Partner Programs	08/10/12	09/25/12
PON 2569	Advanced Clean Power Technologies	07/02/12	08/29/12 Round 1 06/13/13 Round 2
PON 2584	Advanced Transportation Technologies	07/04/12	09/05/12
PON 2606	Advanced Buildings Program	11/30/12	01/22/13**
PON 2631	Behavioral Research & Energy Decision Making	11/08/12	01/23/13 Round 1 08/08/13 Round 2
RFP 2570	Regional Economic Development Outreach	08/27/12	10/22/12
RFP 2574	Customer Service Hotline and Fulfillment Services	10/24/12	11/26/12

\*The Existing Facilities Program (PON 1219) is the active solicitation offering open-enrollment incentives for Demand Response projects across New York State. PON 1219 was updated in September 2012.

\*\*PON 2606, Advanced Buildings Program, has a total of six rounds with dues dates as follows: Round 1: 01/22/13, Round 2: 06/04/2013, Round 3: 12/03/2013, Round 4: 06/04/2014, Round 5: 12/03/2014, Round 6: 06/04/2014.

Notes: Several of the solicitations listed in the Table 2-1 are not fully funded by T&MD funds. Solicitations released in the first six months of 2012 were listed in the August 2012 semi-annual report.

### **2.1.3. Implementation of T&MD Initiatives**

In addition to the stakeholder engagement and solicitations, other noteworthy program implementation and progress milestones include the following. Each of these activities is described in greater detail in Section 3.

- The Smart Grid Program has signed three contracts for technology development, demonstration and pilot projects; signed five contracts for research studies on technologies, market barriers and policies related to increased smart grid implementation in New York State and is supporting eight clean energy companies.
- The Advanced Clean Power Technologies solicitation was released July 2, 2012. This \$10.25 million solicitation has two proposal due dates: August 29, 2012 and June 13, 2013. Fifty-one proposals were received in response to round one. Eleven proposals totaling \$6.9 million in

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NYSERDA support were approved for funding. The program is also supporting 13 clean energy companies.

- The CHP Aggregation and Acceleration Program pre-qualified 36 pre-packaged CHP systems for its catalog.
- The Advanced Buildings Enabling Demand Response (DR) and Load Management Program has supported interval meter and enabling technology installations representing approximately 28 MW of demand response in New York State.
- The Advanced Codes and Standards Program has a code compliance assessment in process focusing on existing commercial building renovations projects. This assessment will serve as the framework for all assessments conducted as part of the T&MD portfolio.
- As part of the Market Development Program, six new retail partners and seven new manufacturer partners have signed onto the New York Products Program and approximately 70 special promotions have been approved in product buy-downs. The Midstream Partner Support Program has provided 154 Lighting Business Partners with continuing education credits through six webinars and five lighting expos and 14 HVAC trainings have been held across the State.
- The Workforce Development Program has trained over 1,400 individuals on renewable and emerging technologies.
- The Clean Energy Business Development Program awarded a total of \$15 million to Columbia University, the Polytechnic Institute of New York University and High Tech Rochester to create three Proof-of-Concept Centers dedicated to helping inventors and scientists turn their high-tech, clean energy ideas into successful businesses.
- The Clean Energy Business Development Program also made an award under PON 2419, NYSERDA Entrepreneurs-in-Residence, to High Tech Rochester, Inc.
- EMEP has contracted seven new research projects and conducted 10 workshops and briefings.

Table 2-2 provides a summary of anticipated T&MD portfolio benefits for the five-year funding period and out years as well as achievements to date for applicable metrics for the first year of program operation. Performance milestone tables are also included for each initiative in Section 3 of this report showing progress through December 31, 2012 against the Operating Plan's expected benefits in the 2012-2013 timeframe. Benefits achieved in the first year of the T&MD program should be viewed with two important points of context:

1. All programs are competitively bid, requiring time to develop and issue solicitations, select winning bidders and negotiate contracts. Several solicitations have been issued in 2012 and early 2013 and realization of most 2012-2013 milestones is expected by the end of 2013.



2. Several T&MD programs are continuing and building on successful, long-standing programs funded with prior rounds of SBC monies or other sources. Where possible, existing programs have maximized use of other funds prior to utilizing T&MD funds.

Where such circumstances exist, program metrics are either not reported (NR) and/or relevant context/explanation are provided.

As noted earlier, NYSERDA intends to modify the reporting of CHP and Workforce Development metrics in its next semi-annual report to comport with the December 17, 2012 Order and the subsequent operating plan revision.

**Table 2-2. Summary of Expected and Achieved T&MD Benefits (as of December 31, 2012)**

	Anticipated 2012 - 2016	Anticipated Out Years 2017-2020	Anticipated Total	Achieved to Date Dec. 31, 2012
On-site Electricity Savings from Energy Efficiency Projects, Technologies, Replications, and Codes & Standards (Cumulative Annual MWh) <sup>1</sup>	602,600 MWh	723,950 MWh	1,326,550 MWh	67,788 MWh
<i>MWh Savings from Funded Project and Technology Installations</i>	232,600	16,150	248,750	67,788
<i>MWh Savings from Anticipated Replications not Directly Funded by Program</i>		90,800	90,800	NR
<i>MWh Savings from Codes &amp; Standards Activities supported by the Program</i>	370,000	617,000	987,000	NR
On-site Fossil Fuel Savings from Energy Efficiency Projects, Technologies, Replications, and Codes & Standards (Cumulative Annual MMBtu) <sup>1,2</sup>	2,970,010 MMBtu	2,440,580 MMBtu	5,410,590 MMBtu	227,705 MMBtu
<i>MMBtu Savings from Funded Project and Technology Installations<sup>2</sup></i>	612,010	(1,030)	610,980	227,705
<i>MMBtu Savings from Anticipated Replications not Directly Funded by Program<sup>2</sup></i>		(121,390)	(121,390)	NR
<i>MMBtu Savings from Codes &amp; Standards Activities supported by the Program<sup>2</sup></i>	2,358,000	2,563,000	4,921,000	NR
On-site Demand Reduction from Energy Efficiency Projects, Technologies and Replications (Cumulative MW)	143 MW	254.9 MW	397.9 MW	28 MW
<i>Demand Reduction from Funded Project and Technology Installations</i>	53	7.8	60.8	28
<i>Demand Reductions from Anticipated Replications not Directly funded by Program</i>		40.1	40.1	NR

	Anticipated 2012 - 2016	Anticipated Out Years 2017-2020	Anticipated Total	Achieved to Date Dec. 31, 2012
<i>Demand Reductions from Codes &amp; Standards Activities supported by the Program</i>	90	207	297	NR
System-wide CO <sub>2</sub> Emission Reductions – On-site and Central Station (Annual Tons)	401,006 Tons	460,397 Tons	861,403 Tons	41,317 Tons
Advanced Technologies Reaching Commercial Availability	47 Technologies	42 Technologies	89 Technologies	NR  (Progress with prior funding captured in SBC3 report) <sup>3</sup>
Improved Technologies Adopted by the Market or Further Supported by Deployment Programs	10 Technologies	9 Technologies	19 Technologies	
Commercial Sales of New and Improved Supported Technologies	\$26.5 million	\$157.7 million	\$184.2 million	
Funding Leveraged (co-funding and outside investment) by NYSERDA's Investment	\$555.2 million	\$103 million	\$658.2 million	\$2.26 million
Clean Energy Businesses Graduating from Incubators	90 Businesses	72 Businesses	162 Businesses	NR  (Previous SBC funded projects have graduated 31 businesses from incubators)
Clean Energy Companies Receiving Support	525 Companies	200 Companies	725 Companies	25
Retail and Supply Chain Businesses Partnering with NYSERDA to Increase Market Share of Energy Efficient Products	1,750 Partners	--	1,750 Partners	1,487 Partners
Clean Energy Training for Practitioners	19,716 Trainees	9 Trainees	19,725 Trainees	1,462 Trainees
Supply Chain Training to Facilitate Adoption of Energy Efficient Products	1,525 Partner Employees	--	1,525 Partner Employees	172 Partner Employees
Adoption of Clean Energy Business Models, Practices or Strategies	Record will be maintained and reported			Outcomes to be determined through program tracking and evaluation
Policy Development and Decisions Supported by NYSERDA studies, assessments and data <sup>4</sup>	Record will be maintained and reported			Outcomes to be determined through program tracking and evaluation

	Anticipated 2012 - 2016	Anticipated Out Years 2017-2020	Anticipated Total	Achieved to Date Dec. 31, 2012
Net Additional Jobs as a Result of NYSERDA Investment <sup>4</sup>	Portfolio Macroeconomic Benefits to be calculated annually and reported			To be reported separately in Q2 2013
Change in GSP as a Result of NYSERDA Investment <sup>4</sup>				

Note: NR = Not Reported

<sup>1</sup> Cumulative annual savings refers to the savings that are achieved in a particular year (“annual”) from all measures installed (“cumulative”) as a result of program activities through the year of reporting; e.g., T&MD cumulative annual savings for 2016 are the energy savings achieved in 2016, as a result of energy efficiency measures installed from January 2012 through December 2016.

<sup>2</sup> Although there is an increase in on-site natural gas use by CHP systems, the increased use is less than the natural gas required to generate the same electricity at the central plant, resulting in a net system-wide savings of natural gas.

<sup>3</sup> These metrics will be reported in the 2013 year-end report as commercialization metrics generally require at least two years to be realized. Progress with Prior SBC3 funding will be captured in the SBC3 annual report.

<sup>4</sup> These benefits will accrue from past investments, as well as T&MD portfolio investments.

#### 2.1.4. Budget and Spending Status

Table 2-3 shows the T&MD program budget and financial status through December 31, 2012.

Committed and spent funds are also shown as a percent of the total 2012-2016 budget. As of December 31, 2012, one year of T&MD activity has been completed of the five-year program (*i.e.*, 20%); thus, as shown in Table 2-3, NYSERDA’s funding commitment level is on target at a portfolio level.

**Table 2-3. Budget and Financial Status for T&MD Programs through December 31, 2012**

	2012-2016 Budget	Spent Funds	Percent of 2012-2016 Budget Spent	Committed Funds <sup>1</sup>	Percent of Budget 2012- 2016 Committed
<b>Power Supply and Delivery</b>	<b>\$113,053,344</b>	<b>\$279,287</b>	<b>0.2%</b>	<b>\$22,662,927</b>	<b>20.0%</b>
Smart Grid/Electric Vehicle	\$61,281,382	\$65,051	0.1%	\$13,024,211	21.3%
Advanced Clean Power	\$51,771,962	\$214,236	0.4%	\$9,638,716	18.6%
<b>Combined Heat and Power</b>	<b>\$75,000,000</b>	<b>\$14,725</b>	<b>0.0%</b>	<b>\$110,174</b>	<b>0.1%</b>
Combined Heat and Power Aggregation & Acceleration	\$25,000,000	\$14,275	0.1%	\$110,174	0.4%
Combined Heat and Power Performance <sup>2</sup>	\$50,000,000	-	0.0%	-	0.0%

	2012-2016 Budget	Spent Funds	Percent of 2012-2016 Budget Spent	Committed Funds <sup>1</sup>	Percent of Budget 2012-2016 Committed
<b>Building Systems</b>	<b>\$92,015,954</b>	<b>\$171,850</b>	<b>0.2%</b>	<b>\$29,850,472</b>	<b>32.4%</b>
Advanced Buildings	\$75,336,160	\$168,038	0.2%	\$29,833,157	39.6%
Advanced Energy Codes & Standards	\$16,679,794	\$3,812	0.0%	\$17,315	0.1%
<b>Clean Energy Infrastructure</b>	<b>\$169,691,375</b>	<b>\$5,078,975</b>	<b>3.0%</b>	<b>\$35,306,944</b>	<b>20.8%</b>
Market Development	\$70,380,281	\$4,577,273	6.5%	\$17,630,911	25.1%
Clean Energy Business Development	\$41,761,046	\$216,576	0.5%	\$15,994,499	38.3%
Environmental Monitoring, Evaluation and Protection (EMEP)	\$18,550,048	\$169,590	0.9%	\$1,470,430	7.9%
Workforce Development <sup>3</sup>	\$39,000,000	\$115,536	0.3%	\$211,104	0.5%
<b>Total Program</b>	<b>\$449,760,673</b>	<b>\$5,544,837</b>	<b>1.2%</b>	<b>\$87,930,517</b>	<b>19.6%</b>
<b>Administration (8%)</b>	<b>\$39,765,533</b>	<b>\$6,270,583</b>	<b>15.8%</b>	<b>\$6,270,583</b>	<b>15.8%</b>
<b>NYS Cost Recovery Fee (1.7%)</b>	<b>\$7,585,944</b>	<b>\$293,979</b>	<b>3.9%</b>	<b>\$293,979</b>	<b>3.9%</b>
<b>Evaluation (5%)</b>	<b>\$26,363,458</b>	<b>\$190,248</b>	<b>0.7%</b>	<b>\$921,873</b>	<b>3.5%</b>
<b>Grand Total</b>	<b>\$523,475,608</b>	<b>\$12,299,648</b>	<b>2.3%</b>	<b>\$95,416,952</b>	<b>18.2%</b>

Totals may not sum exactly due to rounding.

<sup>1</sup> Committed funds include amounts spent plus remaining funding obligated under a contract, purchase order, or incentive award. In addition, committed funds include planned funding for contracts awarded and under negotiation and planned funding under active development through solicitations with specific due dates.

<sup>2</sup> Funding was not approved until the Commission's December 17, 2012 Order.

<sup>3</sup> Funding was increased in the Commission's December 17, 2012 Order.

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## **3 T&MD INITIATIVES**

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This section provides a status update on each of the T&MD initiatives, including budget status and highlights of early achievements during the first year of the five-year funding period. As noted in Section 2, benefits achieved in the first year of the T&MD program should be viewed with two important points of context:

1. All programs are competitively bid, requiring time to develop and issue solicitations, select winning bidders and negotiate contracts. Several solicitations have been issued in 2012 and early 2013 and realization of most 2012-2013 milestones is expected by the end of 2013.
2. Several T&MD programs are continuing and building on successful, long-standing programs funded with prior rounds of System Benefits Charge monies or other sources. Where possible, existing programs have maximized use of other funds prior to utilizing T&MD funds.

Where such circumstances exist, program metrics are either not reported (NR) and/or relevant context/explanation are provided.

### **3.1. Power Supply and Delivery Initiatives**

Table 3-1 shows the Power Supply and Delivery and Combined Heat and Power budget and financial status through December 31, 2012. Committed and spent funds are also shown as a percent of the total 2012-2016 budgets. Later sections describe progress for each area of this initiative.

**Table 3-1. Power Supply & Delivery and Combined Heat and Power Budget and Financial Status as of December 31, 2012**

	<b>2012-2016 Budget</b>	<b>Spent Funds</b>	<b>Percent of 2012-2016 Budget Spent</b>	<b>Committed Funds<sup>1</sup></b>	<b>Percent of 2012-2016 Budget Committed</b>
<b>Smart Grid/Electric Vehicle</b>	<b>\$61,281,382</b>	<b>\$65,051</b>	<b>0.1%</b>	<b>\$13,024,211</b>	<b>21.3%</b>
Smart Grid	\$47,284,415	\$64,336	0.1%	\$12,096,235	25.6%
Electric Vehicle	\$13,996,967	\$716	0.0%	\$927,976	6.6%
<b>Advanced Clean Power</b>	<b>\$51,771,962</b>	<b>\$214,236</b>	<b>0.4%</b>	<b>\$9,638,716</b>	<b>18.6%</b>
Technology Innovation	\$27,826,749	\$48,970	0.2%	\$9,274,291	33.3%
Resource Development	\$13,945,213	\$165,266	1.2%	\$364,425	2.6%
Solar Cost Reduction	\$10,000,000	-	0.0%	-	0.0%
<b>Total Program - Power Supply &amp; Delivery</b>	<b>\$113,053,344</b>	<b>\$279,287</b>	<b>0.2%</b>	<b>\$22,662,927</b>	<b>20.0%</b>
<b>Combined Heat and Power</b>	<b>\$75,000,000</b>	<b>\$14,725</b>	<b>0.0%</b>	<b>\$110,174</b>	<b>0.1%</b>
CHP Aggregation and Acceleration	\$25,000,000	14,725	0.1%	110,174	0.4%
CHP Performance	\$50,000,000	-	0.0%	-	0.0%
<b>Power Supply &amp; Delivery Total including Combined Heat and Power</b>	<b>\$188,053,344</b>	<b>\$294,012</b>	<b>0.2%</b>	<b>\$22,773,101</b>	<b>12.1%</b>

Totals may not sum exactly due to rounding.

<sup>1</sup> Committed funds include amounts spent plus remaining funding obligated under a contract, purchase order, or incentive award. In addition, committed funds include planned funding for contracts awarded and under negotiation and planned funding under active development through solicitations with specific due dates.

### **3.1.1. Smart Grid and Electric Vehicle Infrastructure**

#### **3.1.1.1. Smart Grid**

The Smart Grid program is designed to promote product development and demonstrations targeted at ensuring high levels of security, quality, reliability, and availability of electric power; improving economic productivity; and minimizing environmental impacts while maximizing safety and sustainability. Over the longer term, a smarter grid will be characterized by the

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widespread application of advanced sensing, communication and control devices and other uniform diagnostic systems to support real-time visualization of electric grid operating conditions. This is expected to reduce energy losses, extend equipment life, reduce operating costs, support the integration of distributed resources and increase the throughput or transfer of electric energy between regions of the State. A smarter grid will be essential to accelerating adoption of grid-powered electric vehicles (GPV) and associated infrastructure.

The following program activity has been performed as of December 31, 2012 in an effort to meet the above stated milestones and anticipated results:

- NYSERDA met individually with each of the major utilities in New York State and conducted two stakeholder workshops with them and other interested parties at NYSERDA offices to solicit input into the new Smart Grid program design. NYSERDA also obtained input from the New York Smart Grid Consortium and the New York Battery and Energy Storage Technology (NYBEST) consortium.
- The Electric Power Transmission and Distribution (EPTD) Smart Grid Program solicitation (PON 2474) was released April 2, 2012. The solicitation offered \$10 million over two rounds and was specifically developed to attract a broad range of proposals addressing policy and technology issues. The primary program objective is to support projects that improve the reliability, efficiency, quality, and overall performance of the electric power delivery system in New York State. Projects must demonstrate significant statewide public benefit and quantify all energy, environmental and economic impacts. Technology demonstrations, product development, research studies, and engineering studies are all eligible for funding under this solicitation.
- A total of 70 proposals were received for both rounds, requesting over \$35 million in funding. Sixteen projects have been selected for funding representing a commitment of \$7.95 million of NYSERDA funding leveraged by an additional \$10.7 million of private sector co-funding and investment.
- \$1 million in Smart Grid program funding has been awarded to an energy storage project selected under the Advanced Clean Power solicitation PON 2569; increasing total Smart Grid program funding to \$8.95 million and private sector co-funding and investment to \$11.7 million.

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- A variety of projects were selected. A few examples are: the development of a product to optimize supply voltage, the demonstration of a utility-scale transportable energy storage system, the feasibility of implementing a thermal energy storage system, and the development of a distribution automation control system.
  - Smart Grid projects contracted in 2012 leveraged \$1.4 million in funds.
  - The next EPTD Smart Grid solicitation is planned to be released in the first quarter of 2013 with expected due dates of April and September 2013.

NYSERDA has historically funded smart grid projects with SBC3 resources. Benefits from this SBC3 smart grid investment continue to accrue and will be reported in the 2012 SBC3 annual report (prior historical accomplishments can be found in the SBC3 annual report through December 31, 2011).<sup>1</sup>

### 3.1.1.2. *Electric Vehicle Infrastructure*

The Electric Vehicle Infrastructure efforts will include engineering studies, product development, demonstration projects and pilot programs to validate technology that minimizes negative grid impacts from GPV charging, develop GPV-to-grid communication technologies and control processes, and promote new business models to exploit the benefits of vehicle storage to the distribution system.

In late 2011, \$8 million in non-T&MD funds became available to NYSERDA to support the installation for electric vehicle charging infrastructure and explore approaches that overcome business impediments to private sector investment in publicly accessible EV charging. This funding leveraged an additional \$1 million in federal funding designated to support regional EV readiness. Based on the availability of these funds, a decision was made to delay the launch of the T&MD Electric Vehicle Infrastructure work until the non-T&MD funds were exhausted.

Using the non-T&MD funding, NYSERDA's EV Charging Infrastructure solicitation (PON 2301) was administered with two proposal due dates. Twenty eight projects using unique and innovative business models for public access charging were selected for funding. The projects

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<sup>1</sup> See [http://www.nysERDA.ny.gov/Program-Evaluation/~/\\_media/Files/Publications/PPSER/NYES%20Program/2012/2011-nyes-evaluation.ashx](http://www.nysERDA.ny.gov/Program-Evaluation/~/_media/Files/Publications/PPSER/NYES%20Program/2012/2011-nyes-evaluation.ashx), Section 5.9.



will install charging capability at 860 locations throughout the State over the next year. Although the charging station hardware and installation costs were not SBC3 funded, SBC3 funds are being used to support monitoring of site utilization and reporting on business model success with the contractor selected through PON 2392 Electric Vehicle Supply Equipment (EVSE) Support. The second phase of work contracted under the DOE Regional Readiness project will be supported with T&MD funds and is anticipated to begin in the third quarter of 2013.

As noted above, NYSERDA has historically funded electric transportation projects with SBC3 resources. Benefits from this SBC3 investment continue to accrue and will be reported in the 2012 SBC3 annual report (prior historical accomplishments can be found in the SBC3 annual report through December 31, 2011).<sup>2</sup>

Table 3-2 shows the performance milestones and actual results for Smart Grid and Electric Vehicle Infrastructure Program through December 31, 2012. The table includes only those performance milestones with anticipated achievements during the first two years (2012-2013) of the five-year program. The rightmost column indicates the actual achievement to date during the first year.

**Table 3-2. Smart Grid and Electric Vehicle Infrastructure Performance Milestones and Actual Results**

		2012-2013 Anticipated	2012 Actual
<b>Outputs/Leading Indicators</b>			
Smart Grid	Sign contracts for 29 technology development, demonstration and pilot projects, including several large flagship projects	7	3
	Sign contracts for 8 research studies on technologies, market barriers and policies related to increased smart grid implementation in New York State	2	5
	34 clean energy companies receiving support	8	9

<sup>2</sup> See [http://www.nyserdera.ny.gov/Program-Evaluation/~/\\_media/Files/Publications/PPSER/NYES%20Program/2012/2011-nyes-evaluation.ashx](http://www.nyserdera.ny.gov/Program-Evaluation/~/_media/Files/Publications/PPSER/NYES%20Program/2012/2011-nyes-evaluation.ashx), Section 5.10.

		2012-2013 Anticipated	2012 Actual
	Facility operator agreement executed with 3rd party for Commercialization Center	Executed agreement	NR (Commercialization center funding approved in September 2012. Center is under development.)
	Grant Awarded for Energy Storage Hub	Grant decision	Not Awarded
Electric Vehicle Infrastructure	Sign contracts for 25 grid powered vehicle technology development, demonstration and pilot projects	4	NR (Non-T&MD funds are being used to support this effort and to further leverage limited T&MD funds in the near term. Metrics associated with T&MD funding will be included in future reports. 28 proposals were selected to install changing capability of 860 sites.)
	Contract 8 research studies on technologies, market barriers and policies related to increased grid powered vehicle implementation in New York State	4	
	30 clean energy companies receiving support	5	
<b>Outcomes/Impacts</b>			
Smart Grid	\$112 million in leveraged funds (co-funding and outside investment) for smart grid infrastructure	\$18M	\$1.4M (\$11.7 M in total from contracts in negotiation)
	\$7 million in leveraged funds (co-funding and outside investment) for the Commercialization Center	\$2M	NR (Commercialization center funding approved in September 2012. Center is under development.)
	\$10M Revenue generated from facility use of the Commercialization Center	\$150k	
	41 Product development tests (technology readiness level (TRL) 7+) in the Commercialization Center	2	
	25 tested or prototyped products commercialized from the Commercialization Center	1	

		2012-2013 Anticipated	2012 Actual
	\$120 million in leveraged funds (co-funding and outside investment) for the Energy Storage Hub	\$120M	Energy Storage Hub grant not awarded
	27 users of diagnostics and Energy Storage Hub testing suite	1	Energy Storage Hub grant not awarded
Electric Vehicle Infrastructure	\$42 million in leveraged funds (co-funding and outside investment) for electric vehicle infrastructure	\$4M	NR (Non-T&MD funds are being used to support this effort in the near term and to further leverage limited T&MD funds. Metrics associated with T&MD funding will be included in future reports. \$1 million in federal funding was leveraged.)

Note: NR = Not Reported. See explanation at the beginning of Section 3.

### 3.1.2. Advanced Clean Power

#### 3.1.2.1. Clean Power Technology Innovation Program

The Clean Power Technology Innovation Program works to advance clean power technology, assist New York State innovators in product development, and overcome barriers and institutional impediments to the widespread use of renewable power. Cost reduction of PV installations is an initial focus. This effort is targeting the reduction of BOS costs that include all costs with the exception of the PV module. The program also supports energy storage, wind, hydro and fuel cell product development, building on projects funded in the last round of the SBC program. The following summarizes program activities during the period ending December 30, 2012.

On May 29, 2012, NYSERDA, together with the State University of New York (SUNY) Albany and the New York Power Authority (NYPA), held a PV BOS cost reduction workshop. Nearly 50 selected key stakeholders representing all aspects of the industry including utilities, manufacturers, installers, and financing institutions attended the workshop.

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In September 2012, the PSC approved the transfer of \$10 million of SBC3 funds to a PV BOS cost reduction effort. Six million of that funding was allocated to an R&D solicitation designed to attract projects, will focus on reducing PV BOS costs (non-module costs of solar systems), such as overall equipment and installation costs and standardization and streamlining of procedures for permitting and interconnection. The solicitation will have two proposal due dates and will be a collaboration with NYPA which will provide an additional \$10 million to be administered by NYSERDA.

The Advanced Clean Power Technologies solicitation (PON 2569) was released July 2, 2012. This \$10.25 million solicitation has two proposal due dates: August 29, 2012 and June 13, 2013. Fifty one proposals were received in response to round one of Clean Power solicitation PON 2569. Eleven proposals totaling \$6.9 million in NYSERDA funds were approved for funding. The majority of the projects selected are for the development of new clean energy technologies. Some examples of these products are a hydrokinetic energy conversion system, solid oxide fuel cells, hydrogen-bromine fuel cells, and a small wind turbine.

#### *3.1.2.2. Resource Development Program*

The Resource Development Program is focusing on activities that can stimulate the development of new renewable energy supplies, technologies, and businesses in the renewable energy industry with the greatest potential to meet near-to-intermediate-term energy and environmental goals. Similar to previous efforts that supported land-based renewable energy development in the upstate region, emphasis is being given to offshore wind energy. Marine resource and site assessment activities will result in increased knowledge of coastal marine energy assets and their suitability for power development and better understanding of the capacity in New York State to manufacture construct and service new-marine-based electrical generation projects and components.

#### Offshore Wind Site Characterization Research Plan Development

Program staff is collaborating with New York Department of State (DOS), Bureau of Ocean Energy Management, NYPA, and DOE, in preparing a New York State Offshore Wind Site Characterization Request for Information (RFI) to gather input/guidance on gaps in site characterization research that stakeholders identify as impeding the development of off shore

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wind energy. This will complement another NYSERDA effort to develop a research agenda for wildlife impacts of offshore wind.<sup>3</sup>

Offshore Wind Cost-Benefit Study

NYSERDA is conducting a comprehensive cost-benefit study for potential offshore wind projects in the Atlantic Ocean. This work will estimate costs, performance, operation and economic impacts to New York State to enable policy makers in New York State to fully evaluate competing options for meeting long-term energy and environmental objectives. Electrical system cost impacts and costs associated with a significant build-out of offshore wind capacity will be modeled as will the expected benefits to the New York State economy and environment be estimated. Important aspects of permitting, port infrastructure, and operation and maintenance service opportunities will be considered.

DOS Coastal Resources Offshore Amendment to Coastal Zone Management Program (CZMP)

NYSERDA continues to have a close collaboration and provide technical support to the DOS Coastal Resources program as it develops screening criteria it intends to employ in establishing a revised coastal zone planning process related to offshore wind energy. The process is expected to identify areas off the coasts where wind development may be suitable for State and federal consideration under the U.S. Department of Interior's Smart from the Start Initiative aimed at accelerating the federal process for leasing offshore tracts for wind energy.

Table 3-3 shows the performance milestones and actual results for the Advanced Clean Power Program through December 31, 2012. The table includes only those performance milestones with anticipated achievements during the first two years (2012-2013) of the five-year program. The rightmost column indicates the actual achievement to date during the first year.

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<sup>3</sup> NYSERDA Environmental Research program has contracted with BRI to conduct a formal stakeholder process to develop a scope/guidance for environmental/wildlife research in the ocean.

**Table 3-3. Advanced Clean Power Performance Milestones and Actual Results**

		2012-2013 Anticipated	2012 Actual
<b>Outputs/ Leading Indicators</b>			
Clean Power Technology Innovation	Contract 51 clean power technology projects	15	NR (12 projects currently being negotiated)
	64 clean energy companies receiving support	19	13
Resource Development	6 studies, surveys, and plans contracted	3	1 (This study was a modification to add T&MD funds to existing contract)
	6 studies, surveys, and plans completed	1	NR
	3 engagements with stakeholder organizations and consortia in support of developing a research /program agenda	2	2
Solar Cost Reduction	200 training sessions on aspects of PV for authorities having jurisdiction, local officials and trainers	180	NR (In September 2012, the PSC approved the transfer of \$10 million of SBC3 funds to a PV BOS cost reduction effort. These metrics will be tracked in future reports.)
	2,000 trainees attending training sessions on aspects of PV for authorities having jurisdiction, local officials and trainers	1,800	
	10 Projects to develop tools/practices, studies/surveys, or workshops/engagements, to reduce PV costs contracted	7	
	10 BOS technology development or demonstration projects contracted	7	
	9 clean energy companies receiving support	6	
	10 Workshops/engagements as a result of BOS projects	1	

Outcomes/Impacts			
Clean Power Technology Innovation	\$55M in commercial sales of supported clean power technologies	\$1M	NR (Metric will be reported in the 2013 year-end report for projects that commenced in SBC2 or SBC3 and received phase two T&MD support, as available. Commercialization metrics for projects that only received SBC3 funding will be reported in the SBC3 annual report.)
	\$65M of leveraged funds (co-funding and outside investment) for clean power technology projects	\$20M	NR (\$8.2 million from 12 projects in negotiation)
Resource Development	\$2.5-5.0 M of leveraged funds (co-funding and outside investment)	up to \$0.5 M	NR
Solar Cost Reduction	\$13.2M of leveraged funds (co-funding and outside investment) for BOS projects	\$5.52M	NR (In September 2012, the PSC approved the transfer of \$10 million of SBC3 funds to a PV BOS cost reduction effort. This metric will be tracked in future reports.)

Note: NR = Not Reported. See explanation at the beginning of Section 3.

### 3.1.3. Combined Heat and Power (CHP)

#### 3.1.3.1. CHP Aggregation and Acceleration Program

The CHP Aggregation and Acceleration Program will develop and transform the marketplace for CHP systems in the size range of 50 kW to 1.3 MW (which is the size range covering the majority of NYSERDA's previous CHP projects). The Program will accomplish this by (1) compiling a vetted catalog of pre-qualified equipment, and (2) creating and validating rules-of-thumb for simplifying the analysis used to determine the size needs of a given site. This focus on pre-packaged CHP modules that include all major components will reduce the need for (and thus reduce the costs of and opportunities for errors during) equipment-integration engineering and

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assembly; nevertheless, site-specific engineering regarding placement of equipment at the site and tie-ins to the site's infrastructure will still be necessary.

In June 2012, NYSERDA issued Request for Information (RFI) 2568, which invites vendors of packaged CHP systems to submit "equipment cut sheets" for vetting by a NYSERDA-assembled Technical Evaluation Panel. This program and RFI 2568 were highlighted during NYSERDA's CHP Conference held in New York City in June 2012 with 150 stakeholders in attendance. NYSERDA intends to issue the catalog that will specify the eligible equipment along with each item's assigned incentive and the program's system sizing rules-of-thumb in February 2013. Upon issuance of the catalog, NYSERDA will begin accepting open enrollment first-come/first-served applications for the program. The program and opportunities to add items to the catalog will then remain open continuously until the end of 2016 or funds are exhausted, whichever occurs first.

NYSERDA has historically funded CHP projects with SBC3 resources. Benefits from this SBC3 investment continue to accrue and will be reported in the 2012 SBC3 annual report (prior historical accomplishments can be found in the SBC3 annual report through December 31, 2011).<sup>4</sup>

Table 3-4 shows the performance milestones and actual results of Combined Heat and Power Program through December 31, 2012. The table includes only those performance milestones with anticipated achievements during the first two years (2012-2013) of the five-year program. The rightmost column indicates the actual achievement to date during the first year. As noted earlier, NYSERDA intends to modify the reporting of CHP metrics in its next semi-annual report to comport with the December 17, 2012 Order and the subsequent operating plan revision.

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<sup>4</sup> See <http://www.nysesda.ny.gov/Program-Evaluation/~//media/Files/Publications/PPSER/NYES%20Program/2012/2011-nyes-evaluation.ashx>, Section 5.8.



**Table 3-4. Combined Heat and Power Performance Milestones and Actual Results**

		2012-2013 Anticipated	2012 Actual
<b>Outputs/ Leading Indicators</b>			
CHP Aggregation & Acceleration Program	20 Pre-packaged CHP Systems 0“pre-qualified” for catalog	10	36
	37 CHP Aggregation Sites – Contracted	15	NR (Program solicitation released in Q1 2013. Future reports will show progress toward this metric.)
	37 CHP Aggregation Sites – Installed	3	
	10 Technology transfer activities such as development and dissemination of “Best Practices” guidebooks, analyses of barriers busting policy and technology initiatives, conferences, and web-based materials	4	1 conference in June 2012, CHP performance data website ( <a href="http://chp.nysedra.ny.gov">http://chp.nysedra.ny.gov</a> ) ongoing with T&MD funding.
	12.5 peak MW of new clean generating CHP capacity contracted for installation	5 MW	NR (Program solicitation released in Q1 2013. Future reports will show progress toward these metrics.)
	76,250 MWh/yr electric generation from new clean generating CHP contracted for installation	30,500 MWh/yr	
<b>Outcomes/Impacts<sup>1</sup></b>			
CHP Aggregation & Acceleration Program	12.5 MW of new clean generating CHP peak capacity installed	1 MW	NR (Program solicitation released in Q1 2013. Future reports will show progress toward these metrics.)
	76,250 MWh/yr electric generation from new clean generating CHP installed	6,100 MWh/yr	
	\$50 million in leveraged funds (co-funding and outside investment) for installed CHP systems	\$20M	

Note: NR = Not Reported. See explanation at the beginning of Section 3.

<sup>1</sup>Although there is an increase in on-site natural gas use by CHP systems, the increased use is less than the natural gas required to generate the same electricity at the central plant, resulting in a net system wide savings of natural gas.

## 3.2. Building Systems Initiatives

Table 3-5 shows the Building Systems budget and financial status through December 31, 2012.

Committed and spent funds are also shown as a percent of the total 2012-2016 budget. Later sections describe progress for each area of this initiative.

**Table 3-5. Building Systems Budget and Financial Status as of December 31, 2012**

	2012-2016 Budget	Spent Funds	Percent of 2012-2016 Budget Spent	Committed Funds <sup>1</sup>	Percent of 2012-2016 Budget Committed
<b>Advanced Buildings</b>	<b>\$75,336,160</b>	<b>\$168,038</b>	<b>0.2%</b>	<b>\$29,833,157</b>	<b>39.6%</b>
Emerging Technology/Accelerated Commercialization	\$32,446,214	\$81,601	0.3%	\$4,277,459	13.2%
Technology Development	\$33,613,215	\$39,611	0.1%	\$23,390,210	69.6%
Demand Response	\$9,276,731	\$46,826	0.5%	\$2,165,488	23.3%
<b>Advanced Energy Codes &amp; Standards</b>	<b>\$16,679,794</b>	<b>\$3,812</b>	<b>0.0%</b>	<b>\$17,315</b>	<b>0.1%</b>
<b>Building Systems Total</b>	<b>\$92,015,954</b>	<b>\$171,850</b>	<b>0.2%</b>	<b>\$29,850,472</b>	<b>32.4%</b>

Totals may not sum exactly due to rounding.

<sup>1</sup>Committed funds include amounts spent plus remaining funding obligated under a contract, purchase order, or incentive award. In addition, committed funds include planned funding for contracts awarded and under negotiation and planned funding under active development through solicitations with specific due dates.

### 3.2.1. Advanced Building Technologies

#### 3.2.1.1. Emerging Technology/Accelerated Commercialization (ETAC) – Buildings

The ETAC Buildings component is a new, deliberate approach to accelerating commercial introduction of emerging or underused building technologies and strategies. ETAC will serve as a feeder effort to support EEPs and other New York clean energy programs. This effort focuses on three market sectors, commercial/institutional, multifamily and residential. Activities to date in each sector are described below.

#### Commercial/Institutional ETAC

NYSERDA held its first advisory group meeting for the Commercial/Institutional (C/I) ETAC Program in October 2012. Advisory group members include representatives of the design

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community, commercial property owners, colleges and universities, utilities, national laboratories, environmental groups and national energy efficiency organizations. Input and feedback from the group will be applied to identify and review promising commercially-available yet underutilized technologies and approaches.

NYSERDA has initiated market research on C/I emerging technologies (ET), and is participating in the Consortium for Energy Efficiency's ET Collaboration. NYSERDA plans to offer an open enrollment program in the first quarter of 2013, consisting of two program tracks:

- Energy Performance Validation – Targeted to technology developers and owners of multiple buildings wishing to gain independent validation of performance for a product, technology, or approach that is commercially available, yet not in widespread use.
- Demonstrations – Will support multiple installations of selected technologies or approaches that are commercially available, yet not in widespread use, in order to accelerate market acceptance. Cost-shared incentives support installation, monitoring and verification.

As part of a larger solicitation to be released in the first quarter of 2013, NYSERDA plans to seek a consultant to assist with technical and program support. Additionally, NYSERDA has a small cadre of independent technical consultants on-board to assist with validation, monitoring and verification of energy savings in demonstration projects.

#### Multifamily ETAC

- Multifamily Technology Demonstration Program

A broad-based Advisory Committee, comprised of over twenty members, was formed and convened three times. Members were asked to provide input on importance/impact of technologies, types of pilot projects that might be implemented, barriers to the technologies and strategies, and potential solutions. A master list of technologies and projects was created. The Advisory Committee was also requested to provide input on other important elements for the ETAC solicitation.

Since the last advisory committee meeting, the multifamily team is working on a draft solicitation with a target of having demonstration project contracts in place in the third quarter of 2013.

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- Multifamily Deep Energy Retrofit Competition

The Multifamily Deep Energy Retrofit Competition planning process began by leveraging \$50,000 from the DOE State Energy Program Base Grant to hire a planning consultant for feasibility analysis. This effort is aimed at determining if a prize competition is an appropriate mechanism for achieving deep energy retrofits in New York State. The final results from the preliminary assessment were reported to NYSERDA at the end of 2012. The consultant found that a competition, structured so that both energy savings and return on investment were rewarded, would entice participants from potentially both the market rate and affordable housing sectors. Next steps for this initiative include solicitation of an implementation contractor and working with the selected contractor to design and implement the competition.

- Multifamily Mixed-Use Pilot Program

The pilot program is still early on in the design phase. A Request for Proposals is currently being developed for an implementation contractor who will assist with the pilot design and will likely be issued in the second quarter of 2013. Once an implementer is selected, program design and project screening and selection can occur.

### Residential ETAC

NYSERDA kicked off the residential ETAC effort with stakeholder meetings on June 8, 2012 and August 7, 2012. Stakeholders from the residential energy field including contractors, builders, PV installers, products manufacturers, research and design firms, and utilities were present. Input and feedback from the stakeholders will be used to develop the initiative. In addition, a program website and clearinghouse for potential demonstration participants was created in 2012.

NYSERDA plans to release a Program Opportunity Notice (PON) in the first quarter of 2013 to seek proposals for demonstration projects that will feature solid-state lighting in the residential sector, for both new construction and existing homes. Specific technology transfer strategies and activities will be a required element of proposals submitted to the PON, and will be the primary

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means of achieving program success. NYSERDA will also release a RFI in 2013 to solicit feedback on additional technologies for consideration under the residential ETAC initiative.

### *3.2.1.2. Technology Development*

Under the Technology Development area, NYSERDA will undertake targeted building technology development activities that address the technical and economic barriers and opportunities of new or emerging products. As a complement to Technology Development, NYSERDA also plans to establish an Advanced Building Consortium to guide and conduct targeted high priority technology development and demonstration projects and to help accelerate the introduction of emerging technologies into New York State markets.

A proposed program design for Technology Development and the Advanced Building Consortium was developed and presented to a diverse group of stakeholders that included technology developers, builders, financial and real estate industries, design professionals, public and private sector building owners and operators, academic and research organizations, code agencies and organizations, manufacturers and suppliers, building trades, and utility program representatives. A total of 177 stakeholders attended meetings held in April and May 2012 in Buffalo, Syracuse, Albany, and New York City. Types of stakeholders present include technology developers, builders, financial and real estate industries, design professionals, public and private sector building owners and operators, academic and research organizations, code agencies and organizations, manufacturers and suppliers, building trades, and utility program representatives. Feedback on the proposed approach for Technology Development activities and the establishment of an Advanced Building Consortium were generally positive. Stakeholders were also in favor of simplifying and expediting the proposal submission and award process. Stakeholder input was incorporated into the program design where possible. The solicitation for the Advanced Buildings Consortium is planned to be issued in late summer (2013).

NYSERDA issued solicitation PON 2606 Advanced Buildings Program for \$25 million (\$22 million T&MD, and \$3 million from R&D statutory funds) in November 2012. The solicitation is a broad solicitation with multiple rounds (six) for building related technology development and pilot demonstration projects. Proposals are due on January 22, 2013. The Advanced Building Technology Development solicitation efforts will be coordinated with the Advanced Building

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Consortium to solicit feedback on research topics, industry trends and barriers, continuous stakeholder engagement and information dissemination.

### *3.2.1.3. Enabling Demand Response (DR) and Load Management*

Under the Enabling DR Load Management Program, NYSERDA will help increase participation and reliability of performance in utility and New York State Independent System Operator (NYISO) programs. Such outcomes can contribute to suppressed wholesale energy costs, reduced congestion costs, increased reliability, and other benefits. The development of enabling DR technologies and new demand management models through this program will increase the technical potential of DR in New York State.

The Existing Facilities Program (PON 1219) is the active solicitation offering open-enrollment incentives for DR projects across New York State. Clean distributed generation projects are eligible in Con Edison territory (exclusively) and load curtailment projects and energy storage projects are eligible statewide. The incentives for DR are \$100/\$200 per kW Upstate/Downstate and the incentives for energy storage are \$300/\$600 per kW Upstate/Downstate. DR projects are required to enroll in a mandatory-participation DR program offered by the NYISO or local utility. The Existing Facilities Program also offers pre-qualified incentives for interval meters on a per-unit basis. Interval meters must enable at least 40 kW worth of demand response in an approved DR program. The prescriptive incentive is \$1,500/meter or 100% of project cost, whichever is less.

Since January 2012, the program has supported interval meter and enabling technology installations representing approximately 28 MW of demand response.

NYSERDA has historically funded DR projects with SBC3 resources. As benefits from this SBC3 DR investment continue to accrue, they will be reported in the 2012 SBC3 annual report (prior historical accomplishments can be found in the SBC3 annual report through December, 2011).<sup>5</sup>

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<sup>5</sup> See [http://www.nyserdera.ny.gov/Program-Evaluation/~/\\_media/Files/Publications/PPSER/NYES%20Program/2012/2011-nyes-evaluation.ashx](http://www.nyserdera.ny.gov/Program-Evaluation/~/_media/Files/Publications/PPSER/NYES%20Program/2012/2011-nyes-evaluation.ashx), Section 5.14.

Table 3-6 shows the performance milestones and actual results of Advanced Buildings Program through December 31, 2012. The table includes only those performance milestones with anticipated achievements during the first two years (2012-2013) of the five-year program. The rightmost column indicates the actual achievement to date during the first year.

**Table 3-6. Advanced Buildings Performance Milestones and Actual Results**

		<b>2012-2013 Anticipated</b>	<b>2012 Actual</b>
<b>Outputs/Indicators – Quantifiable Targets</b>			
<b>Emerging Technology/Accelerated Commercialization</b>	13-22 stakeholder meetings on emerging and underused technologies and strategies	7-10	11
	38-70 knowledge/technology transfer activities across the commercial and residential sectors (webcasts, reference case studies, and other knowledge transfer mechanisms)	8-18	NR (Scoping meetings held. Solicitations to be issued in Q1 2013.)
	17-36 contracted reference demonstration <sup>1</sup> projects across the commercial and residential sectors (including large-scale demonstrations)	3-6	
	17-36 completed reference demonstration projects across the commercial and residential sectors (including large-scale demonstrations)	1-2	
<b>Technology Development</b>	46-74 advanced building technology projects contracted (including some large-scale projects) <sup>2</sup>	23-36	3 (Proposals for current solicitation due in Q1 2013. Strong market demand is expected.)
	23-37 clean energy companies receiving support	12-18	3

		<b>2012-2013 Anticipated</b>	<b>2012 Actual</b>
	15-30 stakeholders engaged in the Advanced Buildings Consortium (ABC)	5-10	NR (Pre-ABC meetings held with 177 stakeholders to define scope. Following Superstorm Sandy, ABC funds were repurposed to focus on resiliency and sustainability. Program adjustments are underway.)
	16-35 ABC stakeholder meetings, advisory meetings, workshops, conferences, events, etc.	2-5	4
	10-15 clean energy companies receiving support through ABC	3-5	NR (ABC is under development.)
<b>Demand Response</b>	46 MW Registered	9 MW	28 MW
<b>Outcomes/Impacts – Quantifiable Targets<sup>3</sup></b>			
<b>Emerging Technology/Accelerated Commercialization</b>	\$6.5 -13 million of leveraged funds (co-funding and outside investment) for demonstration projects	\$1-3M	NR (Scoping meetings have been held. Solicitations to be issued in Q1 2013.)
	10,500 MWh of energy savings from supported demonstration projects <sup>4</sup>	2,000 MWh	
	78,000 MMBtus of energy savings from supported demonstration projects <sup>4</sup>	5,000 MMBtu	
	2,300 Peak kW reduction	550	



		<b>2012-2013 Anticipated</b>	<b>2012 Actual</b>
Technology Development	\$14-23 million in leveraged funds (co-funding and outside investment) for advanced building technologies	\$7-10M	\$721,385

Note: NR = Not Reported. See explanation at the beginning of Section 3.

<sup>1</sup> For this program, a demonstration project is defined as highly visible, large-scale demonstration of a technology or technologies at one or more sites. For example, a demonstration of load-shedding ballast in a number of different building locations would be considered one demonstration.

<sup>2</sup> Using a stage-gate process, technology opportunities will be explored and only the most promising technologies (select few) will be advanced to large-scale projects.

<sup>3</sup> Estimates based on savings per program dollar invested in projects.

<sup>4</sup> It is difficult to estimate savings for these new feeder programs. Estimates are conservative given the difficulty of assessing replication impacts. Estimates are based on previous NYSERDA evaluation studies of replication from demonstration projects.

### **3.2.2. Advanced Energy Codes and Standards**

The Advanced Codes and Standards Initiative consists of two components: a set of code activities targeted at the commercial and residential building sectors in New York State and a set of standards activities directed towards state and national appliance and equipment standards and specification setting processes for various equipment types. Activities within the four major areas are described below.

#### **3.2.2.1. Annual Statewide Compliance Assessments**

Statewide compliance assessment studies are an important component of the Advanced Energy Codes and Standards Initiative, as they provide a means to track compliance (or non-compliance) trends associated with changing codes and standards helping to identify where program intervention may be needed. Compliance assessments will occur as a phased effort. The first effort, currently underway, will concentrate on existing commercial building renovation projects and will help establish the overall framework for all assessments during the T&MD period. Future efforts, built upon this framework, will evaluate commercial new construction, and residential new construction and renovation, and update the initial commercial renovation assessments for the latter periods of T&MD funding cycle. The later study efforts will also summarize the findings of the various studies from the five-year assessment period using data from the T&MD and NYSERDA's initial American Recovery and Reinvestment Act (ARRA) compliance assessment studies.

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### 3.2.2.2. *Development and Delivery of Advanced Training and Tools*

Training to support new and advanced codes and standards is critical, particularly at points of adoption. Training efforts will build upon those developed using ARRA funds, with new or enhanced training modules and approaches.

Stakeholder meetings and discussions with DOS, Pace Energy and Climate Center, and various contractors performing work under ARRA have occurred to review overall concept for T&MD activities. Initial efforts leading to the program's first solicitation are in progress. The first solicitation associated with this task is anticipated for spring 2013 and will include the following initiatives:

#### Classroom Training

- Traditional, classroom training specific to the International Energy Conservation Code (IECC) 2012 and changes specific to New York State.

The T&MD plan also identifies that a solicitation will be issued specific to the following tasks:

#### Website: Host/Support

- Enhanced mechanisms for public contact
- Design website upgrade
- Manage and host additional website content by others
- Overall program marketing

It is anticipated that a solicitation specific to the aforementioned website tasks will be issued in late 2013.

### 3.2.2.3. *Technical Support, Studies, and Resources*

Technical consulting and market research firms will be competitively selected to provide support and the objective review necessary for considering codes and standards changes, to implement new strategies, and to conduct other activities. These efforts will increase New York's proactive response to federal standard proposals and national energy code changes.

Initial efforts leading to the first solicitation in this area are in progress. A solicitation anticipated for late 2013 and will include the following tasks:

Studies and Support: Technical and Administrative

- Program effectiveness study (include creation of standards for training, trainer selection)
- Regulatory and administration studies (e.g., third party energy enforcement)
- Technical studies (e.g., Building Science, New Materials) in support of proposed code changes

**3.2.2.4. Pilots and Expanded Implementation Assistance**

Initial efforts leading to the program’s first solicitation is in progress. A solicitation is anticipated for spring 2013 and will include the following tasks:

Municipal Support

- Pilot Programs for select communities (Plan Review, Specialized Training, Inspection Support, Database Creation)
- Development of Enforcement Tool Manual

Table 3-7 shows the performance milestones and actual results of Advanced Energy Codes Program through December 31, 2012. The table includes only those performance milestones with anticipated achievements during the first two years (2012-2013) of the five-year program. The rightmost column indicates the actual achievement to date during the first year.

**Table 3-7. Advanced Energy Codes Performance Milestones and Actual Results**

		2012-2013 Anticipated	2012 Actual
<b>Outputs/ Leading Indicators</b>			
<b>Annual Statewide Compliance Assessments</b>	Conduct 5 annual code compliance assessments	2	1 in progress
	Conduct 3 compliance efforts with appliance and equipment vendors to assess conformance to State and federal standards	1	NR

		2012-2013 Anticipated	2012 Actual
Development and Delivery of Advanced Training and Tools	Develop 12-16 new or expanded code training modules	6-8	NR (Solicitation development in progress for new training modules)
	Train 15,000 individuals on code requirements	7,000	NR
	Develop or update educational or other tools to help support code compliance and NYS appliance/equipment standards		NR (Code/Commentary to 2013 Commercial/2014 Residential ECCCNY updates in progress; solicitation for Code Enforcement Manual expected for issue spring 2013.)
Technical Support, Studies and Resources	Issue 2 competitive solicitations to hire consulting and market research firms to provide program support	1	NR (Solicitation expected for release late 2013.)
	Participation by NYSERDA and DOS in rulemaking, code development hearings and codes and standards development workshops		NR (NYSERDA and DOS will attend applicable events in 2013 as available.)
Pilots and Expanded Implementation Assistance	Issue 2 competitive solicitations for pilots and program implementation assistance	1	Solicitation expected for release in spring 2013.
<b>Outcomes/Impacts</b>			
Annual Statewide Compliance Assessments	Information from code compliance assessments and standards research supports policy decisions on future code/standard changes		Results of compliance assessment focusing on commercial renovation and alteration expected to be made available late 2013.

		2012-2013 Anticipated	2012 Actual
Development and Delivery of Advanced Training and Tools and Technical Support, Studies and Resources	Code compliance efforts lead to 631 GWh of cumulative annual electricity savings	84 GWh/yr	NR (Not yet measured. Compliance study underway.)
	Code compliance efforts lead to 129 MW of cumulative annual peak demand savings	18 MW/yr	
	Code compliance efforts lead to 4,921,000 MMBtu of cumulative annual fossil fuels savings	575,000 MMBtu/yr	

Note: NR = Not Reported. See explanation at the beginning of Section 3.

### 3.3. Clean Energy Infrastructure Initiatives

Table 3-8 shows the Clean Energy Infrastructure budget and financial status through December 31, 2012. Committed and spent funds are also shown as a percent of the total 2012-2016 budget. Later sections describe progress for each area of this initiative.

**Table 3-8. Clean Energy Infrastructure Budget and Financial Status as of December 31, 2012**

	2012-2016 Budget	Spent Funds	Percent of 2012-2016 Budget Spent	Committed Funds <sup>1</sup>	Percent of 2012-2016 Budget Committed
<b>Market Development</b>	<b>\$70,380,281</b>	<b>\$4,577,273</b>	<b>6.5%</b>	<b>\$17,630,911</b>	<b>25.1%</b>
Market Research	\$4,640,140	-	0.0%	\$256,350	5.5%
Market Pathways	\$55,710,000	\$3,501,491	6.3%	\$12,105,437	21.7%
Education/Behavior	\$10,030,140	\$1,075,782	10.7%	\$5,269,124	52.5%
<b>Clean Energy Business Development</b>	<b>\$41,761,046a</b>	<b>\$216,576b</b>	<b>0.5%</b>	<b>\$15,994,499c</b>	<b>38.3%</b>
Innovation Entrepreneurial Capacity	\$36,761,046	\$51,000	0.1%	\$14,880,524	40.5%
Market Intelligence	\$1,688,584	\$54,500	3.2%	\$82,825	4.9%

	<b>2012-2016 Budget</b>	<b>Spent Funds</b>	<b>Percent of 2012-2016 Budget Spent</b>	<b>Committed Funds<sup>1</sup></b>	<b>Percent of 2012-2016 Budget Committed</b>
Direct Support for Business	\$2,400,000	-	0.0%	\$636,000	26.5%
<b>EMEP</b>	<b>\$18,550,048</b>	<b>\$169,590</b>	<b>0.9%</b>	<b>\$1,470,430</b>	<b>7.9%</b>
<b>Workforce Development</b>	<b>\$39,000,000</b>	<b>\$115,536</b>	<b>0.3%</b>	<b>\$211,104</b>	<b>0.5%</b>
Workforce Development-Renewable Energy/Advanced Technologies	\$15,000,000	\$115,536	0.8%	\$211,104	1.4%
Workforce Development – Energy Efficiency <sup>2</sup>	\$24,000,000	-	0.0%	-	0.0%
<b>Clean Energy Infrastructure Total</b>	<b>\$169,691,375</b>	<b>5,078,975</b>	<b>3.0%</b>	<b>\$35,306,944</b>	<b>20.8%</b>

Totals may not sum exactly due to rounding.

<sup>1</sup> Committed funds include amounts spent plus remaining funding obligated under a contract, purchase order, or incentive award. In addition, committed funds include planned funding for contracts awarded and under negotiation and planned funding under active development through solicitations with specific due dates.

<sup>2</sup> Funds included in this row represent the \$24 million in EEPS funds that were transferred into the Workforce Development program area per the December 17, 2012 PSC Order. These funds have not yet been allocated into individual workforce initiatives. Future reports will integrate these funds accordingly.

<sup>3</sup> Dollars spent for CEBD initiatives do not sum to the total CEBD 2012-2016 budget because \$911,416 in CEBD 2012-2016 budget funds were added to the total.

<sup>b</sup> Dollars spent for CEBD initiatives do not sum to the total CEBD dollars spent because \$111,076 in spent CEBD marketing funds were added to the total.

<sup>c</sup> Dollars committed for CEBD initiatives do not sum to the total CEBD dollars committed because \$395,150 in committed CEBD marketing funds were added to the total.

### **3.3.1. Market Development**

The Market Development initiatives help to create the foundation for long-term changes in the market for the delivery of products and services that address energy efficiency and the adoption of renewable energy technologies. Strategies address the supply chain, consumer behavior, market barriers, and education. Market Development activities identify new market opportunities and keep the supply chain informed about technological innovations and provide the technical tools, resources and training necessary to promote energy efficiency and renewable options to consumers.

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### 3.3.1.1. *Market Research*

The Market Research component works to identify market and institutional barriers to technology and product adoption, obtain critical early stage information and insights to guide investment decisions, and further advance the reach of T&MD and EEPS programs and other public policy goals. The goal is to amass specific market intelligence and identify program opportunities that will increase program implementation efficiency and effectiveness.

In 2012, a multi-organization supported research project was completed with the American Council for an Energy-Efficient Economy (ACEEE) to review next generation energy efficiency program designs and approaches. Specific programs designed to achieve a greater number of participants and greater savings for each participant were examined and case studies of promising program designs were developed. The research was published<sup>6</sup> in a technical report in early 2013 and offers insight on how NYSERDA's energy efficiency programs could be tailored to incorporate new strategies that would allow the programs to go broader and deeper.

A second multi-organization supported research project with ACEEE will begin in early 2013 to explore the opportunities for scaling up savings from commercial and residential retrofits. The project will include a review of comprehensive commercial retrofit efforts to date including efficiency program activity as well as State and local programs targeting the commercial sector. In addition, the project will include a review of recent data on commercial retrofits to develop estimates of the savings potential of a shift to more comprehensive retrofits. For the residential sector, the project will review existing deep retrofit programs, and analyze cost and savings data to better understand the most promising opportunities for savings in terms of technical and economic potential and consumer and builder acceptance.

Market research on the NYSERDA Residential Point-of-Sale Lighting Program is underway to provide information on how resources could be best used to market and deploy the program in the most efficient and effective way as the lighting market transforms under market forces and

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<sup>6</sup> York, Dan, Maggie Molina, Max Neubauer, Seth Nowak, Steven Nadel, Anna Chittum, Neal Elliott, Kate Farley, Ben Foster, Harvey Sachs, and Patti Witte. "Frontiers of Energy Efficiency: Next Generation Programs Reach for High Energy Savings". January 9, 2013, ACEEE Research Report U131. <http://www.aceee.org/press/2013/01/new-report-reveals-how-next-generati>

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external regulations. This market research effort will also look at the Products Program, and explore ways to continue to increase use of energy-efficient products.

A data center market research project is under development, focused on the identified need for better characterization of: (1) information technology loads in the marketplace, (2) the most energy-efficient configurations to manage cooling loads, and (3) the opportunities for demand response from data centers.

As a follow-up to the National Renewable Energy Laboratory (NREL) 2011 Solar PV BOS cost survey, a new national survey is being conducted to assess BOS costs. In collaboration with NREL, NYSERDA has developed a New York State specific PV BOS cost survey to gather state specific information to help establish a New York State baseline for non-hardware PV costs. Work on this effort is currently underway and will be completed in 2013. Work is also underway on a second NYSERA/NREL survey collaboration. This effort will survey homeowners with installed PV systems to determine economic and other decision making factors that drive PV installations, particularly for third party owned systems. Results from these survey efforts will inform program and policy design that serve to further develop the New York State PV market in support of the NY-Sun Initiative<sup>7</sup>.

A multi-state research project is under development to study awareness, knowledge, motivation, intention, and behavior of new light-duty motor vehicle buyers' with respect to electric vehicle technologies. The project would include a statewide survey of new car buying households potentially followed by in-depth interviews with a subset of survey respondents to measure consumer awareness and knowledge of, as well as motivation and intention toward electric vehicles. The results will inform program and policy design that serve to grow a New York State electric vehicle market in support of the recently announced Charge NY Plan<sup>8</sup>.

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<sup>7</sup> NY-Sun, an initiative of New NY Works for Energy. <http://ny-sun.ny.gov/>

<sup>8</sup> See "NY Rising: 2013 State of the State" by Governor Andrew M. Cuomo, January 9, 2013. <http://www.governor.ny.gov/sites/default/themes/governor/sos2013/2013SOSBook.pdf>



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Additional market research options are being explored for energy efficiency programs in the commercial and industrial sectors.<sup>9</sup> Research areas under discussion and consideration include successful program precedents integrating delivery of demand response and renewable energy programs with energy efficiency programs, trends in owner versus renter occupied facilities by region and energy intensity, and the role of tax and accounting practices in energy efficiency decision making processes.

### 3.3.1.2. *Market Pathways*

The Market Pathways component works across the supply chain and sectors to promote the stocking, specification, sales, installation, maintenance, and use of energy-efficient products and strategies. NYSERDA provides tools, business strategies, and business and marketing materials to manufacturers, suppliers, distributors, retailers, service providers, designers, specifiers, contractors, and builders. Progress in key areas is described below.

#### New York Products Program

The New York Products Program, formerly the Energy Smart Products Program, assists businesses that supply emerging, underused, or high first cost/high efficiency products. The Program currently has 823 retail and 52 manufacturer partners. Since January 2012, six new retail partners and seven new manufacturer partners have signed onto the program. The six new retail partners include three new Sears storefronts in Upstate New York, and Energy Max, located in Queensbury, NY Lighting and Furniture located in Flushing and Phoenix Appliance in Brooklyn. The new manufacturers (six lighting/one electronics) include Ruscco Lighting, NCC of New York, DMF Lightings, AIBC, Energetic, TW Lighting and Megalight. Through the partner network, NYSERDA has approved approximately 70 special promotions for a total of \$684,546 in product buy-downs. These promotions are expected to save more than 4.3 million kWh and 14,664 MMBtu annually. These buy-down promotions provide a lower cost to the consumer at the point-of-purchase and products include, but are not limited to, informational energy usage displays, advanced power strips, energy management devices, lighting, appliances, and electronics. Promotional displays also include educational messaging for consumers, to help

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<sup>9</sup> Market Research activities, while funded through the T&MD portfolio, can also serve programs funded through other program portfolios, such as the Energy Efficiency Portfolio Standard Program.

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them choose the right product for the application, or to provide information on energy and environmental benefits of the promoted products.

NYSERDA has historically funded activities in this area with SBC3 resources under the Market and Community Support Program. Benefits from this SBC3 investment continue to accrue and will be reported in the 2012 SBC3 annual report (prior historical accomplishments can be found in the SBC3 annual report through December 31, 2011).<sup>10</sup>

#### Midstream Partner Support

This program helps NYSERDA's service providers in the commercial midmarket supply chain address the primary factors affecting customers' operations, business models, and energy decisions. The program will help these service providers understand energy decision making processes, barriers, attitudes, and opportunities.

The Business Partner Programs have continued to expand and provide energy efficiency services to commercial, institutional and industrial customers on an interim basis while the contracts for the next round of implementation contractors are negotiated and finalized. The solicitation was issued in July 2012 seeking contractors to evolve and implement the Lighting, HVAC and Motors Midstream Market Programs. Two contractors were selected to manage the Lighting and HVAC Programs. The Motors implementation portion will be rebid in early spring of 2013.

The Lighting Business Partners program continues to provide strategies for profitable business models and provide beyond-code design and implementation as standard practice. While the solicitation for the next round of program implementers was in development, partners remained engaged in the Program. Several partners submitted projects for review that demonstrated that program criteria were met; this was accomplished in the absence of incentives. These projects resulted in kWh savings of 688 MWh. As of December 31, 2012, 154 Lighting Business Partners received continuing education credits through six webinars and five Lighting Expos held across the State. The program recruited 10 new Business Partners since January 2012.

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<sup>10</sup> See <http://www.nyscrda.ny.gov/en/Publications/~media/Files/Publications/NYES%20Program/2012/2011-nyes-evaluation.ashx>, Section 4.7.

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The selected implementation contractor for the Commercial Lighting Midstream Market Partners program will evolve the program, building off of the success of the program's model for effective energy-efficient interior lighting. Partners will be encouraged to adopt a "start-to-finish" model for lighting projects that will include appropriate lighting audits, effective design strategies, proper installation techniques, and successful commissioning approaches. Plans also include introducing criteria for effective, energy-efficient site lighting that will enhance the business models of partners who undertake outdoor lighting projects. The contract for this effort will be finalized in Q1 2013.

The HVAC Business Partners program continues to provide strategies for profitable business models and provide quality maintenance services significantly beyond standard practice. The program held 14 formal trainings across the State, covering the Air Conditioner Contractors of America (ACCA) Quality Maintenance (QM) Standards and the use of advanced diagnostic tools. A total of 18 sales and administrative staff and technicians were trained. Three new Partners were recruited. Partners using the QM business model achieved 56,382 kWh of savings for their customers.

The selected implementation contractor for the Commercial HVAC Midstream Market Partners program will evolve the program, building off of the success of the QM business model. Recruitment of partners will go beyond HVAC contractors and will include refrigeration firms that service HVAC units, and facility managers that maintain HVAC equipment for their business or institution. Plans also include the introduction of the ACCA Quality Installation standard and the incorporation of advanced control strategies that will enhance the business model of partners who adopt these approaches. The contract for this effort will be finalized in Q1 2013.

The Motors Business Partners program supports motor vendors, dealers and re-winders to work closely with their customers to develop detailed motor inventories. These inventory reports are detailed application-based documents that directly address what customers identify as their return-on-investment (ROI) criteria. These inventories provide customers with specific information regarding which motors meet their identified ROI based on early replacement, and which are better met at end-of-service life. From the inventories completed in 2012, 43,455 kWh of potential electricity savings were identified. A solicitation for the Motors implementation contractor will be issued in early spring of 2013.

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NYSERDA has historically funded midstream partner support activities with SBC3 resources. Benefits from this SBC3 investment accrued and will be reported in the next SBC3 annual report. Prior historical accomplishments can be found in the SBC3 annual report through December 31, 2011.<sup>11</sup>

### Innovative Strategies

Innovative Strategies will test and prove new, innovative approaches of conveying the energy efficiency message to building owners, operators and the financial sector, and reducing barriers that are not addressed by EEPS.

During 2012, NYSERDA co-funded a pilot program with Urban Green, the New York City Mayor's Office of Long Term Planning and Sustainability, and others to examine the barriers and opportunities for incorporating energy-aligned lease (EAL) clauses into commercial leases. Presentations were held and information collected to understand the likelihood that organizations would use some form of an EAL. A post-presentation survey indicated that, of the audience members who responded, 98% agreed with the principles of the EAL concept, and 45% felt that the likelihood of their organization adopting a form of an EAL in the next two years was greater than 60%. The information gathered from this pilot will be used to inform other initiatives in 2013. Other financing strategies that address the split-incentive issue and allow greater investment in energy efficiency will also be investigated during 2013.

#### *3.3.1.3. The Workforce Development and Training (WFD) and Career Pathways*

The Workforce Development and Training (WFD) and Career Pathways component is designed to address the needs for renewable energy and innovative technology-based training as identified in the New York State Department of Labor (DOL) May 2009 publication, *New York State's Clean Energy Industry: Labor Market and Workforce Intelligence (LMI) Report*. Using the LMI results, and in coordination with DOL, NYSERDA and Pace are in the process of finalizing a curriculum assessment to help refine training necessary to support a clean energy economy. The assessment is funded through Green Jobs-Green New York using allocations from the Regional

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<sup>11</sup> See <http://www.nyserdera.ny.gov/en/Publications/~media/Files/Publications/NYES%20Program/2012/2011-nyes-evaluation.ashx>, Section 3.6.

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Greenhouse Gas Initiative, and will be finalized in May 2013. While the final report is not yet ready to be published, the results and outcomes of this report are being used in the design and implementation of new T&MD initiatives as appropriate.

With stakeholder input collected through a survey and a stakeholder meeting held in May 2012, and the curriculum assessment work nearly complete, NYSERDA is in the process of designing programs and solicitations to expand the training network in targeted areas and integrate new technology education into existing programs. NYSERDA is also designing a high school technical training initiative. It is anticipated that the first solicitations will be issued in March 2013.

Finally, in Spring 2012, NYSERDA took advantage of opportunities to reprogram remaining ARRA State Energy Program funds from completed or cancelled ARRA projects and provided \$1.2 million in funding for training equipment to 12 energy partners to expand their energy efficiency and or renewable energy hands-on training capacity. Hands-on training was identified as a priority by stakeholders and leveraging other funds was identified as a priority in the T&MD Operating Plan. Several renewable energy training contracts from SBC3 were extended and enhanced as a result of ARRA training equipment and training continues with a significant number of students trained as reported in Table 3-9. NYSERDA expects to use T&MD funding to complement existing training, expand training where there is a demonstrated demand and increase hands-on training opportunities in the State. Additionally, NYSERDA is looking for opportunities to leverage other State funds and federal funds to support workforce training initiatives.

#### *3.3.1.4. Education to Change Behavior and Influence Choices Component*

##### Energy Smart Communities Program/Economic Development Growth Extension Programs

The Energy Smart Communities (E\$C) Program which provided local, convenient, community-based access to promote the value of energy efficiency, sustainable growth practices, and clean energy technologies ended December 31, 2012. In 2012, the E\$C Program supported 226 community partnerships. A new program called Economic Development Growth Extension (EDGE) Program will align with the Regional Economic Development Council territories and efforts to build strategic partnerships with local economic development and community

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stakeholders to educate and encourage energy best practices. Contractors have been selected through a competitive request for proposals (RFP) process, and implementation of the program is expected in March 2013.

#### Behavioral Demonstrations (formerly Behavioral Pilots)

Behavioral Demonstrations will support further penetration of new products and practices through behavior change strategies. New and emerging informational platforms will be demonstrated, and tactics will be explored and tested in order to demonstrate how large-scale adoption of energy-efficient behavior can be achieved with little or no financial incentives.

NYSERDA hosted a one-day workshop on behavior-based energy efficiency in July. This workshop included representatives from academia as well as contractors specializing in behavior-based energy efficiency. From these sessions, NYSERDA was informed that there are a relatively large number of pilots currently ongoing across the country; however, there is a lack of larger deployments that are evaluated in the same fashion as traditional energy efficiency programs. The importance of ensuring all demonstrations are statistically significant and include appropriate baseline and control groups that are selected by an unbiased, independent evaluation contractor. Additionally, the idea of a conference hosted by NYSERDA to continue the discussion, foster discussion and networking, and better organize with other programs was proposed. The program design has received NYSERDA management approval and a solicitation to select behavioral demonstrations is expected in early 2013.

#### Behavior Research Program

NYSERDA's Behavior Research Program (2010 – present) works with Action Research, Inc., and clean energy programs in New York State to implement and evaluate behavior pilots to identify successful pilot interventions that use behavior principles of decision making to influence energy-related decisions. The research pilots are documented through a series of case study reports and funding to demonstrate successful pilot interventions at a larger scale will be available through NYSERDA's Behavior Demonstration Program. The Behavior Research Program has conducted training on the basics of behavior research guidelines and will provide a series of instructional webinars in 2013.

Low-Income Forum on Energy (LIFE)

The Low-Income Forum on Energy (LIFE) is the longest running statewide low-income energy dialogue in the United States. LIFE brings together a diverse range of parties committed to addressing the challenges and opportunities facing low-income New Yorkers as they seek safe, affordable and reliable energy. Guided by a Steering Committee composed of State agencies, utilities, and community-based organizations, the program undertakes several initiatives to increase awareness of low-income energy issues. In 2012, a statewide conference featuring presentations on energy affordability, consumer protections, emerging energy issues, best practices, and program updates was held. The conference was attended by 275 individuals from 129 different organizations. In addition, the LIFE program presented eight webinars to 551 attendees and distributed 12 electronic newsletters to a network of over 5,000 individuals.

Table 3-9 shows the performance milestones and actual results for Market Development Performance Program through December 31, 2012. The table includes only those performance milestones with anticipated achievements during the first two years (2012-2013) of the five-year program. The rightmost column indicates the actual achievement to date during the first year. Per the Commission’s December 17, 2012 Order and NYSERDA’s revised Operating Plan submitted on February 15, 2013, the Workforce Development Program metrics will be revised and reported separately in future semi-annual reports.

**Table 3-9. Market Development Performance Milestones and Actual Results**

		2012-2013 Anticipated	2012 Actual
Outputs/ Leading Indicators			
Market Pathways	Enlist 1,240 Energy Smart Products partners participants	940 Includes approximately 840 of NYSERDA’s current program partners expected to renew their participation agreements and 400 new partners signed up by the end of the program.	823
	Enlist 510 Midstream Partner participants	430 Includes approximately 400 current program partners expected to renew their participation agreements and 110 new partners signed up by the end of the program.	664 (Total participants include current program partners plus 13 those recruited in 2012.)

		2012-2013 Anticipated	2012 Actual
	Train 500 Product Partner employees on sales of high efficiency equipment	200	NR
	Train 1,025 Midstream Partner business owners or their staff on advanced strategies and technologies (Midstream Partner business owners and their staff may participate in more than one training.)	375	172
	Investigate, catalog and communicate innovative energy efficiency investment strategies through 6-9 fact sheets and 10 seminars	3-4 fact sheets; 4 seminars & webinars	NR (On-Bill Recovery launched in 2012. Future T&MD activities will be reported.)
	Facilitate 30-45 customers accessing innovative energy efficiency investment strategies	20-25 projects	
	Energy-aligned leasing (EAL) arrangements (10-15) and other approaches to split incentive issue	4-6 EAL evaluations; 4 seminars & webinars	1 EAL pilot
	Provide supply chain with tools, strategies, marketing materials, and information to incorporate into their businesses operations (9-12 factsheets; 9-12 seminars)	4-5 fact sheets; 4-5 seminars & webinars	Lighting: 8 webinars and 5 expos HVAC: 2 fact sheets and 14 training seminars
Workforce Development	Train 2,680 individuals on renewable and emerging technologies (Individuals may participate in more than one training)	670	1,462
Education/Behavior Change	Sponsor and support 5 annual LIFE conferences	2	1
	Support 600 community partnerships	250	226
	Sponsor up to 8-12 behavioral pilots	5-8	NR (Used non-T&MD funds to complete assessment and



		2012-2013 Anticipated	2012 Actual
			categorization of NYSERDA's current behavioral activities. Second phase of this work will train staff and pilot behavioral activities. This activity will inform future T&MD behavioral work in this area. )
<b>Outcomes/Impacts</b>			
Market Research	Conduct 4-6 research studies	2-3	1 study completed, 5 additional studies underway
Market Pathways	125 GWh saved through supporting emerging technologies and higher efficiency products with Energy \$mart Partners (some savings may overlap with end user incentive programs)	50 GWh	67 GWh
	895,000 MMBtu saved through supporting emerging technologies and higher efficiency products with Energy \$mart Partners	254,000 MMBtu	227,705 MMBtu
	Increase market share of 3-6 technologies and higher efficiency products	1-3	NR (Program data and evaluation studies will be used to retrospectively examine change in market share.)
	37 GWh saved through Midstream Partner projects <sup>1</sup>	15 GWh	788 MWh
	Complete 20–35 customer projects that accessed innovative energy efficiency investment strategies	5-8 projects	NR (Evaluation research underway to assess attitudes towards financing. Future T&MD outcomes will be reported.)

		2012-2013 Anticipated	2012 Actual
Workforce Development	Support entry of 480 disadvantaged or entry workers into the job market	90	NR

Note: NR = Not Reported. See explanation at the beginning of Section 3.

<sup>1</sup>Estimated savings after net-to-gross adjustment. Past program experience suggests that approximately 60% or 24 GWh of savings will be reported in end user incentive programs.

### **3.3.2. Clean Energy Business Development**

#### *3.3.2.1. Innovation/Entrepreneurial Capacity Building*

##### Proof of Concept Centers

The mission of a Proof-of-Concept Center (POCC) is to accelerate the translation of research into marketable products. This is primarily accomplished by fostering successful pre-startup companies. Generally, the next step for these companies is to participate in a business mentoring or incubation program.

The objectives of the NYSERDA POCC initiative are to: (1) Accelerate the commercialization of innovations out of research institutions and into the marketplace, particularly through startups; (2) Early in the research and development phase, match emerging clean energy technologies that have scalable commercialization potential, based on real market need, with the investment community; and, (3) Establish sustainable regional innovation ecosystems of potential investors and entrepreneurs in clean energy technologies and solidify the POCC linkages to them.

During January 2012, stakeholder meetings on the POCC Initiative were held with representatives from 28 academic or technology-based economic development organizations. Feedback was specifically requested in three areas: level and duration of funding necessary to establish a sustainable program; appropriate performance metrics to measure and determine success at the different stages of development, implementation and operation; and, the benefit of regional or team collaboration to provide access to a wider pool of research and the possible impact of this approach on program sustainability.

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PON 2537 was issued in May 2012 with a mandatory Letter of Intent to propose form required to be submitted by June 6, 2012 and a proposal due date of July 18, 2012. An informational webinar was held on May 23, 2012. The Technical Evaluation Panel met on September 11, 2012 to review the submitted proposals. Following the TEP's recommendation, NYSERDA awarded a total of \$15 million to Columbia University, the Polytechnic Institute of New York University and High Tech Rochester to create three POCCs dedicated to helping inventors and scientists turn their high-tech, clean energy ideas into successful businesses. NYSERDA will invest \$5 million in seed money at each center over a five-year period, with cost sharing required. The centers are expected to operate on their own after NYSERDA funding ends.

The three POCCs will be created by:

- Columbia University (New York City), which will open the Downstate Regional Energy Technology Accelerator. The organization is partnering with Brookhaven National Laboratory, Stony Brook University and Cornell University's NYC Tech, a new campus located in New York City.
- High Tech Rochester Inc., (HTR) a non-profit venture development organization based in the Rochester area, which will open the NYSERDA POCC to serve western and central New York. HTR will work with a number of academic partners including: University of Rochester, Rochester Institute of Technology, SUNY Research Foundation, Alfred University, Cornell University, Clarkson University and the University at Buffalo, as well as multiple industry and investor partners.
- Polytechnic Institute of New York University (NYU-Poly), which will partner with the City University of New York (CUNY) to create the New York City Clean Economy Center for Proof-of-Concept. The organization called PowerBridge, and the NYU Center for Urban Science and Progress (CUSP) will partner in an applied science research institute that focuses on challenges specific to an urban environment.

#### Emerging Clean Energy Business Development

The Clean Energy Business Incubator program was initiated in 2009 with funding from SBC3. The purpose of these incubators is to foster the viability and growth of young early stage clean

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energy companies, most of which are still in the process of developing new products and have yet to earn revenue from commercial operation. To date, the program has been funded with SBC3 resources alone and therefore benefits will be reported in full in the SBC3 Annual Report.

Additional historical accomplishments can be found in the SBC3 annual report through December 31, 2011.<sup>12</sup> Based on current plans, the program will transition to T&MD funding in 2013, and at that point benefits will be reported only in the T&MD semi-annual reports.

#### Clean Energy Cluster Development

This program will work to convene multi-disciplinary market participants to promote new networks of interrelated clean energy firms, or clusters that can accelerate the development of new products and services and create new business models. These clusters can drive productivity and innovation and serve as an important driver of regional competitiveness.

The first initiative under this program is the development of an Energy Infotech cluster in New York City. The objectives of this cluster development include the formation of more startup companies in energy infotech; attraction of venture capital to New York City-based companies in this sector; and development of a community to facilitate recruiting, marketing, and strategic partnering. Energy Infotech NYC (EITNYC) is a newly formed organization to promote this cluster. EITNYC will perform strategic planning, outreach to the energy infotech community, and event sponsorship. EITNYC sponsored a successful Cleanweb Hackathon in January 2012 and was the lead organizer of a follow-up event in September 2012. Although current cluster activities have been funded with SBC3 funds, work in this area will be used to inform future T&MD programs.

#### *3.3.2.2. Market Intelligence*

##### New York State Clean Energy Innovation Metrics

Under RFP 2266, NYSERDA has selected a contractor to define and promote New York State's environment conducive to innovation, entrepreneurship and technology-led growth. Specifically

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<sup>12</sup> See <http://www.nysERDA.ny.gov/Program-Evaluation/~media/Files/Publications/PPSER/NYES%20Program/2012/2011-nyes-evaluation.ashx>, Section 5.6.

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targeted to the clean energy space, information and metrics will be gathered for business owners, entrepreneurs and investors who are deciding where and how to invest. The current lack of such information is a barrier to business start up, expansion and attraction. These clean energy indicators that can be used for policy purposes—to gauge progress and weaknesses in the development of the State’s clean economy, and to identify policy gaps that need to be addressed. Although this effort has been funded with SBC3 funds, work in this area will be used to inform future TM&D programs.

### 3.3.2.3. *Direct Support for Business Acceleration*

The NYSERDA Entrepreneurs-in-Residence (EIR) program provides business mentoring to companies receiving NYSERDA R&D funding, NYSERDA incubator clients, and other select companies supported by NYSERDA. The mentors are selected for their senior executive or entrepreneurial experience and provide strategy level guidance. A pilot program was funded under SBC3.

PON 2419, NYSERDA Entrepreneurs-in-Residence, was issued in May 2012 with a proposal due date of June 20, 2012. High Tech Rochester Inc., the original contractor for the program, submitted the proposal that was selected for contract award.

In the fourth quarter of 2011, NYSERDA issued a PON seeking proposals to develop a multi-year clean energy education program to educate experienced entrepreneurs interested in seeking opportunities in the clean technology (clean tech) and renewable energy industries. Increasing the knowledge and awareness of clean energy business operations for experienced and successful executives in New York State will likely increase the number of successful clean technology businesses and create the opportunity for increased hiring in the clean tech sector within the State. No contracts resulted from the proposals received under the solicitation. Stakeholder meetings are scheduled for early 2013 and the solicitation is expected to be re-issued soon after.

In an effort to assist clean tech companies and their management in the development of the business capabilities necessary to commercialize and launch their innovations, a PON will be released in the third quarter of 2013 for the development of a Cleantech Commercialization Toolkit. This toolkit will be publicly available and will guide businesses through the process for commercializing clean tech innovations. As such, the toolkit will include templates, references, and instructions for each stage of

commercialization. The contractor selected to perform this development will also provide an up-to-date list of business mentorship and assistance resources available, and will provide guidance and feedback to the companies that choose to use the toolkit.

Table 3-10 shows the performance milestones and actual results for Clean Energy Business Development Program through December 31, 2012. The table includes only those performance milestones with anticipated achievements during the first two years (2012-2013) of the five-year program. The rightmost column indicates the actual achievement to date during the first year.

**Table 3-10. Clean Energy Business Development Performance Milestones and Actual Results**

		2012-2013 Anticipated	2012 Actual
Outputs/ Leading Indicators			
Innovation/ Entrepreneurial Capacity	Support 405 clients in incubators or POCs <sup>1</sup>	65	NR (Contracting for 3 POCs underway. Contracting for 3 new incubator agreements, continuing on SBC3 work, underway.)
Market Intelligence	Create 5 annual "benchmark reports" on clean energy business and financial indicators for New York State	2	NR (Indicators being developed using SBC3 funds. Draft report under review.)
	Support dissemination of clean energy benchmark information through 500 website downloads	100	
Direct Support for Business Acceleration	Provide support for 150 companies with new and improved products serving New York State markets	59	NR (Contractor to deliver EIR services has been selected.)

		2012-2013 Anticipated	2012 Actual
Outcomes/Impacts			
Innovation/ Entrepreneurial Capacity	Help clean energy businesses attract \$150 million in leveraged funds (co-funding and outside investment)	\$40M	NR (Previous SBC funded projects have generated approximately \$100M in leveraging)
	Graduate 162 businesses from incubators	36	NR (Previous SBC funded projects have graduated 31 businesses from incubators)
	40 advanced technologies reaching commercial availability	5	NR (Previous SBC funded projects have generated 71 new products offered by incubator clients for commercial sale)
	\$20 million in commercial sales of new and improved supported technologies <sup>13</sup>	\$2.5M	NR (Metric will be reported in the 2013 year-end report for projects that commenced in SBC3 and received phase two T&MD support, as available. Commercialization metrics for projects that only received SBC3 funding will be reported in the SBC3 annual report.)
	486 Incremental FTEs associated with incubator graduates	108	NR

Note: NR = Not Reported. See explanation at the beginning of Section 3.

<sup>1</sup>Because POCCs are a new NYSERDA initiative, estimating program outcomes requires the use of surrogates. One leading example is the Deshpande Center at MIT. Since beginning operation in September 2002, through the end of 2010, the Center reviewed over 500 proposals and funded 80 projects with \$11 million in grants. This investment has resulted in the creation of 23 companies that raised over \$300 million in funding and have over 400 employees. The Center funds approximately 18 projects per year. Translating these outcomes to New York's new POCCs must take into account the limited technology/market focus of the New York program and the time required to establish a program and build momentum.

<sup>13</sup> This is an estimate only for sales dollars. The program will support a variety of technologies making it difficult to forecast the value of sales. In addition, some of the products developed through incubators may participate in other NYSERDA product development efforts.

Table 3-11 highlights business development progress from the pipeline of NYSERDA’s pre-T&MD SBC investments. Over time, each of the companies listed has achieved substantial private/outside funding support to leverage the NYSERDA investment made. These highlights illustrate the time frame often required to achieve business development impacts of the type expected from the T&MD portfolio.

**Table 3-11. SBC Funded Business Development – Pre-T&MD Achievements**

<b>Company</b>	<b>Product</b>	<b>Private/Outside Investment</b>	<b>NYSERDA SBC Funding</b>
American Aerogel – Rochester, NY (Founded in 1995)	Aerogel-based materials for insulation used in shipping containers and energy systems.	In 2011, the company received \$2.5 million in venture capital financing.	\$400,000
Applied Nanoworks/Auterra – Malta, NY (Founded in 2003)	Technology removes oil contaminants and can reduce refining cost/energy by 30-50%.	Reported up to \$10 million in venture funding received.	\$503,000
Crystal IS – Green Island, NY (Founded in 1997)	Substrates for UV LEDs used in energy efficient water and air purification products.	Received several million dollar private investments and was acquired in 2012; still based in Green Island.	\$399,000
Ener-g-Rotors – Rotterdam, NY (Founded in 2004)	Device to recapture industrial waste heat and convert it into electricity.	Several private investments including \$1.5 million from Bright Capital in 2012.	\$1.5 million in NYSERDA SBC funding plus Entrepreneur-in-Residence services.
Ephesus Technologies – Syracuse, NY (Founded in 2011)	First LED light both designed and manufactured in New York State.	Awarded a \$50,000 technology development grant from Syracuse Center of Excellence and \$1 million in NYS tax incentives.	\$100,000 in NYSERDA SBC funding, plus business incubation services.
Honest Buildings – New York, NY	Online network of buildings and building professionals to promote energy efficiency measures.	\$750,000 in seed and venture capital investment.	Business incubation and Entrepreneur-in-Residence services.



<b>Company</b>	<b>Product</b>	<b>Private/Outside Investment</b>	<b>NYSERDA SBC Funding</b>
Ioxus – Oneonta, NY (Founded in 2007)	Advanced Ultracapacitors used in wind turbines and hybrid vehicles.	Raised \$21 million with its second round of investment.	\$450,000 for product development and \$1.5 million for manufacturing scale-up paid as product is produced.
OptiCool Technologies – Rochester, NY	Energy-efficient refrigerant based data center cooling system.	More than \$4 million in private investment.	Business incubation services.
Paper Battery Company (Founded in 2009)	Flexible, thin batteries with potential applications including computer servers and electronics.	Raised over \$1 million in angel investments.	\$1.5 million in NYSERDA SBC funding, plus business incubation services.
ThinkEco – New York, NY	Plug-load management devices and cloud-based systems for low cost energy management and demand response.	More than \$11 million in private investment.	\$350,000 in NYSERDA SBC funding, plus business incubation services.
United Environment and Energy – Horseheads, NY (Founded in 2003)	Environmentally friendly, energy efficient, renewable/recycled materials used in roof coatings, energy-efficient windows, bioasphalt, and renewable energy.	\$1 million Federal Small Business Innovation Research (SBIR) grant to continue technology development.	\$568,000

### **3.3.3. Environmental Monitoring, Evaluation and Protection (EMEP)**

EMEP provides knowledge to reduce the adverse impacts associated with electricity generation that damages New York’s ecosystems and the health of its citizens, and it assists planning efforts for cleaner alternative options. Additionally, informing the clean energy technology industry

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about life cycle environmental impacts early in the development stage can minimize unanticipated negative effects and document the energy and environmental attributes of products. EMEP also provides critical energy-related environmental research to help support the regulatory responsibilities of a range of other agencies in New York State including the Department of Environmental Conservation, Department of Health, Department of State, and the Office of the Attorney General.

As planned, the EMEP program has initiated the updating of the multi-year environmental research plan with input from policymakers, scientists and stakeholders. Three meetings have been conducted to date: Ecosystem Response to the Deposition of Sulfur, Nitrogen and Mercury; Greenhouse Gas Reduction Strategies; and Environmental Issues Related to Kinetic Hydropower. Meetings targeting Air Quality and Health, Wind Energy Impacts, Climate Change Adaptation, and High-Volume Hydraulic Fracturing for Natural Gas Extraction will be conducted in 2013. A comprehensive assessment of ecosystem monitoring activities in New York State, funded with SBC3 funds, has concluded and is serving as a basis for streamlined, coordinated environmental monitoring activities in the state, some of which are now being supported through EMEP. In addition, seven new research projects with a focus on acid deposition and mercury monitoring have been contracted and 10 workshops and briefings have been conducted. Two new project planning requests have been approved in coordination with the research planning activities and will focus on comprehensive monitoring of atmospheric deposition, and ecosystem recovery and economic evaluation. New projects from these efforts are expected to be contracted in 2013.

As noted earlier, NYSERDA has historically funded EMEP projects with SBC3 resources. Prior historical accomplishments can be found in the SBC3 annual report through December 31, 2011.<sup>14</sup>

Table 3-12 shows the performance milestones and actual results of Environmental Monitoring and Protection Program through December 31, 2012. The table includes only those performance

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<sup>14</sup> See <http://www.nyscrda.ny.gov/Program-Evaluation/~media/Files/Publications/PPSER/NYES%20Program/2012/2011-nyes-evaluation.ashx>, Section 5.11.

milestones with anticipated achievements during the first two years (2012-2013) of the five-year program. The rightmost column indicates the actual achievement to date during the first year.

**Table 3-12. Environmental Monitoring Evaluation and Protection Performance Milestones and Actual Results**

		2012-2013 Anticipated	2012 Actual
Outputs/ Leading Indicators			
Environmental Monitoring Evaluation and Protection	Update multi-year EMEP research plan with input from policymakers, scientists, and stakeholders		EMEP has initiated an update of the multi-year environmental research plan with input from policymakers, scientists and stakeholders. Three meetings have been conducted to date. Additional meetings covering other topics will be conducted in 2013.
	Sign 60 contracts for research studies, including several large flagship projects	23	5
	Hold 5 Program Advisory Group meetings	2	2
	Hold 5 Science Advisory Committee meetings	2	2
	Sponsor 14 workshops, conferences or seminars	5	1
	Complete 65 research studies	5	NR

		<b>2012-2013 Anticipated</b>	<b>2012 Actual</b>
	Convene 30 briefings on research projects with policy-makers or other stakeholders	12	9
<b>Outcomes/Impacts</b>			
	\$11 M in leveraged funds (co-funding and outside investment) to support projects and sponsored research	\$3.5M	\$138,951
	Publish 119 peer-reviewed scientific journal articles based on program-supported research	10	3

Note: NR = Not Reported. See explanation at the beginning of Section 3.

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## **4 T&MD Program Evaluation Activities**

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NYSERDA evaluation staff has engaged its long-standing process evaluation contractor, Research Into Action, to conduct the early logic model, evaluability and process evaluation work. These activities began in June 2012 and will be undertaken according to the time line outlined in the T&MD Evaluation Plan.

As identified in the Plan, these early evaluation tasks have included development of program theory and logic models, and assessment of each major program to ensure readiness for future evaluation. By identifying and documenting inputs, activities, outputs, outcomes and external influences relevant to the program, theory and logic models are a good practice that will help to guide program implementation and program evaluation. Evaluability assessments will help ensure early on that the necessary program tracking or other data is being collected and recorded in a manner that will support examination, through a robust evaluation, of the ultimate outcomes and indicators identified for each program.

Through December 31, 2012, program theory and logic modeling activities were underway for the Advanced Codes and Standards, Clean Energy Business Development, Market Development and Advanced Buildings programs. Evaluability assessments will be developed for these programs upon completion of the theory and logic models.

The Operating Plan also identified that formative process evaluations would be conducted on most programs during the early stages of implementation and repeated periodically to examine program efficiency and effectiveness in light of the program's stated outcomes and impacts. Process evaluations typically include an assessment of customer and stakeholder satisfaction with programs. The goal of process evaluation is to inform real time adjustments and maximize program efficiency and effectiveness through actionable recommendations. These studies will mainly be conducted through in-depth interviews resulting in a qualitative assessment and will be supported by secondary research, such as

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review of program documents, as appropriate. Evaluations of NYSERDA's internal processes may also be conducted.

Process evaluation work will begin in early 2013 and will initially be undertaken by Research Into Action. The first process evaluations expected to be undertaken include:

- Advanced Clean Power Technology Innovation component,
- Advanced Buildings Technology Development component,
- Market Development Education to Change Behavior and Influence Choices component, and
- Clean Energy Business Development Direct Support for Business Acceleration.

In addition, during the early part of 2013, NYSERDA will competitively solicit a contractor to conduct process, market and impact evaluation on the T&MD portfolio. Attention will be placed on hiring a contractor, or team of contractors, with expertise in evaluating technology and market development program impacts. As noted above, given the near-term need for this information, early process evaluation and logic modeling activities are being conducted by NYSERDA's existing process/market evaluation contractor. The contractor, selected through this new solicitation, will conduct subsequent logic modeling and process evaluation work. The work, conducted by NYSERDA's evaluation contractors, will be closely coordinated such that data is collected from market actors in the most efficient and least burdensome manner and findings from formative evaluations are incorporated into subsequent studies.

In 2013 and going forward, the remaining logic model work will be completed as well as the completion of process evaluations on most of the remaining programs. It is expected that the new evaluation contractor will be under contract by mid-2013 and further development of a detailed multi-program evaluation plan will begin at that time.

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# Appendix A

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## NYSERDA T&MD Program Advisory Committee Members

**Richard Adams**

Manager  
NREL Innovation and Entrepreneurship  
Center, Center for Renewable Energy  
Economic Development

**Anthony Collins**

President  
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**Mark Duvall**

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**Kate Fish**

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**Dave Hewitt**

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**Ellis Rubinstein**

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The New York Academy of Sciences

**Robert Simpson**

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Northwest Energy Efficiency Alliance (NEEA)

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NYSERDA, a public benefit corporation, offers objective information and analysis, innovative programs, technical expertise and funding to help New Yorkers increase energy efficiency, save money, use renewable energy, and reduce their reliance on fossil fuels. NYSERDA professionals work to protect our environment and create clean-energy jobs. NYSERDA has been developing partnerships to advance innovative energy solutions in New York since 1975.

*To learn more about NYSERDA programs and funding opportunities visit [nyserda.ny.gov](http://nyserda.ny.gov)*

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**State of New York**  
Andrew M. Cuomo, Governor

## NYSERDA Technology & Market Development Program

Semi-Annual Report through December 31, 2012

**New York State Energy Research and Development Authority**  
Francis J. Murray, Jr., President and CEO