Energy Efficiency Portfolio Standard
Program Administrator Proposal

Prepared by

The New York State Energy Research and Development Authority

September 22, 2008

(Revised November 21, 2008)

Case 07-M-0548

Proceeding on Motion of the Commission

Regarding an Energy Efficiency Portfolio Standard

1. INTRODUCTION

1. BACKGROUND AND PURPOSE OF NYSERDA'S PROGRAM ADMINISTRATOR PROPOSAL

In its June 23, 2008 Order,[1] the New York State Public Service Commission (Commission) established the State's Energy Efficiency Portfolio Standard (EEPS). That Order approved a subset of "fast track" (Fast Track) programs to begin October 1, 2008. On August 22, 2008, NYSERDA filed a Supplemental Revision to its SBC Operating Plan that serves as the vehicle that incorporates the NYSERDA-applicable Fast Track programs into NYSERDA's existing SBC program portfolio. The Order also conditioned NYSERDA's eligibility for additional EEPS funding on the submission of a program plan to implement electric energy efficiency programs designed, at a minimum, to achieve NYSERDA's identified cumulative efficiency target through 2011. This Program Administrator Proposal (Program Proposal) serves to fulfill that condition.

2. PRESENTATION OF NYSERDA'S PROGRAM PROPOSAL

NYSERDA is submitting an extensive Program Portfolio that includes programs that are designed to address electric measures, either as new programs or enhancements of existing, successful programs; or to offer natural gas measures, either as stand-alone programs, or as natural gas components of existing or proposed electric programs. Certain programs apply to multiple energy-using sectors. Given the breadth of NYSERDA's proposal, it is organized into the following sections, as well as supporting appendices.

Section 2: Overview of NYSERDA's Program Proposal

Section 3: Programs for the Commercial and Industrial Sector

Section 4: Programs for the Residential Sector

Section 5: Cross Sector Programs

Section 6: Independent Program Administrator Proposals Submitted for Consideration by NYSERDA

3. SCOPE OF NYSERDA'S PROGRAM PROPOSAL

The goal of the EEPS is to reduce New York's electricity use by 15% from expected levels by 2015. During the first phase, reflected in the Appendix 3, Table 15 of the June 23, 2008 Order, NYSERDA was awarded $79.8 million to implement its "fast track" programs to achieve a target of 2,348,992 MWh of energy savings. The Order also conditioned NYSERDA's obtaining additional EEPS funding on the submission of a proposal that would achieve, at a minimum, an additional 693,901 MWh of energy savings by 2011. This Program Proposal includes a portfolio of programs that adopts a balanced approach to achieving NYSERDA's energy efficiency savings goal.[2] The entirety of NYSERDA's

[1] Case 07-M-0548, Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard, *Order Establishing Energy Efficiency Portfolio Standard and Approving Programs*, (issued and effective June 23, 2008).

[2] As identified in the June 23, 2008 Order, NYSERDA's Proposed Plan identifies additional programs that would provide, in the aggregate, for cumulative efficiency savings not lower than 693,901 MWh through 2011. This energy efficiency savings is net after the deduction of NYSERDA Fast Track Programs already approved in the June 23, 2008 Order.

Program Proposal is intended to represent a Statewide blended portfolio that addresses all energy consuming sectors, all regions, and all types of buildings and facilities found in New York.

The program portfolio contains a combination of carefully chosen enhancements to current NYSERDA programs with proven results for which much additional energy savings potential exists, as well as innovative new programs that accomplish the EEPS goals set forth for NYSERDA. In designing its portfolio, NYSERDA contemplated not only the near-term energy reductions, but has built a strategy to incorporate future infrastructure needs in anticipation of the next generation of equipment, systems, and industry requirements.

NYSERDA identified programs, that due to a whole-building approach, result in significant heating fuel savings. Recognizing the need to achieve aggressive electric aggressive electric savings through the EEPS, NYSERDA proposes that these identified programs be allocated gas efficiency funds. Some of these programs already receive gas funding as a result of Public Service Commission proceedings or agreements with gas utilities. NYSERDA seeks to continue and expand integrated electric and gas programs Statewide through 2011. Combined with SBC or EEPS funding, gas funds will enable programs to better address the need for high efficiency heating equipment, serve more customers, and provide significant reductions in energy bills at a time when energy prices make up a greater percentage of a household budget or a business expense. NYSERDA's proposal identifies each proposed program in its portfolio as seeking electric funding, gas funding or electric and gas funding.

NYSERDA continues to pursue greater levels of regional parity in program delivery. Strategies used include using local contractors, who best know their customers, to deliver services within markets, and by adjusting incentive levels within markets to enhance customer interest and increase participation in the programs. NYSERDA also tailors outreach, education and marketing to the region, making program adjustments in response to changing market conditions. To further meet the challenges in achieving regional parity and to better serve and educate consumers, NYSERDA regularly researches ways to increase participation by energy consumers in NYSERDA's programs.

4. NYSERDA'S COLLABORATIVE EFFORTS WITH UTILITIES

NYSERDA places a premium on objective analysis, as well as collaboration, reaching out to solicit multiple perspectives and share information. In order to successfully achieve the 15 by 15 goal, NYSERDA firmly believes that the EEPS must be a joint effort between NYSERDA and all other program administrators. NYSERDA continues to collaborate with utilities on many ongoing energy efficiency efforts always striving for electricity and natural gas savings and enhanced outreach and education of New York's energy consumers. It has been NYSERDA's experience that the response rate for program participation has been the highest in those regions where cooperative arrangements are underway, particularly with regard to cooperative marketing and outreach efforts.

In order for the 15 x 15 effort to succeed, NYSERDA and the utilities will need to collaborate. Since the June 23, 2008 Order, several meetings have occurred with the utilities resulting in many meaningful discussions on potential collaboration. At the request of the Joint Utilities, NYSERDA hosted a joint utility conference call and meeting on August 1, 2008, to discuss collaboration efforts at the State level. This was preceded and followed by individual conversations between certain utilities and NYSERDA regarding the type and nature of programs being considered by the parties.[3] In response to utility energy

[3] In particular, NYSERDA had meetings or calls with Con Edison, National Grid, NYSEG and RG&E, and Orange and Rockland Utilities.

efficiency proposals through other proceedings, additional conversations have ensued through collaborative discussions that address the relationship and relevance of the proceeding to the EEPS. NYSERDA has had several discussions with gas utilities in particular through that process.

In some program areas, the parties were able to segment the market in a manner that avoids direct competition for the same energy savings, while in other cases the parties identified areas of overlap that need to be addressed more fully. While some utilities clearly articulated that they oppose permitting customers to receive incentives from two entities toward the same energy savings, others felt that this would not pose a problem if the total of the incentive did not exceed the incremental cost of the measure. In addition, NYSERDA and some of the utilities acknowledge that in buildings where NYSERDA and the utility are providing services, there will be a need to determine how savings will be allocated between parties; whether incentive levels require coordination; and to establish processes to ensure customers are not receiving excessive incentives, impacting cost-effectiveness, driving up costs to the ratepayers, and potentially leading to double-counting of savings.

With regard to residential and low-income programs, NYSERDA has an understanding of which programs complement or overlap programs under consideration by Con Edision. The parties have had productive discussions on where additional coordination may be needed. NYSERDA also has a relatively good understanding of programs being considered by National Grid. NYSERDA is less aware of what programs may be considered by other utilities, but stands ready to more fully discuss coordination once program proposals are available. NYSERDA is primarily proposing Statewide programs and there may be overlap of particular programs with some utilities, but not with others.

NYSERDA and some utilities were able to develop a truly collaborative residential power management program that includes roles for both parties. It is unclear, due to the need to evaluate competing priorities, how many of the utilities who considered the program will include it in their proposals, but it exemplifies how a collaborative effort could be designed. The program is described in more detail in this proposal.

The results of NYSERDA's collaborative efforts are mixed, but have resulted in agreements-in-principle between NYSERDA and some utilities about the type of coordination needed on particular programs. From these discussions, NYSERDA believes that potential exists for streamlining the implementation of programs, sharing customer information, simplifying application processes, and coordinating outreach and marketing activities, while minimizing program overlap.

4.1. PROGRAM PORTFOLIO ELEMENTS

NYSERDA has proposed a Program Portfolio that offers energy efficiency savings opportunities for commercial and industrial, residential, multi-family, low-income and a suite of programs that traverse more than one energy-sector. Pursuant to the elements provided in the June 23, 2008 Order, NYSERDA's proposed Program Portfolio includes the following information for each proposed program.

Program Elements that encompass the Narrative Considerations referenced in Appendix 3:

- A *program description* that addresses goals, strategies and mechanics of the effort;
- Plans for measurement, verification and *evaluation* for each program;
- *Demand reduction and system benefits*, including any ancillary savings benefits, if applicable;
- How the program addresses *market segment needs*;
- *Coordination* efforts undertaken by NYSERDA in program design and anticipated for program implementation
- *Cobenefits* readily attributable to each program

- How the program complements other efforts to enhance EEPS *portfolio balance*;
- The *depth of savings* to be achieved through efficient program design;
- How the program will address underserved markets;
- NYSERDA's overall commitment to the program;
- Strategies for customer outreach;
- The collaborative approach taken by NYSERDA in program design and anticipated for program implementation;
- NYSERDA's efforts for fuel integration within individual programs;
- NYSERDA's plan for transparency with regard to the accessibility of program information; and
- The procurement process for those program elements not performed by NYSERDA.
- Program Selection Criteria for each program as set forth in Appendix 3:
- Total Resource Cost Test benefitcost ratio;
- Total Resource Cost Test benefitcost ratio, with carbon externality added, assuming a carbon value of $15 per ton (TRC plus C);
- MWh saved in 2015 if the program functions for as long as proposed by NYSERDA;
- MWof coincident NYISO peak demand reduction in 2015 if the program functions for as long as proposed by NYSERDA;
- Peak coincidence factor of MWh saved in 2015; and
- Number of participants as a percentage of the number of customers in class, as of 2015 (for select programs).

NYSERDA did not include individual program or portfolio screening metrics related to electric and natural gas rate impacts (Appendix 3, program screening metrics 2, 3, 4, 8, 10 and 11and portfolio screening metrics 1 and 2). NYSERDA intends to provide screening metrics related to electric and gas rate impacts in a separate supplemental filing. NYSERDA has been working with DPS Staff to obtain information needed to develop these analyses. NYSERDA recently received the information from DPS Staff to conduct the electric rate impact analysis, but the analysis is not yet complete.

For each program, NYSERDA did not include the estimated MWh saved in 2015 assuming the program continues to expand and extends through 2015 (Appendix 3, screening metric 5a), or the estimated MW of coincident NYISO peak saved in 2015 assuming the program continues to expand and extends through 2015 (Appendix 3, screening metric 6a). The estimated MWh and coincident peak MW reductions are affected by many factors. These factors include: changes to Federal appliance and equipment standards and State Energy Code; other programs offered by utilities or independent program administrators and their impacts on energy efficiency measure uptake and remaining potential; the ultimate rate and extent to which market transformation occurs for any specific measures supported by NYSERDA's planned programs; and economic conditions and energy prices. The specific quantifiable impact of these factors, some of which are outside of NYSERDA's direct control, and how they would ultimately affect future program extension and expansion are unclear. Therefore, NYSERDA proposes to formulate these projections once the full slate of EEPS program offerings and administrators is known, and when more complete information is available from program evaluation efforts on early progress and market conditions.

4.2. INDEPENDENT PROGRAM ADMINISTRATOR PROPOSALS

The proposed program portfolio also addresses the process used by NYSERDA to invite and evaluate proposals for independent program administrators to submit proposals to NYSERDA for new program ideas that could be implemented in the 2009–2011 time frame. The Commission directed that all proposals received by NYSERDA and the utilities from independent administrators be give serious consideration for inclusion in their proposed Program Plans. In response, NYSERDA undertook the process that is described in Section 6 of this Program Proposal, along with the results of that technical review.

II. OVERVIEW OF NYSERDA'S PROGRAM PORTFOLIO

1. NYSERDA PROGRAM PORTFOLIO

NYSERDA's Program Portfolio is designed to meet the cumulative efficiency savings target of not less than 693,901 MWh through 2011 as provided in Appendix 3, Table 10 of the June 23, 2008 Order. The portfolio includes programs that are designed to address electric measures, either as a new program or an enhancement of an existing, successful program; or to offer natural gas measures, either as a stand-alone program, or as a natural gas component of an existing or proposed electric program. Certain programs apply to multiple energy-using sectors. These aspects of NYSERDA's proposed portfolio are shown in Table II-1.

The commercial and industrial portion of NYSERDA's portfolio identifies a cost-effective array of 13 programs reflecting a combination of carefully chosen enhancements to proven programs and the establishment of innovative programs that can result in an expeditious accomplishment of the energy savings goals of the EEPS. New program designs have been incorporated to increase participation, avoid customer confusion, and shorten the process for receiving incentives.

The residential and low-income portion of NYSERDA's portfolio is comprised of a portfolio of 15 programs that build on successful programs established through the SBC and new programs and options that focus on maximizing electric savings. This portion of the portfolio identifies opportunities for achieving gas savings through comprehensive, whole-building programs. Of the programs proposed, six explicitly target lower income households (at or below 80 percent of the State Median Income or Area Median Income), accounting for 52% of the requested residential funding.

Three programs in NYSERDA's portfolio cut across sectors, providing reductions in electricity consumption and demand through more efficient electric transportation systems, improving control over energy demand through "Smart Grid" applications, and the development of a trained and competent workforce to deliver energy savings for all program administrators, Statewide. Although energy efficiency in residential and commercial buildings and industrial facilities will provide the bulk of the targeted savings, NYSERDA recognizes that much more energy savings can be achieved by looking at the infrastructure of our communities.

With the funding requested to make commitments through 2011, the Program Portfolio is projected to achieve 751,698 MWh and 8,680,750 MMBtu of savings by 2011, and an additional 272,748 MWh and 1,069,822 MMBtu by 2015.

Throughout the development of this portfolio, NYSERDA continued to collaborate with several of the State's investor-owned electric and gas utilities through joint meetings and conference calls, individual meetings and administrative proceeding forums. These discussions further informed the development of NYSERDA's proposed program portfolio and efforts to streamline program offerings, increase sharing of customer information, and further coordination of outreach and marketing activities.

2. NYSERDA'S PROGRAM PORTFOLIO BUDGET

NYSERDA is proposing a total additional program portfolio budget of $611.5 million through 2011. Of that, $190.5 million is allocated to fund programs for the commercial and industrial sector; $305 million is allocated to the residential and low-income sector (with $146.2 million allocated to the market rate sector and $158.8 million to the low-income sector) and $42.6 million to that portion of the portfolio that addresses multiple sectors. The budget includes $73.4 million for program administration and evaluation.

Table II-1. NYSERDA Program Portfolio

	Funds Requested			Cumulative Total MWh Savings	Cumulative Total MMBtu Savings
	Electric	Gas	Total		
Commercial and Industrial					
Advanced Burners		$6,000,000	$6,000,000		600,000
Benchmarking	$14,520,000		$14,520,000	84,000	420,000
Business Partners	$9,510,000		$9,510,000	70,533	
Existing Facilities	$47,080,000	$10,470,000	$57,550,000	300,000	1,050,000
Flex Tech Expansion		$2,633,000	$2,633,000		658,207
Industrial Process and Efficiency		$31,071,000	$31,071,000		3,452,295
Institutional Block RFP (Bidding Program)	$10,905,840	$2,558,160	$13,464,000	60,000	210,000
Loan Fund	$10,723,152	$1,420,848	$12,144,000	29,739	483,000
New Construction		$11,114,000	$11,114,000		1,145,742
Solar Thermal	$300,000	$600,000	$900,000	120	1,260
Statewide CHP	$25,608,000		$25,608,000	120,000	(810,000)
Waste Energy Recovery	$3,000,000	$3,000,000	$6,000,000	7,884	120,000
Subtotal	$121,646,992	$68,867,008	$190,514,000	672,276	7,330,504
Residential (Low Income)					
Assisted Home Performance		$48,719,886	$48,719,886	479	442,194
Electric Reduction in Master –Metered Multifamily Buildings	$26,892,000		$26,892,000	51,177	15,207
EmPower		$27,450,000	$27,450,000		274,320
Geothermal Heat Pump System Incentives	$3,960,000		$3,960,000	18,312	
MFPP Expansion	$25,089,424	$22,430,577	$47,520,001	38,112	475,956
Solar Thermal Incentives	$4,224,000		$4,224,000	7,200	
Subtotal	$60,165,424	$98,600,463	$158,765,887	115,280	1,207,677
Residential (Market Rate)					
Electric Reduction in Master-Metered Multifamily Buildings	$17,928,000		$17,928,000	34,119	10,137
Energy Star Homes		$24,110,000	$24,110,000	1,724	907,969
Geothermal Heat Pump System Incentives	$3,960,000		$3,960,000	18,309	
Green Homes	$613,800	$6,026,200	$6,820,000	800	35,290
Home Performance		$43,155,000	$43,155,000	969	693,968

	Funds Requested			Cumulative Total MWh Savings	Cumulative Total MMBtu Savings
	Electric	Gas	Total		
MFPP Expansion	$16,726,283	$14,953,718	$31,680,000	44,238	195,465
Power Management	$3,000,000		$3,000,000	46,365	
Remodel with Energy Star	$11,367,000		$11,367,000	13,311	
Solar Thermal Incentives	$4,224,000		$4,224,000	7,200	
Subtotal	$57,819,083	$88,424,918	$146,244,001	167,035	1,842,829
Cross-Cutting Programs					
Enhanced Electrified Rail	$15,000,000		$15,000,000	60,000	
Smart Grid	$11,352,000		$11,352,000	16,500	
Workforce Development	$16,255,000		$16,255,000		
Subtotal	$42,607,000	$0	$42,607,000	76,500	
Program Total	$282,238,499	$255,892,389	$538,130,888	1,031,091	10,381,010
Administration (7% of Total)	$22,450,790	$20,355,076	$42,805,866		
Evaluation (5% of Total)	$16,036,278	$14,539,340	$30,575,619		
Portfolio Total	$320,725,567	$290,786,806	$611,512,373	1,031,091	10,381,010

3. PROJECTED ENERGY EFFICIENCY SAVINGS (MWH AND MMBTU) FROM NYSERDA'S PROGRAM PORTFOLIO

NYSERDA's program portfolio will result in both electricity (MWh) savings, as well as gas savings (MMBtu). The anticipated electricity savings results from NYSERDA's Program Portfolio for the years 2009 through 2015 are shown in Table II-2.

Table II-2. Anticipated Annual MWh Results from NYSERDA's Program Portfolio (2009-2015)

	2009	2010	2011	2012	2013	2014	2015	*Cumulative Total*
Commercial Industrial								
Benchmarking	14,000	23,240	28,000	14,000	4,760	-		*84,000*
Business Partners	23,511	23,511	23,511	-	-	-		*70,533*
Existing Facilities	25,000	50,000	100,000	100,000	25,000	-		*300,000*
Institutional Block RFP (Bidding Program)	-	24,000	36,000	-	-	-		*60,000*
Loan Fund	9,913	9,913	9,913	-	-	-		*29,739*
Solar Thermal	-	20	40	40	20	-		*120*
Statewide CHP	-	-	13,700	29,700	41,200	26,300	9,100	*120,000*
Waste Energy Recovery	-	2,628	2,628	2,628	-	-		*7,884*
Subtotal	*72,424*	*133,282*	*213,792*	*146,368*	*70,980*	*26,300*	*9,100*	*672,276*
Residential and Low-Income								
Low-Income								
Assisted Home Performance (Gas)	145	159	175	-	-	-	-	*479*
Electric Reduction in MM MF Buildings	17,059	17,059	17,059	-	-	-	-	*51,177*
Geothermal Source Heat Pumps	6,104	6,104	6,104	-	-	-	-	*18,312*
MFPP Expansion	12,704	12,704	12,704	-	-	-	-	*38,112*
Solar Thermal Incentives	2,400	2,400	2,400	-	-	-	-	*7,200*
Subtotal	*38,412*	*38,426*	*38,442*	-	-	-	-	*115,280*
Market Rate								
Electric Reduction in MM MF Buildings	11,373	11,373	11,373	-	-	-	-	*34,119*
Energy Star Homes (Gas)	496	546	682					*1,724*
Geothermal Source Heat Pumps	6,103	6,103	6,103	-	-	-	-	*18,309*
Green Homes	-	400	400	-	-	-	-	*800*
Home Performance (Gas)	294	322	353	-	-	-	-	*969*
MFPP Expansion	14,746	14,746	14,746	-	-	-	-	*44,238*
Power Management	12,505	15,455	18,405					*46,365*
Remodel with Energy Star	3,651	4,458	5,202	-	-	-	-	*13,311*

	2009	2010	2011	2012	2013	2014	2015	*Cumulative Total*
Solar Thermal Incentives	2,400	2,400	2,400	-	-	-	-	*7,200*
Subtotal	*51,568*	*55,803*	*59,664*	-	-	-	-	*167,035*
Residential Subtotal	*89,980*	*94,229*	*98,106*	-	-	-	-	*282,315*
Cross Cutting Programs								
Enhanced Electrified Rail	-	20,000	20,000	20,000	-	-	-	*60,000*
Smart Grid	-	6,500	10,000	-	-	-	-	*16,500*
Subtotal	-	*26,500*	*30,000*	*20,000*	-	-	-	*76,500*
TOTAL	**162,404**	**280,511**	**371,898**	**166,368**	**70,980**	**26,300**	**9,100**	**1,024,4761,024,476**

The anticipated natural gas savings results from NYSERDA's Program Portfolio for the years 2009 through 2015 are shown in Table II-3.

Table II-3. Anticipated Annual MMBtu Results from Requested Funding (2009 – 2015)

	2009	2010	2011	2012	2013	2014	2015	*Cumulative Total*
Commercial Industrial								
Advanced Burners	-	200,000	200,000	200,000	-	-	-	*600,000*
Benchmarking	70,000	116,200	140,000	70,000	23,800			*420,000*
Existing Facilities	90,000	175,000	350,000	350,000	85,000	-	-	*1,050,000*
Flex Tech Expansion (Gas)	26,118	73,596	134,111	161,908	139,395	80,103	42,976	*658,207*
Industrial Process and Efficiency (Gas)	503,460	813,328	1,056,365	876,558	202,284	-	-	*3,452,295*
Institutional Block RFP (Bidding Program)	-	84,000	126,000	-	-	-	-	*210,000*
Loan Fund	161,000	161,000	161,000	-	-	-	-	*483,000*
New Construction (Gas)	103,117	137,489	263,521	297,893	252,063	91,659	-	*1,145,742*
Solar Thermal	-	210	420	420	210	-	-	*1,260*
Statewide CHP*	-		(92,475)	(200,475)	(278,100)	(177,525)	(61,425)	*(810,000)*
Waste Energy Recovery	-	40,000	40,000	40,000	-	-	-	*120,000*
Subtotal	*883,539*	*1,730,977*	*2,308,796*	*1,796,304*	*424,652*	*(5,763)*	*(18,449)*	*7,120,066*
Residential and Low-Income								
Low-Income								
Assisted Home Performance (Gas)	134,111	146,986	161,097	-	-	-	-	*442,194*
Electric Reduction in MM MF Buildings	5,069	5,069	5,069	-	-	-	-	*15,207*
EmPower (Gas)	45,720	91,440	91,440	45,720	-	-	-	*274,320*
MFPP Expansion	158,652	158,652	158,652	-	-	-	-	*475,956*
Subtotal	*343,552*	*402,147*	*416,258*	*45,720*	-	-	-	*1,207,677*
Market Rate								

	2009	2010	2011	2012	2013	2014	2015	*Cumulative Total*
Electric Reduction in MM MF Buildings	3,379	3,379	3,379	-	-	-	-	*10,137*
Energy Star Homes (Gas)	259,605	288,162	360,202	-	-	-	-	*907,969*
Green Homes	-	17,645	17,645	-	-	-	-	*35,290*
Home Performance (Gas)	210,471	230,676	252,821	-	-	-	-	*693,968*
MFPP Expansion	65,155	65,155	65,155	-	-	-	-	*195,465*
Subtotal	*538,610*	*605,017*	*699,202*	-	-	-	-	*1,842,829*
Residential Subtotal	*882,162*	*1,007,164*	*1,115,460*	*45,720*	-	-	-	*3,050,506*
TOTAL	**2,343,016**	**2,959,078**	**3,378,656**	**895,466**	**198,568**	**(5,763)**	**(18,449)**	**10,170,572**

NOTE: Sums may not total due to rounding.

*Because the electricity saved by the DG/CHP projects replaces electricity previously purchased from the grid, the program has reduced fuel used at central generating stations, for a net decrease statewide due to greater efficiency of the DG/CHP systems at sites where imported fuel is used. The fuel avoided at the central generating plant is determined from the electricity generated by the DG/CHP installations. Furthermore, at additional projects such as waste water treatment plants, electricity generation is powered fully or partially by digester gas produced on site. Such fuel switching achieves natural gas conservation above and beyond what is achieved through efficiency alone.

4. Overarching Evaluation Plan for NYSERDA Program Portfolio

The June 23, 2008 EEPS Order called for NYSERDA to file, within 60 days, a Transition Plan identifying steps that will be taken to enhance NYSERDA's program evaluation efforts. The Order specifically directed NYSERDA to describe planned enhancements to evaluation, measurement and verification, including (a) creation of a uniform database allowing more comparable evaluation of programs, and (b) increased detachment of NYSERDA from evaluation contractors, and increased involvement of DPS Staff in oversight of evaluation. The NYSERDA Transition Plan contains a full discussion of these issues which are relevant to the evaluation of programs proposed in this filing.[4]

4.1. Evaluation Reporting and Benefit Cost Analysis

Each year, NYSERDA and its evaluation contractors will prepare three quarterly reports and one annual report covering both the SBC-funded **New York Energy $mart**[SM] Program and EEPS portfolio progress to date. NYSERDA will further consult with DPS Staff and the EEPS Evaluation Advisory Group (EAG) to modify the existing format of the SBC Program quarterly and annual reports, as needed, in order to also fulfill reporting needs for EEPS programs. The quarterly and annual reports will show NYSERDA's tracking or allocation of committed funds, spending, and energy savings to both SBC and EEPS.

[4] NYSERDA, *NYSERDA Transition Plan for Enhancing Program Evaluation*, Prepared for the New York State Public Service Commission, Case 07-M-0548 Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard, filed August 22, 2008.

The quarterly and annual reports will include: financial status, program progress indicators, energy savings[5], peak demand reductions, customer bill savings, and progress toward goals. As available from program-specific evaluation work, recommendations made by NYSERDA's evaluation contractors and NYSERDA's response will also be included. NYSERDA will also make available copies of all detailed reports prepared by evaluation contractors to support the quarterly and annual reports, and will work with DPS Staff, the EAG, and the EEPS evaluation advisor consultant, as needed, on the development of these detailed reports.

Quarterly reports will be provided to the Commission within 60 days of the end of each calendar quarter. The annual report will substitute for the fourth quarterly report, summarizing program and portfolio progress throughout the calendar year. The annual report will be submitted to the Commission within 90 days of the end of the calendar year.

Monthly status "scorecard" reports will also be provided to DPS by NYSERDA. These reports will document key, summary level information on program funding, participants, and energy savings. While NYSERDA will endeavor to provide the most accurate information possible in the scorecard reports, they will not reflect the same adjustments and quality controls as the quarterly and annual evaluation reports.

Detailed reports presenting results from evaluation studies conducted by NYSERDA's evaluation contractors will be provided to DPS and the EAG upon completion. NYSERDA also expects to involve DPS and the EAG in the evaluation process leading up to the delivery of these detailed reports. Final reports will align with requirements set forth in the DPS evaluation guidelines, and will include: methodology, key results, recommendations, summary and conclusions, and appendices with detailed documentation.

Once per year, NYSERDA will update benefit/cost ratios (at a minimum, Total Resource Cost test) for each major program and for the entire portfolio of SBC-funded **New York Energy $mart**[SM] and EEPS programs. NYSERDA will conduct benefit/cost analysis for its programs in a manner consistent with other program administrators, as appropriate. NYSERDA has worked with its evaluation contractors over the years to conduct benefit/cost analyses on the SBC program, and has knowledgeable staff and a tool in place to accomplish benefit/cost analyses for all of its SBC and EEPS programs. NYSERDA is prepared to make adjustments to its current practice should DPS Staff or the EAG decide that alternative methods, tools, or inputs are superior or would foster greater consistency among program administrators.

4.2. EVALUATION PLANS

Background Information

This filing includes preliminary, specific evaluation plans for each of NYSERDA's proposed programs or program components. Each specific evaluation plan was developed based on NYSERDA's current plans for design and administration of the programs.

These evaluation plans have been prepared using best efforts and allow NYSERDA and its independent evaluation contractors flexibility to adapt the approaches that best suit the program as implemented, the final evaluation protocols, and the ultimate available funding, after accounting for overarching studies and other higher-level evaluation costs. NYSERDA's estimated evaluation budget for each program will

[5] NYSERDA will report cumulative annual energy savings for each program and the portfolio of programs. Cumulative annual savings will be adjusted to reflect the results of measurement and verification and attribution (net-to-gross) evaluation studies conducted in compliance with the evaluation protocols developed by the DPS Staff. For programs receiving both EEPS and SBC funding, energy savings will be allocated to each funding source.

include a modest set-aside for developing a full evaluation plan with DPS Staff and EEPS EAG involvement. NYSERDA will endeavor to comport with evaluation guidelines and protocols set forth by DPS Staff. NYSERDA will also reference the guidelines put forth by the American Evaluation Association for conducting ethical evaluations.[6]

Budget Considerations

With regard to the evaluation of the proposed programs, NYSERDA arrived at approximate budgets for those efforts based on a consideration of: each program's expected spending and energy savings; possible program participation levels; expected distribution of savings across the population of participants; nature of each program's design and intervention strategies; and, where applicable, prior evaluation methods, results, level of rigor/reliability attained, and remaining uncertainty. Based these considerations, allocations for program-specific evaluation efforts are not necessarily equal to 5% across the proposed programs and program elements. Furthermore, given the current uncertainty about overarching needs for evaluation funding, and without a full picture of future program offerings, the program-specific evaluation plans contained herein are intended to serve as illustrative examples at this early stage in the process. To the extent that the proposed programs represent expansions of current programs, those programs will be evaluated in total (i.e., all funding sources). Therefore, the preliminary, program-specific evaluation plans and budgets for some programs will likely be expanded to address all funding sources in the same manner described, and through a single comprehensive evaluation effort. Program impacts will then be allocated to each funding source.

Staff/Consultant Resources and Ethical/Operational Considerations

In order to provide timely evaluation of the EEPS programs, and to provide for cost-effective integration of the enhanced SBC evaluation with the EEPS program evaluations, NYSERDA plans to utilize its current group of evaluation contractors to the extent possible. Current evaluation contracts will be modified, as necessary, to allow for the conduct of this additional work. Should other evaluation contractor support be necessary to provide for the enhanced level of evaluation, NYSERDA will use its competitive procurement process to obtain these resources. However, selection of new contractors may alter the ultimate timing of evaluations proposed herein.

NYSERDA's current evaluation contractors are organized into three specialty evaluation teams covering: impact evaluation,[7] process evaluation, and market characterization and assessment. All of the major program-specific evaluation activities covered by the DPS evaluation guidelines are represented by these teams. NYSERDA also currently has a survey data collection contractor that serves the large-scale data collection needs of each of the three specialty evaluation contractor teams. Each of NYSERDA's evaluation contractor teams was competitively selected using NYSERDA's rigorous solicitation process.

Management of evaluation contractors, and overall management of the evaluation effort, will be conducted by NYSERDA's Energy Analysis group. The Energy Analysis group has no program administration or implementation functions, and is organizationally separate from NYSERDA's other groups that perform these functions. NYSERDA and its evaluation contractors follow the American Evaluation Association's Guiding Principles for Evaluators. These principles call for: systematic

[6] American Evaluation Association (AEA), Guiding Principles for Evaluators, www.eval.org. See source for a full explanation of these guiding prineiples.

[7] NYSERDA's current impact evaluation team is responsible for measurement and verification, net-to-gross analysis, research and development impact evaluation, and assisting with benefit/cost analysis.

inquiry, competence, integrity, honesty, respect for people, and responsibility for general and public welfare.

5. INDEPENDENT PROGRAM ADMINISTRATOR PROPOSALS CONSIDERED BY NYSERDA

Section 6 of this Proposal provides information on the independent program administer proposals received by NYSERDA and the process for their evaluation. NYSERDA issued a Program Opportunity Notice (PON) to provide a vehicle for independent program administrators to submit proposals and for NYSERDA to evaluate any such proposals. The PON was a competitive solicitation that sought proposals for innovative programs that would not duplicate programs currently being offered by NYSERDA, or the utilities, or assigned to NYSERDA or utilities in the June 23, 2008 Order. The selection criteria stated in the PON were adopted from the June 23, 2008 Order as contained in Appendix 3.

In response to the PON, twelve proposals were submitted to NYSERDA and reviewed by a Technical Evaluation Panel (TEP). The TEP recommendations were submitted to NYSERDA's Management Review Process and two proposals, from EnerNoc, Inc. and EnSave, Inc., were found to merit further investigation and are attached as Appendices B and C to this Proposal. NYSERDA has notified all proposers as to their status of inclusion in or omission from this filing. No funding has been included in this Program Proposal to accommodate the two proposals found to merit further investigation.

III. COMMERCIAL AND INDUSTRIAL PROGRAMS

This section of NYSERDA's Program Administrator Proposal Filing identifies a cost-effective portfolio of commercial and industrial (C/I) programs that, based on NYSERDA's longstanding experience, could reasonably result in meeting a significant portion of NYSERDA's mandated MWh reduction goals. The C/I portfolio comprises a combination of carefully chosen enhancements to proven programs and the establishment of innovative programs that can result in an expeditious accomplishment of the energy savings goals of the Energy Efficiency Portfolio Standard. New program designs have been incorporated to increase participation, avoid customer confusion, and shorten the process for receiving incentives.

As stated in the June 23, 2008 EEPS Order, the expansion and enhancement of existing, proven programs is the most reasonable and expeditious way to accomplish the goal of accelerating savings, particularly in light of the substantial period of time that NYSERDA programs have been rigorously and transparently evaluated. The extensive evaluation of NYSERDA's C/I programs provides solid metrics with which to reasonably project the effectiveness and results of NYSERDA's proposed C/I portfolio.

Twelve programs propose a combination of electric-only, gas-only, and a combination electric & gas savings. Five programs are requesting electric and gas funding (Existing Facilities, Loan Fund, Block Bidding for Commercial/Institutional Programs, Solar Themal for Commercial and Industrial Applications,, and Waste Energy Recovery Systems). Three additional programs are requesting electric-only funding (CHP, Benchmarking and Operations Efficiency Program, and Business Partners). Finally, four request gas-funding only programs (Flexible Technical Assistance, Industrial Process, New Construction, and Advanced Burners). Additional funding for gas measures is requested to provide comprehensive, fuel-neutral programs.

The programs provide a multifaceted approach to energy reductions, by targeting vendors, end-use customers, contractors, design professionals, and the financial community. The focus is primarily on achieving energy savings from the more complex, large building and facility projects, using a whole-building approach. Incentive structures for end-users, along with efforts that encourage mid-stream energy product and service providers to sell and install efficient systems are designed to build on NYSERDA's success in transforming markets for efficiency in New York State. New efforts to deploy solar thermal systems, waste energy recovery systems, and advanced burners will determine the viability of these technologies and the contribution their installation can make to energy use reduction goals.

The programs were developed in collaboration with a variety of stakeholders and, addition to contributing to the State's EEPS goals, also support the public policy objectives as outlined in the Governor's Renewable Energy Task Force Report, and PlaNYC.

1. Statewide Combined Heat and Power Performance Program (Electric)

1.1. Description of Program

Performance-based installations of combined heat and power (CHP) systems are proposed as eligible measures in the portfolio of programs administered by NYSERDA to meet the 2015 goals identified in the Order. CHP systems can provide substantial impacts by increasing energy efficiency and relieving stresses on transmission and distribution (T&D) systems. Benefits are achieved by focusing on environmentally clean, energy efficient, cost-effective, and commercially available CHP systems that are properly sized for each specific application. To help achieve these goals, NYSERDA recently expanded statewide the existing CHP Performance Program piloted only in the Con Edison service territory. NYSERDA also increased the incentives for Con Edison customers.

Previously, NYSERDA built upon its successful joint distributed generation (DG) and CHP demonstration program to offer incentives on a first-come, first-served performance basis for CHP systems that provide summer on-peak-demand reduction. This program was a key part of the portfolio of programs that NYSERDA issued to meet the goals for the Con Edison System Wide Program (SWP).

Since program inception in 2006, NYSERDA has offered incentives to 10 CHP projects representing 27 MWs of summer peak-demand reduction and almost 204,000 MWh in energy savings in the Con Edison service territory.

The Statewide Combined Heat and Power Performance Program (Statewide CHP Program) will continue to focus on clean, efficient, cost-effective, commercially available systems that provide the maximum ratepayer benefit. The program requires systems to achieve 60 percent fuel conversion efficiency on an annual basis with considerable incentive reductions for non-performance.

Unlike other energy efficiency measures, CHP projects are large complex projects with long lead times that provide reliably persistent savings. The viability of CHP projects is affected by numerous external variables including the difference between electric and gas prices ("spark spread"), siting and space constraints, adequate fuel supplies, and interconnection issues. The anticipated savings from this program are dependent on the interaction of these variables. However, electric savings can be quite significant over the long term. Table III-2 shows anticipated installed MWh for the CHP Program.

Table III-1 is the anticipated expenditures for the CHP Program. Since this program makes multiple payments based upon actual performance, program expenditures are expected to continue beyond 2015.

1.2. Demand Reduction and System Benefits

CHP systems can help alleviate stress on the T&D system and defer upgrades, especially in load pockets where capacity is strained. The CHP Program will focus on incentives for systems that operate during peak load periods. Systems must operate more than 60 percent of the time from May 1 to October 31 from 12 PM to 6 PM. The CHP Program anticipates 27 MW of demand reduction and 120,000 MWh of savings by 2015.

Table III-1. Statewide Combined Heat and Power Performance Program — Total Program Expenditures (Projected and net of administration and evaluation) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual EEPS Spending	$0.41M	$0.58M	$1.88M	$3.72M	$5.97M	$6.17M	$4.45M
Outreach / Marketing	$0.34M	$0.51M	$0.51M	$0.17M	$0	$0	$0

	2016	2017	Total
Annual EEPS Spending	$1.90M	$0.52M	$25.60M
Outreach / Marketing	$0	$0	$1.54M

Table III-2. Statewide Combined Heat and Power Performance Program — Electric Installed MWh Impacts (Projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings Installed in the Current Year	0	0	13,700	29,700	41,200	26,300	9,100
Annual Savings Installed in Prior Years	n/a	0	0	13,700	43,400	84,600	110,900
Cumulative Annual Savings	0	0	13,700	43,400	84,600	110,900	120,000

NYSERDA has developed initial evaluation plans with the intention of providing the necessary rigor and reliability for metrics used by the NYISO and transmission and distribution system planners. NYSERDA will continue to work with DPS Staff and the EEPS Evaluation Advisory Group to devise final evaluation plans that meet established protocols and produce results that can be used as inputs for system planning and forecasting.

1.3. EVALUATION

General Evaluation Approach

Evaluation Goals

The primary goal of the Statewide CHP Program evaluation is to assess the energy and demand savings attributable to program activities. The secondary goal of the evaluation is to foster an understanding of the market to help tailor the program to the needs of the audience and assist in creating an efficient program delivery mechanism.

Brief Overview of the Evaluation Approach

The evaluation approach presented in this section was designed based on NYSERDA's current plans for the design and administration of the Statewide CHP Program, and in the absence of complete knowledge

about final evaluation protocols, and potential funding set-asides and plans for overarching evaluation projects that would serve the needs of all EEPS program administrators. Thus, these plans have been prepared in order to afford NYSERDA and its independent contractors flexibility to adapt the evaluation approaches that best suit the program as implemented once a greater understanding is in place regarding final evaluation protocols and funding.

To the extent that NYSERDA's original and ongoing SBC-funded Distributed Generation/Combined Heat and Power Program can be evaluated using the same approaches and time lines outlined in this section, NYSERDA will supplement this plan to include additional resources from the enhanced SBC3 evaluation funding. NYSERDA's estimated evaluation budget for this program includes a set-aside for developing a full evaluation plan, an effort that will involve DPS Staff and the EEPS Evaluation Advisory Group.

This evaluation plan for the Statewide CHP Program emphasizes impact evaluation, including measurement and verification and net-to-gross analysis. The evaluation plan also includes more modest process evaluation and market studies.

Evaluation Budget

NYSERDA expects evaluation budget for the Statewide CHP Program to be approximately equal to 5% of the program funding level, less funds set aside for statewide studies and other overarching costs borne by program administrators. The majority of the Statewide CHP Program evaluation budget will be allocated to impact evaluation (approximately 60%). Process evaluation is expected to require approximately 25% of the program's evaluation budget, and market evaluation is expected to receive the remaining funds (15%).

Evaluation Schedule

Evaluation studies included as part of the Statewide CHP Program evaluation plan are shown in the table below along with the time frame for their anticipated completion. The evaluation plan is expected to include multiple measurement and verification, net-to-gross, and process evaluation studies. One market evaluation is planned for completion in 2009.

Table III-3. Statewide CHP Performance Program Evaluation Schedule

Evaluation Element	Expected Completion					
	2009	2010	2011	2012	2013	2014
Impact - M&V				X		X
Impact - Net-to-Gross		FR-MR	SO, FR-MR			SO
Process Evaluation		X		X		
Market Evaluation	X					

FR = Freeridership MR = Targeted market research for NTG analysis SO = Spillover

Impact Evaluation

Measurement and Verification

The Statewide CHP Performance Program design links incentive payment to performance, and monitoring will be done through an existing web-based central database. This data collected as part of the program design is expected to provide a solid basis for a thorough, balanced measurement and verification of the electricity generated and net thermal benefits experienced by each facility. The initial

step will be to review and assess the quality and comprehensiveness of the metered data. If the data sets are complete, there may be little value gained in spending limited evaluation funds to perform additional metering as the Web site will also record any downtime. M&V work may be largely focused on verification of the baseline assumptions for each project. If needed, strategies will be developed for addressing gaps in the data, including additional metering and on site data collection. In addition, it is possible that additional information from the participants may be needed to interpret the metering data. For example, interviews with participants may shed light on the reasons for a lengthy shut down of the equipment. For projects with complete data, M&V work will focus on the baseline assumptions for each project. Given the long development times for CHP systems, M&V will likely be scheduled for the years 2012 and 2014, but is subject to change to match the pace of installations.

During the more detailed evaluation planning process NYSERDA will assess the benefits versus costs of undertaking a persistence impact evaluation for this program. The Statewide CHP Program requires the site to meet overall system efficiency standards for two (2) years to get the full incentive. There is no evaluation experience as to the level of persistence after this period.

Net-to-Gross

NYSERDA intends to explore participant and non-participant spillover and participant freeridership using an enhanced self-report survey process with multiple decision-makers including building owners, chief financial officers, vendors, technical assistance providers, etc. involved in adopting combined heat and power systems. Sample sizes will be calculated on kWh generated to target 90% confidence and 10% sampling precision at the program level. If budget permits, 90/10 confidence could be achieved at the utility level. Participant population sizes, however, may likely afford census attempts whereby the greatest consideration is in maximizing survey participation and reducing potential respondent bias. The surveys will include alternative inquiries to test and provide construct validity for the NTG estimates. Given the long-term nature of CHP Projects, attribution analysis will be conducted beginning in 2010 for freeridership and will include an analysis of spillover in 2011. If budget permits, this work could be updated in 2014 or at the conclusion of accrual of program benefits. This effort may also leverage a current NYSERDA evaluation that is assessing replications from demonstration projects funded by the Research and Development programs.

Process Evaluation

Process evaluation activities will focus on the participation and decision making process in the Statewide CHP Performance program. The process evaluation is expected to include both participants and non-participants. The program implementation team will track individuals who request information about the program services. Those who do not know of nor participate in the program will form the non-participant population. Areas of inquiry expected for the process evaluation work include:

- Attrition analysis focusing on the reasons for non-participation and drop out at different stages
- Barriers to participation
- Value of services provided to business (non-energy and monetary)
- Overall customer satisfaction with the program services and equipment installed
- Examination of customer decision making, including roles of individuals involved and factors influencing the decision

The process evaluation work is expected to generate actionable recommendations for possible improvements to the program. Given the anticipated small number of program participants, a census survey could be attempted. It is expected that a process evaluation will be conducted at two points in

time: first, approximately a year after the program start date so as to provide early feedback regarding the program processes and participation rates; and second, in approximately the third year to further explore reasons for attrition.

Because the process evaluation will be in the field a year before the impact evaluation starts, the process evaluation contractor will be responsible for conducting an "evaluability assessment" and data review for the program. This exercise will help ensure that data that will ultimately be needed for impact evaluation are being collected and stored appropriately. The evaluability assessment will be undertaken as part of the first process evaluation activity. Recommendations for data collection, validation and organization will be included as part of the first process evaluation report, and feedback to NYSERDA will be transmitted as findings and recommendations are available.

Market Evaluation

Considerable untapped potential exists for CHP in New York State. Given that merely a fraction of that potential has been met to date, market characterization and assessment work will be structured to explore the factors hindering greater market uptake of CHP systems. Primary data collection with key market actor groups will be used to explore market awareness and knowledge of CHP opportunities, perceived market barriers such as first cost, fear of new technology, and lack of expertise, among others; and primary decision making criteria and motivations for installation including reduced operating costs, ability to attract buyers/tenants, mitigating climate change, etc. Secondary data sources will be mined to characterize the market eligible to participate in the program along several dimensions including the size and influence of key market actor groups and the relationships and dynamics among those groups. This work should be completed in the first year of program implementation in the event that training and development of the market delivery infrastructure is warranted.

Evaluation Plan Variations

Given the level of uncertainty regarding final evaluation protocols, statewide studies to be conducted by all program administrators, and funding levels needed to support overarching evaluation studies and activities, the evaluation plan presented in this section should be viewed as scalable and flexible. Specifically, if the total evaluation budget for this program needs to be reduced, the Market or Process work would be curtailed in scope and possibly frequency. Conversely, if more of NYSERDA's total evaluation funding could be allocated to this program, the additional funds could be used for more site-specific data collection as part of the impact evaluation and larger sample sizes, *e.g.*, by utility service territory.

1.4. Market Segment Need

Based on a 2002 study, considerable potential exists for CHP systems in New York State[8]. The study identified approximately 8,500 MW of technical CHP potential in the State and identified sites with both a high load factor and high thermal utilization as good candidates for cost-effective CHP. Potential sites addressed in the study included commercial, industrial, and institutional facilities.

[8] Energy Nexus Group Onsite Energy Corporation and Pace Energy Project, *Combined Heat and Power Market Potential for New York State*, NYSERDA Report 02-12, October 2002.

1.5. COORDINATION

NYSERDA has met numerous times with representatives of New York utilities to discuss different approaches to meeting MWh goals. Currently, NYSERDA is the only program administrator offering a performance-based, standard offer Statewide CHP Program. Based on these meetings and on a review of program offerings in other states, NYSERDA does not anticipate any utility to propose a CHP performance program in their 90-day filings.

If an independent program administrator or utility were selected by the Commission to offer a CHP program, NYSERDA will continue its tradition of collaboration, work to minimize customer confusion, and seek to ensure that clean, efficient CHP systems are installed.

NYSERDA has worked closely with utilities such as National Grid and Con Edison to host customer meetings to discuss the capabilities and limitations of CHP. NYSERDA will continue this effort.

1.6. CO-BENEFITS

In addition to providing significant energy savings, CHP systems can provide power during grid outages and increase on-site electric reliability.

1.7. PORTFOLIO BALANCE

CHP will contribute to portfolio diversification and provide substantial savings over a long time frame. CHP systems are complex projects with lengthy project development, engineering, and installation times when compared to other energy efficiency projects. To help balance the longer lead times, CHP is included in a portfolio of programs that offer energy efficiency measures with relatively short installation time frames, *e.g.*, lighting and variable speed drives.

1.8. DEPTH OF SAVINGS

NYSERDA recommends that customers explore possible energy efficiency improvements to optimize their load profiles before they install CHP systems. Such optimization may reduce the first cost of CHP systems by decreasing the size of systems and ensuring that systems are correctly sized.

1.9. UNDERSERVED MARKETS

Until 2006, NYSERDA provided incentives only for CHP demonstration projects. These projects focused primarily on innovative CHP systems and not on using CHP for acquisition of energy efficiency savings. Based upon participation rates for the demonstration program and input from various stakeholder groups, the need became apparent for a standard offer program for CHP. As a result, the CHP Performance Program was created to address this need. To date, this program has been well received by the market and continues to grow.

1.10. COMMITMENT

NYSERDA has developed the internal infrastructure necessary to operate the CHP performance program. Expansion statewide is a natural progression of the program. The challenge lies in expanding NYSERDA's network of engineering firms and CHP developers and continually improving the skills of engineering firms and CHP developers who now work with NYSERDA.

1.11. CUSTOMER OUTREACH

NYSERDA will expand its current integrated outreach approach to increase the number of commercial/industrial customers that participate in its programs. Outreach will largely be accomplished through the Energy Smart Focus initiatives that target various sectors of the commercial/industrial market with tailored messages, one-on-one interactions, and other strategies that encourage efficiency practices. Based on experience to date, an additional investment in the Energy Smart Focus initiatives is expected to result in a direct increase in both the quantity and quality of projects entering core incentive programs.

However, due to its site specific nature, CHP is not a fit for every customer or every sector. Unlike other energy efficiency measures, CHP may not be feasible or cost-effective for most facilities. CHP systems are specific applications that require targeted customer outreach. NYSERDA will target sectors providing the best opportunities for successful utilization of CHP systems such as industrial customers and institutional customers such a health care facilities.

NYSERDA will also work with architects and engineering firms and professional organizations to promote the benefits and discuss the challenges of installing CHP systems. Mechanisms will include seminars, case studies, and training.

1.12. COLLABORATIVE APPROACH

Implementation of CHP systems was identified during the planning of the Con Edison Statewide Program as a prime method for reducing energy use and providing demand reductions. The Collaborative Group and the CHP Working Group consisted of interested stakeholders, developers, NYSERDA staff, representatives of the Public Service Commission, and Con Edison staff. The groups determined that CHP systems provide ratepayer and system benefits and CHP was included as a component of the Statewide Program order. Also consulted in this review were developers, utility representatives, members of A&E firms, and end users and their representatives. These relationships are continually maintained and representatives of these groups are consulted when modifications to the program are contemplated.

1.13. FUEL INTEGRATION

The nature of CHP systems requires fuel integration because a CHP system is only efficient if an adequate heat load is coincident with electrical production. Proper sizing and configuration of CHP systems help ensure efficient use of gas and electric generation.

1.14. TRANSPARENCY

NYSERDA has a Data-Integrator Web site used for posting the performance of existing systems in the CHP Performance Program and will continue to post the performance of each new system. Posted information includes fuel conversion efficiencies, runtimes, and generator output. Program results will be made available by NYSERDA on its Web site. NYSERDA is also working with DPS Staff toward development of a uniform tracking system to increase transparency of program results.

1.15. PROCUREMENT

NYSERDA administers the CHP Performance Program and customers participate on a first-come, first-served basis.

1.16. APPENDIX 3 EFFICIENCY PROGRAM SELECTION CRITERIA

This section provides screening metrics for the Statewide Combined Heat and Power Program (Statewide CHP) required per Appendix 3 of the Commission's June 23, 2008 EEPS Order. As discussed earlier, NYSERDA intends to provide screening metrics related to electric and gas rate impacts (Screening Metrics 2, 3, 4, 8, 10, 11, and for the suite of programs Screening Metrics 1 and 2) in a separate supplemental filing. Also, for reasons described earlier, estimated MWh and coincident peak MW reductions in 2015 if the program continues to expand and extends through 2015 (Screening Metrics 5a and 6a) are not included.

Total Resource Cost Test Benefit/Cost Ratio (Screening Metric 1)

Table III-4 shows the resource savings and average measure life used as inputs for the benefit/cost analysis. Table III-5shows the present value of the costs and benefits used in the analysis. Table III-7 shows the Program Administrator Cost (PAC) and Total Resource Cost (TRC) results. Appendix A provides additional information on benefit/cost definitions and inputs.

Table III-4. Statewide CHP Performance Program Cumulative Annual Savings

	Program Years	Average Life of Electric/Gas Measures (Years)	Cumulative Annual GWh/Year	Cumulative MW	Cumulative Annual Fuel Savings (MMBtu)	% Downstate (Con Edison)
Electric Funding Only	2009-2011	20	120	27	-810,000	38%

Table III-5. Statewide CHP Performance Program: Program and Participant Costs ($2008)

	Present Value of Program Administrator Cost ($millions)	Present Value of Program and Participant Costs ($millions)	Present Value of Resource Benefits ($millions)
Electric Funding Only	$26.6	$80.5	$63.0*

*$0.02 per kWh of operations and maintenance costs were subtracted from benefits.

Table III-6. Statewide CHP Performance Program Beuefit-Cost Ratios

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
Electric Funding Only	2.4	0.8

Total Resource Cost Test Benefit-Cost Ratio with Carbon Externality (Screening Metric 8)

Table III-7 shows the PAC and TRC test results when the estimated benefits of carbon reduction are included. Carbon was valued at $15 per ton, as directed by DPS in the Order, resulting in a total present value of carbon benefits of $3.3 million.

Table III-7. Statewide CHP Performance Program Benefit-Cost Ratios with Carbon

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
Electric Funding Only	2.5	0.8

MWh Saved in 2015 (Screening Metric 5b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 120,000 MWh (cumulative annual) in 2015.

MW of Coincident NYISO Peak Saved in 2015 (Screening Metric 6b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 27 MW (cumulative) of coincident peak reduction in 2015.[9]

Peak Coincidence Factor of MWh Saved in 2015 (Screening Metric 7)

The peak coincidence factor is a measure of the extent to which the MWh savings is concentrated at the time of system peak. The peak coincidence factor for the program is 0.51.[10]

Number of Participants as a Percentage of the Number of Customers in the Class (Screening Metric 9)

The Statewide CHP Program is intended to reach 30 customers in total.

[9] NYSERDA defines coincident on-peak period as being between 12:00 noon to 6:00 PM on summer non-holiday weekdays.

[10] Peak coincidence factor = annual MWh saved/(MW saved on peak)(8,760 hours). For this equation, annual MWh saved is the cumulative annual savings expected in 2015 if the program is offered only as long as proposed, i.e., Screening Metric 5b.

2. BENCHMARKING AND OPERATIONS EFFICIENCY PROGRAM (ELECTRIC)

2.1. PROGRAM DESCRIPTION

The Benchmarking and Operations Efficiency Program (Program) will encourage customers to benchmark their facilities' energy performance, implement low- and no-cost operational improvements, and participate in NYSERDA's incentive programs for capital intensive efficiency measures. The benchmark compares a facility's energy use with other similar facilities, on both a local and national level, and serves as a baseline of energy performance from which improvements in energy efficiency can be measured and tracked over time. The output from building energy performance rating systems, such as Portfolio Manger (available through the U.S. Environmental Protection Agency), provides a whole-building performance assessment, taking into account actual energy consumption, hours of operation, space use, number of occupants, and other unique factors. This information helps determine where the major energy efficiency opportunities lie, which often entails low- and no-cost operational improvements that can be implemented quickly to provide immediate energy savings.

National associations and several state agencies now encourage benchmarking as the first step toward energy performance improvements. The Governor's Renewable Energy Task Force Report and PlaNYC recommend initiatives to require commercial buildings to periodically benchmark their energy use. Additional infrastructure, tools and support are needed to realize the energy efficiency potential of such initiatives. This includes assistance to acquire and load data into benchmarking systems, verify quality data and outputs, and help customers interpret the results and take action.

NYSERDA has begun to provide these types of services through its sector-based Energy Smart Focus program under the **New York Energy $mart**[SM] program. Based on the results of these efforts, NYSERDA is proposing to use EEPS funds for a major expansion of activities related to energy benchmarking, with particular focus on methods that encourage and support operations and maintenance measures. Under the Program, NYSERDA will develop the critical tools and resources needed to support benchmarking. This includes a web-based portal that links to national benchmarking systems such as the U.S. EPA Portfolio Manager, and a growing database of energy use information from peer buildings in the region and State. The Program will provide assistance to help building owners collect and load data into the appropriate benchmarking system, and provide the necessary quality control. Energy Management "SWAT" Teams will then be available to customers to identify and implement energy savings opportunities from operations and maintenance improvements. Analysis will also point out where major system upgrades are warranted or may require further technical examination. On-going benchmarking will be encouraged so that building owners and managers can periodically assess the overall impact of the implemented measures on their facility's energy use and their utility bills.

The Program will integrate closely with the Workforce Development Program to expand the number of trained professionals with the skills needed to benchmark and implement best-practices energy management. The Program will also integrate with general program marketing strategies to achieve participation goals in NYSERDA's portfolio of programs. Efforts will address the significant efficiency opportunities for existing buildings across the state, with particular focus in New York City to work in concert with the recommendations of PlaNYC. Marketing and deployment of services will align with NYSERDA's priority sectors particularly those where benchmarking has proven to motivate action (commercial real estate, K-12 schools, hospitality, healthcare, and colleges). Estimated annual savings are 28,000 MWh, 140,000 MMBtus, and an increased participation rate in other NYSERDA programs.

2.2. DEMAND REDUCTION AND SYSTEM BENEFITS

The Program presents the first opportunity in the nation to provide detailed monitoring, verification, and evaluation (MV&E) at a 90/10 confidence level for a comprehensive benchmarking, operations,

maintenance, and energy management program. To a limited extent, MV&E of these related services has already begun with the use of energy performance rating tools, and evaluation surveys conducted to date. Early indicators show that at least a 10% energy improvement within a five (5) year period can be attributed to benchmarking and operational improvements distinct from more expensive capital projects. Experience with these activities has developed to the point where implementing the MV&E efforts called for by current PSC Orders is appropriate. Energy reduction indicators from some of the Energy Smart Focus program efforts to date include: 22% energy use reduction per square foot in schools over a four year period; 30 to 50% of savings are achieved without additional assistance from core incentive programs; and 10% to 20% energy use reductions can be achieved in the first three years.

Table III-8. Benchmarking and Operations Efficiency Program – Total Program Expenditures (Projected and net of administration and evaluation) 2009-2015

	2009	2010	2011	2012	2013	2014	2015	Total
Annual EEPS Spending	$5.5M	$4.5M	$4.5M	$0	$0	$0	$0	$14.50M
Projected Outreach/Marketing costs: $0.275M in 2009; $0.225M in 2010; $0.225M in 2011.								

Table III-9. Benchmarking and Operations Efficiency Program – Electric Installed MWh Impacts (Projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings Installed in the Current Year	14,000	23,240	28,000	14,000	4,760	0	0
Annual Savings Installed in Prior Years	n/a	14,000	37,240	65,240	79,240	84,000	84,000
Cumulative Annual Savings	14,000	37,240	65,240	79,240	84,000	84,000	84,000

Table III-10. Benchmarking and Operations Efficiency Program – Natural Gas Installed MMBtu Impacts (Projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings Installed in the Current Year	70,000	116,200	140,000	70,000	23,800	0	0
Annual Savings Installed in Prior Years		70,000	186,200	326,200	396,200	420,000	420,000
Cumulative Annual Savings	70,000	186,200	326,200	396,200	420,000	420,000	420,000
Note: The Program will achieve electric and natural gas savings without additional funding.							

NYSERDA has developed initial evaluation plans with the intention of providing the necessary rigor and reliability for metrics used by the NYISO and transmission and distribution system planners. NYSERDA will continue to work with DPS Staff and the EEPS Evaluation Advisory Group to devise final evaluation plans that meet established protocols and produce results that can be used as inputs for system planning and forecasting.

2.3. PROGRAM EVALUATION PLAN

General Evaluation Approach

Evaluation Goals

The primary goal of the Program evaluation is to assess the energy and demand savings attributable to program activities. Secondary goals are understanding the market to tailor the program to the needs of the audience and fostering creation of an efficient delivery mechanism.

Brief Overview of the Evaluation Approach

The evaluation approach presented in this section was designed based on NYSERDA's current plans for the design and administration of the Program, in the absence of complete knowledge about potential funding set-asides for overarching evaluation projects that would serve the needs of all EEPS program administrators. As such, these plans have been prepared in order to allow NYSERDA and its independent contractors flexibility to adapt the evaluation approaches that best suit the program as implemented, once a greater understanding is in place regarding final evaluation protocols and funding. NYSERDA's estimated evaluation budget for this program includes a set-aside for developing a full evaluation plan, an effort that will involve DPS Staff and the EEPS Evaluation Advisory Group.

Evaluation Budget

NYSERDA expects that the evaluation budget for the Program to be approximately equal to 5% of the program funding level, less funds set aside for statewide studies and other overarching costs borne by program administrators. Approximately 60% of the program evaluation budget will be allocated to impact evaluation and the remainder will be approximately equally split between process and market evaluation efforts.

Evaluation Schedule

Evaluation studies included as part of the Program evaluation plan are shown in the table below along with the time frame for their anticipated completion. Initially, in 2009, process and market evaluation efforts will inform program start up. Then, in 2011, the major impact evaluation will be undertaken and process evaluation will be revisited.

Table III-11. Evaluation Schedule for Benchmarking and Operations Program

Evaluation Element	Expected Completion			
	2009	2010	2011	2012
Impact - M&V			X	
Impact - Net-to-Gross			X	
Process Evaluation	X		X	
Market Evaluation	X			

Impact Evaluation

Measurement and Verification

The Program will track numbers of participants that enter into core NYSERDA and utility incentive programs. The program includes components for which indirect estimates of energy savings will be made as well as components for which direct estimates will be made. The specific approaches for each component are discussed below.

- Benchmarking: This program component will likely use both indirect and direct energy savings estimation approaches. With its independent evaluation contractors, NYSERDA will develop protocols to quantify the savings that result from benchmarking. The entire program and the benchmarking component, in particular, is expected to function as a significant feeder effort to other NYSERDA and utility programs and also encourage independent adoption of energy efficiency measures by customers. This affects the impact evaluations for the interrelated programs. The savings impacts and the decision making (net-to-gross) evaluations may be planned alongside one another in order to capture savings from each related program and any leveraging or overlap that occurs. The primary evaluation focus will be on electricity savings; however, the evaluation will also include impacts on heating fuels, water, and other non-energy benefits such as avoided/reduced operations and maintenance costs. The evaluation may also involve reviewing, early in the program roll out, the assumptions and algorithms built into the tools and software provided by the program.
- Energy Manager SWAT team: This program component will generate recommendations for energy improvements that the customer can implement on their own or with NYSERDA assistance, so savings will likely be estimated using a direct verification method. NYSERDA will perform site visits and net-to-gross surveys with those that implement recommendations without NYSERDA incentives. The approach will follow the model of past evaluations of FlexTech/Technical Assistance and assess the rate of adoption and the accuracy of savings estimates. First, participants will be surveyed on whether any recommended measures or actions were implemented. The survey will be stratified by utility service territory and then the magnitude of potential (recommended) electricity savings within that stratum, targeting sampling to achieve 90/10 confidence/precision by utility service territory. Second, potential projects will be chosen for site visits based upon the results of the telephone surveys. A census of large energy saving sites and a sample (targeting 90/10 confidence/precision levels) of remaining sites in each utility stratum will be selected for verification site visits. The smallest energy savers may be eliminated for site visits, but may be included in a telephone verification survey. Savings will be estimated, using simple engineering models at a

minimum,[11] based on reported baseline conditions (or code assumptions) and as-built conditions. Results will be weighted by utility and for the program as a whole. To allow adequate time for recommendations to be implemented, experience has shown that a minimum of one-year following post energy audit is required. Given this, NYSERDA plans to conduct the impact evaluation in 2011. Participants that receive incentives through other implementation programs may be evaluated through those programs.

- Tools/Resources and Market Research: Impact from these program components can only be assessed using indirect means. The evaluation will likely consist of self-report measurement using surveys to assess any actions taken as a result of receiving the tools. The surveys will only include actions for which energy savings can be estimated. NYSERDA recognizes that overlap with other EEPS programs is an issue that will need to be considered in evaluating energy savings from this program component.

Net-to-Gross

Following up on the Measurement and Verification work, participants who adopted measure recommendations will be surveyed for the amount of energy savings attributable to NYSERDA's efforts. NYSERDA will perform enhanced self-report surveys with customers, contractors and vendors to assess freeridership and spillover. A representative sample, targeting 90% confidence and 10% precision at the statewide level and the results applied to the savings for the entire program. Freeridership quantifies savings from those participants that would have installed the energy efficiency measure without an incentive, yet received an incentive. Spillover accounts for customer savings that occurred due to their interaction with NYSERDA or market actor allies, yet in the absence of an incentive. Spillover savings will be estimated relative to the savings experienced on participating projects. Attribution studies will be conducted concurrently with the Measurement and Verification in 2011.

Process Evaluation

Process evaluation activities will focus on the participation and decision making process in each of the program elements. Participant samples will be drawn from the program tracking system. The implementation team will also track end users who are contacted or who request information about the program services. Those who do not participate in the program will form the non-participant population. Areas of inquiry expected for the process evaluation work include:

- Attrition analysis focusing on the reasons for non-participation and drop-out at different stages
- Barriers to participation
- Barriers to full-scale implementation
- Value of services provided to business (non-energy and monetary)
- Overall customer satisfaction with the program services
- Examination of customer decision making, including roles of individuals involved and factors influencing the decision

[11] More sophisticated methods may be selected for the largest savings' sites and the method selected will depend upon an assessment of the most reliable, and cost-efficient method for the application being examined. For example, a large industrial process measure might best be measured through IPMVP Option B and calibrated DOE-2 modeling (IPMVP Option D) might be most appropriate for a comprehensive large office building application.

The process evaluation work will generate actionable recommendations for improvements to the program. It is expected that process evaluation will be conducted at two points in time: first, approximately a year after the program start date so as to provide early feedback regarding the program processes and participation rates; and second, in approximately the third year to further expand on and explore reasons for attrition.

Because the process evaluation will be in the field a year before the impact evaluation starts, the process evaluation contractor will be responsible for conducting an "evaluability assessment" and data review for the program. This exercise will help ensure that data that will ultimately be needed for impact evaluation are being collected and stored appropriately. The evaluability assessment will be undertaken as part of the first process evaluation activity. Recommendations for data collection, validation and organization will be included as part of the first process evaluation report and feedback to NYSERDA will be transmitted as findings and recommendations are available.

Market Evaluation

An important part of any program evaluation is a thorough understanding of the market environment in which the program is operating. As part of that effort, a program theory and logic model will be developed in the first year of implementation to clarify connections between NYSERDA, customers, contractors and vendors. The program theory and logic model will provide the following information relevant to the Program:

- A high level summary of the market context within which the program operates as well as the other energy efficiency programs it works with to accomplish the overarching EEPS goals
- Key program-specific elements, including the ultimate goals of the program, market barriers, targeted market actors, program activities, inputs, anticipated outputs/outcomes, and potential external influences
- Key programmatic outputs and outcomes, including identification of relevant measurement indicators and potential data collection approaches
- Potential researchable issues for consideration within evaluation planning

The program theory and logic model will guide NYSERDA's program-specific evaluation activities and assist in the development of a comprehensive research agenda geared toward overcoming any existing gaps in program staff's knowledge of current market conditions and opportunities. The final prioritized lists of measurement indicators and researchable issues will be translated into discrete research tasks that generate findings that can be clearly related back to the outputs and outcomes anticipated by the program theory and logic model. Measurement of these program-specific indicators and researchable issues, which will likely include metrics related to market awareness and interest in benchmarking activities as well as the size and influence of key market actor groups and the relationships and dynamics among those groups, will enable baseline values to be established to support subsequent longitudinal analyses. Other possible areas of research could include market awareness and interest in benchmarking.

Evaluation Plan Variations

Given the level of uncertainty regarding final evaluation protocols, statewide studies to be conducted by all program administrators, and funding levels needed to support overarching evaluation studies and activities, the evaluation plan presented in this section should be viewed as scalable and flexible. Specifically, if the total evaluation budget for this program needs to be reduced, impact evaluation would no longer be able to meet 90/10 at the individual utility level, and process evaluation would likely eliminate the non-participant sample and other potential participant groups in an attempt to focus on only the most relevant samples for achieving the highest priority goals of the evaluation. Conversely, if more

of NYSERDA's total evaluation funding could be allocated to this program, the additional funds would allow for more site-specific data collection as part of the impact evaluation.

2.4. Market Segment Need

Existing buildings consume a significant percent of all energy consumed in New York State, and are responsible for more than 79% of all emissions in New York City. Benchmarking and operations and maintenance improvements can easily deliver 10 - 15% energy use reduction within existing buildings. This program approach focuses on fast-payback measures related to inefficient lighting, heating, cooling, air distribution, pumps, fan systems, and building envelope. These measures can be addressed by building maintenance staff through consistent preventative maintenance practices and well-documented building operating practices. These types of measures are typically overlooked by energy providers who tend to target larger retrofit projects that require design/build services or larger capital investment.

2.5. Coordination

The Program is designed to support early adopters and customers ready to commit to continual energy efficiency improvements. Based on experience in Energy Smart Focus programs, customers regularly seek individualized assistance to direct them to appropriate financial, technical, and informational resources. The Program will: improve the cost-effectiveness of efficiency projects, improve use of the most cost-effective measures in core incentive program projects, increase program participation, and achieve significant savings without the need for direct financial assistance. Preliminary findings indicate that 30-60% of Program participants will likely enroll in a core incentive program within 12 months, and anecdotal evidence suggests that many customers will implement higher quality, more cost-effective projects than non-Program participants. NYSERDA staff conduct and will continue to seek out collaborative discussions with representatives of New York's investor-owned utilities to improve coordination of program delivery, maximize resource acquisitions, and minimize costs to rate payers.

2.6. Co-Benefits

The Program offers three important co-benefits. The program offers a low-cost way to directly support energy policy initiatives being developed in New York City and by the Governor's Renewable Energy Task Force, and it provides improved budget prediction capabilities and energy master planning for large energy users and other facilities that are constrained by fixed budgets and are sensitive to price fluctuations. In addition, the program will serve the needs of many customers who need to augment their internal staff with experienced and well trained experts to implement comprehensive, cost-effective, long-term energy programs.

2.7. Portfolio Balance

The Program is an important part of the overall portfolio of services for the commercial/industrial sector, as it addresses the low- and no-cost efficiency opportunities. The Program also directly supports other EEPS programs by increasing program participation, providing a "feeder" mechanism to technical assistance programs, improving the cost-effectiveness and quality of projects seeking direct financial assistance, and encouraging the use of the best available technologies. The Program can easily be adapted to the needs of its customers and key market stakeholders, especially New York City.

2.8. Depth Of Savings

Based on experiences with previous customers, Program staff will advise clients how to implement the most cost-effective energy improvement projects and undertake appropriate measures to meet their

operational needs. Because interactions with customers are ongoing, Program customers can routinely provide timely feedback on project performance that can immediately benefit other customers.

2.9. UNDERSERVED MARKETS

Customers in the industry and institutional sectors have identified the services they most require as technical assistance and initial support for defining and framing projects to help prioritize energy efficiency investments. The commercial sector, particularly in metropolitan New York, has been traditionally underserved due to the split incentives between owner and tenants, an issue that can be addressed through lease-based analysis and other resources proposed under this initiative. The Program responds directly to the specific needs of customers who have begun to make commitments to improved energy performance as directed by the Public Service Commission.

2.10. COMMITMENT

Because the Program is building on Energy Smart Focus programs operated by NYSERDA, program services can be delivered immediately. In many cases, contractors have been competitively selected and have developed or are developing key relationships necessary to deliver services. Basic customer surveys and needs assessments have also taken place and services and tools are being developed.

2.11. CUSTOMER OUTREACH

The Program will support outreach and program participation as customers establish comprehensive energy policies that permit them to enjoy continuous improvement. Key groups, such as the New York City Mayor's Office, associations, and other key stakeholder groups, will be incorporated as partners in program planning and deployment efforts. In essence, the Program is built around these relationships and takes advantage of the partners' communication systems. Specific strategies that NYSERDA will employ are built around the following three methods of outreach and support:

- Most participation with clients will be a direct result of targeted one-on-one and small group interactions through Energy Smart Focus programs. Past experience indicates that broadbased marketing is much less effective than one-on-one technical interactions.
- Staff will actively participate in conferences, planning groups, *e.g.*, the New York City Mayor's Office of Long Term Planning and Sustainability, trade association meetings, and through regularly convened market stakeholder group meetings to obtain feedback and assistance in designing and modifying program elements.
- Limited broadbased marketing, such as advertising and public service messages, will be used to raise general awareness of programs and energy issues.

2.12. COLLABORATIVE APPROACH

NYSERDA will continue to work with organizations, particularly those representing the key sectors to assure that program design and delivery meets the needs of their constituencies. For this effort, collaborators include: the New York City Mayor's Office of Long Term Planning and Sustainability; New York City Economic Development Corporation; Superintendents of Buildings and Grounds Association; the Real Estate Board of New York, and the Manufacturers Association of Central New York; Multiple Intervenors; the New York State Education Department; the New York Power Authority; and New York investor-owned utilities. Representatives of these groups are regularly consulted with respect to desirable services and to provide input on program design. Representatives of most sectors and key stakeholders are asked to participate in formal Technical Review Groups to address ongoing management and program issues at NYSERDA.

NYSERDA staff conduct and will continue to seek out collaborative discussions with representatives of New York's investor-owned utilities to improve coordination of program delivery, maximize resource acquisitions, and minimize costs to rate payers.

2.13. Fuel Integration

While the Program focuses on cost-effective electric kWh savings, program efforts also include recommendations and information on the ways to conserve other fuels and water. Providing consistent advice and services across issue areas encourage customers to have repeated interactions with single points of contact for all energy issues that may affect their facilities. The single point of entry is one of the most valuable services provided to customers, and increases savings from fossil fuels, water, operations and maintenance, and other sustainability related benefits.

2.14. Transparency

Data collected to date is largely sector specific, anecdotal, or geographically based. Once the Program is funded, the following data will be obtained and compiled: detailed lists of customer contacts, the nature of the contacts, changes in energy performance, overlap with core incentive programs, and measures implemented outside of core incentive programs. Improved recommendations for specific equipment efficiency projects and project designs will also be gathered as part of this effort. Program results will be made available by NYSERDA on its Web site. NYSERDA is also working with DPS Staff toward development of a uniform tracking system to increase transparency of program results.

2.15. Procurement

The Program services will be provided through Energy Smart Focus contractors who are competitively selected, and through Program partners to develop and deploy new tools and resources. Customers may be provided with limited incentives and non-financial rewards to motivate participation.

2.16. Appendix 3 Efficiency Program Selection Criteria

This section provides screening metrics for the Benchmarking and Operations Efficiency Program required per Appendix 3 of the Commission's June 23, 2008 EEPS Order. As discussed earlier, NYSERDA intends to provide screening metrics related to electric and gas rate impacts (Screening Metrics 2, 3, 4, 8, 10, 11, and for the suite of programs Screening Metrics 1 and 2) in a separate supplemental filing. Also, for reasons described earlier, estimated MWh and coincident peak MW reductions in 2015 if the program continues to expand and extends through 2015 (Screening Metrics 5a and 6a) are not included.

Total Resource Cost Test Benefit/Cost Ratio (Screening Metric 1)

Table 1 shows the resource savings and average measure life used as inputs for the benefit/cost analysis. Table 2 shows the present value of the costs and benefits used in the analysis. Table 3 shows the Program Administrator Cost (PAC) and Total Resource Cost (TRC) results. Appendix A provides additional information on benefit/cost definitions and inputs.

Table III-12. Benchmarking and Operations Efficiency Program Cumulative Annual Savings

	Program Years	Average Life of Electric/Gas Measures (Years)	Cumulative Annual GWh/Year	Cumulative MW	Cumulative Annual Fuel Savings (MMBtu)	% Downstate (Con Edison)
Electric Funding Only	2009-2011	5	84.0	7.1	420,000	46%

Table III-13. Benchmarking and Operations Efficiency Program: Program and Participant Costs ($2008)

	Present Value of Program Administrator Cost ($millions)	Present Value of Program and Participant Costs ($millions)	Present Value of Resource Benefits ($millions)
Electric Funding Only	$16.4	$24.0	$70.4

Table III-14. Benchmarking and Operations Efficiency Program Benefit-Cost Ratios

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
Electric Funding Only	4.3	2.9

Total Resource Cost Test Benefit-Cost Ratio with Carbon Externality (Screening Metric 8)

Table 4 shows the PAC and TRC test results when the estimated benefits of carbon reduction are included. Carbon was valued at $15 per ton, as directed by DPS in the Order, resulting in a total present value of carbon benefits of $3.4 million.

Table III-15. Benchmarking and Operations Efficiency Program Benefit-Cost Ratios with Carbon

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
Electric Funding Only	4.5	3.1

MWh Saved in 2015 (Screening Metric 5b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 84,000 MWh (cumulative annual) in 2015.

MW of Coincident NYISO Peak Saved in 2015 (Screening Metric 6b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 7.1 MW (cumulative) of coincident peak reduction in 2015.[12]

[12] NYSERDA defines coincident on-peak period as being between 12:00 noon to 6:00 PM on summer non-holiday weekdays.

Peak Coincidence Factor of MWh Saved in 2015 (Screening Metric 7)

The peak coincidence factor is a measure of the extent to which the MWh savings is concentrated at the time of system peak. The peak coincidence factor for the program is 1.35.[13]

Number of Participants as a Percentage of Customers in the Class (Screening Metric 9)

Table 5 shows the number of expected program participants as a percentage of the number of customers in the class. The number of expected program participants represents NYSERDA's best estimate of participation for the current funding request through 2011.

Table 5. Benchmarking and Operations Efficiency Program Participants as a Percentage of Customers in Class

Customer Class	Number of Customers in Class[1]	Number of Anticipated Program Participants	Participants as a Percentage of Number of Customers in Class
Commercial — Electricity	1,002,856	500	< 0.1%
Commercial — Natural Gas	358,504	500	< 0.1%

[1] Sources: DPS Five Year Index Book of Files and DPS Electricity and Natural Gas Retail Access Migration Reports. Electricity figures do not include LIPA, municipal electric utility, rural electric cooperative, or NYPA customers. Gas figures do not include Keyspan/Long Island customers. Retail Access Migration Reports do not separate commercial and industrial customers and label all-such customers as "non-residential". Commercial and industrial customers estimated by NYSERDA.

[13] Peak coincidence factor = annual MWh saved/(MW saved on peak)(8,760 hours). For this equation, annual MWh saved is the cumulative annual savings expected in 2015 if the program is offered only as long as proposed, i.e., Screening Metric 5b.

3. NEW YORK ENERGY $MART[SM] BUSINESS PARTNERS (ELECTRIC)

NYSERDA continues to work with over 1,100 building and systems contractors, distributors, vendors, designers, energy service providers, and energy companies to increase the availability, promotion, and sale of energy-efficient products and services for the commercial and industrial sector. Mid-stream market development programs were consolidated as part of the SBC III Plan and a new Business Partners initiative was launched that conveys the theme that these businesses are vital to the growth of the energy efficiency industry, and important to the economy of the State. The Small Commercial Lighting, Motors, and Commercial HVAC Programs (components of Business Partners) have built strong ally networks and have encouraged mid-market allies to use customer-incentives and other sales tools for closing deals. Partners use strategies that coincide with their own business models to influence markets towards efficiency. Program evaluations have proven the success of the Business Partners Program including significant market share increases for energy efficient products; changes in a business' core practices; wholesale improvements to operation and maintenance practices, and quality installations.

3.1. PROGRAM DESCRIPTION

NYSERDA will build upon the success of the Business Partners model and expand its efforts to recruit new participants and target technologies and practices that have the highest energy savings potential. Partners will gain access to special training, tools, and performance incentives. NYSERDA will work with the Business Partners to help them differentiate their business in a highly competitive marketplace, while assuring that appropriate quality control mechanisms are in place. The Program will include strategies to help Business Partners market their efficient technologies and services to the end-user to encourage program participation

Heating, Ventilation and Air Conditioning (HVAC) – The HVAC Program will promote the efficient operation of existing unitary air conditioning units, and facilitate the specification, purchase, and installation of high efficiency HVAC equipment for commercial buildings. The Program will expand the qualified service delivery network of HVAC contractors in the commercial sector. Participating contractors (business partners) will be eligible for incentives to diagnose the energy efficiency of small commercial unitary HVAC units, and where applicable complete HVAC Test and Tune services, economizer repairs, and enhanced control strategies for units currently in service. The Program will also incorporate an outreach component targeting new construction. A 2006 survey to HVAC distributors indicated that over one third of packaged commercial HVAC units sold are for new installations, thus, there is a significant opportunity to increase the sales of high efficiency equipment by focusing on this market. These services will dove-tail with other NYSERDA and utility incentive programs, to promote the purchase and installation of high-efficiency equipment for new construction, and the replacement and early retirement of HVAC units within existing facilities. Equipment installations will be installed using industry accepted quality installation procedures.

Effective, Energy-Efficient Lighting - The Commercial Lighting Program will focus on market development program offerings and incentive structures to support the training of lighting practitioners on the benefits and attributes of effective, energy-efficient lighting – **The Right Light[SM]**. Lighting Business Partners will also be trained to use advanced lighting technologies for greater energy and demand savings, and to design projects that achieve energy savings beyond what the 2007 Energy Conservation Construction Code of New York State requires. Special training for Lighting Business Partners will provide information on comparative lighting technologies and how to design with them. Trainings will be customized to the appropriate types of lighting practitioners for greater impact. Following the new Lighting Business Partners design under SBCIII, recruitment of Lighting Business Partners will be expanded to include energy services companies (ESCOs) and interior designers. An increase in architects and engineers is expected as the eligible space size is increased from 25,000 square feet to address opportunities in the New York City market. The success of the parent program – the Small Commercial

Lighting Program (SCLP) under SBC - was largely due to the use of account managers working with Lighting Business Partners directly. The Program will add account managers to the New York City and Western New York regions to recruit Lighting Business Partners and provide training and support. The Program will expand end-user marketing efforts started under SCLP. The goal is to educate end-users on the benefits of an effective, energy-efficient lighting design and lead them to the Lighting Business Partners trained under the Program. The Program will further engage end-users by participating in regional events such as energy fairs, association-sponsored meetings (such as BOMA, Chambers of Commerce, etc.), trade shows, and seminars.

Energy-Efficient Motors and Drives - The Motors Program will focus on strategies and incentive structures to procure kWh savings through energy efficiency. The Motors program is currently designed to promote energy efficiency through the purchase and use of NEMA Premium® Efficient motors. The Program reaches out to both motor purchasers and vendors and educates them on the advantages of using NEMA Premium® motors. This is achieved by holding training workshops, vendor education, and customer site visits. Participating vendors have the tools to explain to customers what the advantages are to purchasing and installing NEMA Premium® motors. There are currently approximately 70 active and engaged vendors involved in the program. Motor Program expansion will involve midstream incentives to enrolled Business Partners on the sale of qualified, NEMA Premium® horizontal and vertical shaft three-phase motors and qualified variable speed drives (VSD). Incentives will be directly tied to the existing motor inventories and will be targeted at early replacement, normal replacement, and new construction. Vendor incentives will allow NYSERDA to see a documented correlation between motor inventories and the purchase of motors based on those inventories. The new program will build off current goals for the Business Partners Program and will allow for an increased emphasis on markets within NYS that offer the most energy savings potential. New program components will serve to prime the motor market in anticipation of new motor regulations which take effect in late 2011. Attention will be given to working with vendors and distributors to stock motors meeting the new regulations.

3.2. DEMAND REDUCTION AND SYSTEM BENEFITS

Staff anticipate achieving approximately 70,533 MWH savings through 2011.

Table III-16. Business Partners Program – Total Program Expenditures (Projected and net of administration and evaluation) 2009-2015

Annual EEPS Spending	2009	2010	2011	2012	2013	2014	2015	Total
	$3.17M	$3.17M	$3.17M	$0	$0	$0	$0	$9.51M
Projected Outreach/Marketing costs: $0.16M in 2009; $0.16M in year 2010; $0.16M in 2011.								

Table III-17. Business Partners Program – Electric Installed MWh Impacts (Projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings Installed in the Current Year	23,511	23,511	23,511	0	0	0	0
Annual Savings Installed in Prior Years	0	0	0	0	0	0	0
Cumulative Annual Savings	23,511	47,022	70,533	70,533	70,533	70,533	70,533

NYSERDA has developed initial evaluation plans with the intention of providing the necessary rigor and reliability for metrics used by the NYISO and transmission and distribution system planners. NYSERDA will continue to work with DPS Staff and the EEPS Evaluation Advisory Group to devise final evaluation plans that meet established protocols and produce results that can be used as inputs for system planning and forecasting.

3.3. General Evaluation Approach

Evaluation Goals

The primary goal of the Business Partners Program evaluation is to assess the energy and demand savings attributable to program activities. The secondary goal will be to conduct process evaluation to improve the program.

Brief Overview of the Evaluation Approach

The evaluation approach presented in this section was designed based on NYSERDA's current plans for the design and administration of the Business Partners Program, and in the absence of complete knowledge about final evaluation protocols, and potential funding set-asides and plans for overarching evaluation projects that would serve the needs of all EEPS program administrators. Thus, these plans have been prepared in order to afford NYSERDA and its independent contractors flexibility to adapt the evaluation approaches that best suit the program as implemented once a greater understanding is in place regarding final evaluation protocols and funding.

To the extent that NYSERDA's original and ongoing SBC-funded Business Partners Program can be evaluated using the same approaches and time lines outlined in this section, NYSERDA will supplement this plan to include additional resources from the enhanced SBC3 evaluation funding. NYSERDA's estimated evaluation budget for this program includes a set-aside for developing a full evaluation plan, an effort that will involve DPS Staff and the EEPS Evaluation Advisory Group.

Evaluation Budget

NYSERDA expects the evaluation budget for the Business Partners Program to be slightly greater than 5% of program funding, less funds set aside for statewide studies and other overarching costs borne by program administrators. These funds will likely be allocated primarily to impact evaluation (80%) with a modest budget for process evaluation (20%).

Evaluation Schedule

Evaluation studies expected to be part of the Business Partners Program evaluation plan are shown in the table below along with the time frame for their anticipated completion. Each year the program is operational, measurement and verification and net-to-gross will be assessed. Process evaluation will occur near the end of the first year in order to identify areas for improvement and help maximize program efficiency and effectiveness.

Table III-18. Business Partners Program Evaluation Schedule

Evaluation Element	Expected Completion		
	2009	2010	2011
Impact - M&V	X (if pre-post design possible)	X	X
Impact - Net-to-Gross	FR-MR	FR-MR, SO	SO-MR
Process Evaluation	X		

FR = Freeridership study R = Targeted market research for net-to-gross analysis (if possible within the evaluation budget) SO = Spillover examination

Impact Evaluation

Measurement and Verification

The Business Partners Program will track numbers of contractors and customers participating, and services rendered. The program includes components for which direct estimates of energy savings will be made. The specific approaches for each component are discussed below.

Heating Ventilation and Air Conditioning - The program design dictates that incentives will be paid to contractors following the performance of certain tasks – diagnosis of energy efficiency of small unitary HVAC units, Test and Tune services, economizer repairs, enhanced control strategies, and the promotion and purchase of high-efficiency equipment. Therefore, to form the population of projects, NYSERDA expects to maintain a record of each task, date performed, name of customer receiving services, and the amount of incentives. The population will be stratified by estimated electricity savings to generate a sample targeting 90/10 confidence and precision levels statewide focused on the largest electricity savers. A sample of projects will receive on-site verification and measurement/monitoring. The stratum with projects saving the smallest amount of electricity may be eliminated from site visits but could possibly be included in a telephone verification survey. The specific evaluation methods to be used for each stratum will be developed after assessment of the population. Savings will be estimated, using simple engineering models at a minimum, based on reported baseline conditions (or code assumptions) and as-built conditions. The strata with the projects savings the largest amounts of electricity will likely be a certainty stratum (census attempt group) and will utilize the most rigorous evaluation methods available within the budget. Full measurement for IPMVP Option B: Retrofit Isolation or calibration with energy use data will be used to the extent possible for the certainty strata evaluation. Where possible, site visits and spot measurements will occur as close to peak system conditions as possible. Propagation of error methods will likely be used to determine the greatest reduction of uncertainty that can be achieved through the affordable site measurement and monitoring strategies to be employed.

The evaluation results of the sample will be applied to the entire population by strata. An assessment for outliers will be conducted and their potential exclusion from the strata realization rate will be evaluated. Should the customer receive an incentive from another NYSERDA implementation program, savings will be evaluated through the other program so as to avoid overlap and double counting.

Effective, Energy-Efficient Lighting – Following the model of NYSERDA's long-standing Small Commercial Lighting Program (SCLP), this component will expand training of lighting practitioners on the benefits of effective, efficient lighting. Contractors will receive incentives for completing qualifying projects at customer sites. The main goal of the projects is to reduce lighting power densities from the 2007 Energy Conservation Construction Code of New York baseline. Savings are reported as the

reduction in lighting power densities multiplied by operating hours reported by the applicant. The last Measurement and Verification study on SCLP focused on confirming the self-reported operating hours by installing loggers in spaces representing various usage types. Planned M&V will involve site visits at a sample of completed projects to verify installation, lighting densities, and install loggers to verify annual operating hours. The prior M&V study will be carefully assessed during the detailed evaluation planning process to determine how best to design this proposed light logger study so the two sets of data may be combined to create greater reliability and enhanced application of results at more refined stratification levels (such as more usage types, building types and building vintages). Sampling will likely use the stratified approach at the statewide level similar to the method described above for HVAC and as needed to create this combined dataset to derive more strata with reliable operating hours for application to the program population. This evaluation may leverage any overarching commercial/industrial baseline and measure saturation studies if they provide lighting densities for non-participants by area usage type, building type and building vintages.

Motors - Following the model of NYSERDA's long-standing Premium-Efficiency Motors Program, this component will expand education of motor vendors on the benefits of NEMA® Premium motors. Contractors will receive incentives for installing NEMA Premium motors at customer sites that have received a motor inventory indicating candidate motors for early or normal replacement. This may offer a fruitful opportunity to develop a pre-post evaluation design. This opportunity will be explored during the detailed evaluation planning process. Parameters for pre-post on-site measurement are expected to be developed from a propagation of error assessment, determining what measurements can most affordably achieve the greatest reduction in uncertainty in the savings estimates. Sampling will likely use the stratified approach at the statewide level similar to the method described above for HVAC. The evaluation results of the sample will be applied to the entire population by strata. If a pre-post evaluation design is possible, the stratification scheme may need to be estimated from prior participant distributions and the impact evaluation strata adjusted based upon experience from the 1st year evaluation of the program. An assessment for outliers can be conducted and their potential exclusion from the strata realization rate will be evaluated. Another facet of the evaluation may compare the energy savings accrued from the former dealer incentive program to the later program that provided inventories of motors appropriate for replacement through an incentive program.

Measurement and Verification on these three components will be conducted in parallel in late 2010 to allow for enough installations to be completed. Data collection and analysis will be performed by NYSERDA's independent evaluation contractors using accepted protocols. Until the planned M&V studies are complete, NYSERDA's existing realization rates for these program components can be used to adjust program-reported savings.

Net-to-Gross

NYSERDA's independent evaluation contractors will perform enhanced self-report surveys with customers, contractors and vendors to assess freeridership and spillover. Although the focus is on informing mid-market participants, customers may come to the program with existing notions of the levels of energy-efficiency they would like to achieve. A representative sample, targeting 90% confidence with 10% precision, will be calculated and the results applied to the savings for the entire program. Data collection and analysis will be performed by NYSERDA's independent evaluation contractors using accepted protocols.

Freeridership quantifies savings from those participants that would have installed the energy efficiency measure without incentive, yet received an incentive. Partial free-riders are those customers that would have done some portion of the project without NYSERDA assistance and partial savings will be allocated accordingly. Inquiries on decision making are likely to produce the most reliable results when they are conducted close to the point of the decision.

Spillover accounts for customer savings that occurred due to their interaction with NYSERDA, yet in the absence of an incentive. Spillover savings will be estimated relative to the savings experienced in the program-sponsored project(s). Studies on spillover need to be timed properly in order to allow time for spillover to occur. The spillover studies will be conducted following the Measurement and Verification in 2011, until then the spillover rates from NYSERDA's current programs will be considered as a possible means to adjust program-reported savings.

Targeted small-scale market research studies will be considered during the detailed evaluation planning to the extent that this work can fit within the budget. If conducted, these small targeted market studies will need to occur early for input into freeridership and again later to foster the triangulation of spillover estimates. Furthermore, any statewide baseline and market saturation studies that are conducted for other programs or to inform the entire EEPS portfolio could be leveraged to provide information that will be highly beneficial to the evaluation of the Business Partners Program components.

Process Evaluation

Process evaluation activities will focus on the participation and decision making process in each of the Business Partners components. Program participants and non-participants will be interviewed as part of this evaluation effort. The program's tracking of vendors and contractors who are contacted or who request information but do not participate in the program will be one source for the non-participant sample. Areas of inquiry expected for the process evaluation work include:

- Attrition analysis focusing on the reasons for non-participation and drop out at different stages
- Barriers to participation
- Barriers to full-scale implementation
- Value of services provided to business (non-energy and monetary)
- Overall customer satisfaction with the program services
- Examination of customer decision making, including roles of individuals involved and factors influencing the decision

Data collection and analysis will be performed by NYSERDA's independent evaluation contractors using accepted protocols. The process evaluation will generate actionable recommendations for program improvement. It is expected that process evaluation will be conducted approximately a year after the program start date so as to provide early feedback regarding the program processes and participation rates. Approximately 20% of the overall evaluation budget for the Business Partners program will be allocated to process evaluation.

Because the process evaluation will commence before the impact evaluation, the process evaluation will include conducting an Evaluability Assessment and data review for the Business Partners Program, to ensure that the data are available for impact evaluation. Recommendations for data collection, validation and organization will be included as part of the first process evaluation report and feedback to NYSERDA will be transmitted as findings and recommendations are available.

Evaluation Plan Variations

Given the level of uncertainty regarding final evaluation protocols, statewide studies to be conducted by all program administrators, and funding levels needed to support other areas of evaluation, the evaluation plans presented in this section should be viewed as scalable and flexible. Specifically, if the total evaluation budget for this program needs to be reduced, impact evaluation may not be able to meet 90% confidence level for 10% sampling precision. Conversely, if more of NYSERDA's total evaluation

funding could be allocated to this program, the additional funds could be used for more site-specific data collection as part of the impact evaluation and larger sample sizes, *e.g.*, by program component and utility service territory.

3.4. Market Segment Need

Developing partnerships with manufacturers, distributors, retailers, trade associations, and other organizations involved in supplying equipment and services to the commercial marketplace is critical and will enable NYSERDA to continue supporting only the most highly efficient equipment and practices. The Business Partners Program will focus on all of NYS, with particular attention to the New York City market for the Lighting Program.

3.5. Coordination

Through partnerships, NYSERDA is uniquely positioned to work collaboratively with midstream and upstream market allies to bring the most efficient equipment into the market by developing new specifications and deploying new equipment to customers through NYSERDA programs. The Business Partner programs work closely with NYSERDA's core program efforts to support business and trade ally networks.

3.6. Co-Benefits

Benefits other than direct cost savings and demand reduction/system benefits include increased stocking and sale of efficient products, and increased mid-market understanding of the multiple benefits of installing efficient equipment.

3.7. Portfolio Balance

Since the emphasis is on working with the vendors, the program has the opportunity to service a wide range of customers, offering opportunities to encourage further participation in NYSERDA programs. Motors, HVAC and Lighting are often associated with other critical building functions, offering the opportunity for cross-program participation. The Business Partners trained under this Program will impact projects for customers using NYSERDA's end-user incentive programs. In some cases, such as under the Existing Facilities Program and the New Construction Program, the Lighting Business Partners will be using the design techniques to ensure the customer achieves the greatest savings while receiving a quality lighting design.

3.8. Depth of Savings

The depth of savings depends on the specific Business Partner Program. For instance, the Motors Program will build off exiting motor inventories so lost opportunities will be addressed. Incentives will provide motivation for motor replacements as opposed to motor repair. Research reveals that motor replacement provides significantly more energy savings for the customer than motor repair. Addressing O&M practices in the HVAC program will lead to efficient operation of equipment rather than capital improvements through incentives, which will be captured through NYSERDA's Existing Facilities Program. Proper lighting design and operation will also provide significant energy demand savings. Strategies used in the Business Partner's program complement NYSERDA's core programs.

3.9. Underserved Markets

The Business Partner's Program has historically addressed the specific needs of smaller commercial and industrial customers who are often missed through current program efforts. However, since the Program

works through its trained partner base, the range of customer types and sizes addressed are many. Lighting continues to represent a large opportunity for energy savings, especially in New York City office buildings where a large percentage are still lit with antiquated lighting technologies. New energy saving lighting technologies are evolving rapidly, but the training to design with these new technologies is extremely limited. A very real concern exists that without proper training, lighting practitioners may achieve energy savings with these new technologies, but the quality of the light will be unacceptable, resulting in end-user snapback to inefficient technologies. It has been proven that effective, energy-efficient lighting contributes to an improved work environment, and has a direct and powerful impact on building occupants affecting health, safety, mood and the speed and accuracy of task performance. This Program fills the gap by providing training to lighting practitioners on designing with these technologies in a manner appealing to the end-user of the space.

3.10. COMMITMENT

The program will be implemented through 2011. The expansion of the Business Partner's Program can be done fairly quickly making the savings targets very realistic.

3.11. CUSTOMER OUTREACH

NYSERDA will continue to expand its partner base through direct recruitment and will work closely with the Workforce Development initiative to ensure that continued opportunities exist. Specific strategies to attract customers will be used within each program area. For instance, print articles and multi-lingual advertising and radio spots describing **The Right Light**^{SM} have already been used in the New York City markets to promote the Lighting Program. These forms of marketing will be expanded in New York City and used in other parts of the State.

3.12. COLLABORATIVE APPROACH

Mid-stream market training impacts projects in all utility service territories. Historically, several of the New York utilities have supported training and it is anticipated that this same support will exist with the Business Partner's Program. Con Edison and Orange and Rockland provided venues for lighting training and encouraged lighting practitioners in their utility territories to attend. The utilities will also be approached for assistance in distributing end user marketing materials to their customers to encourage further energy-saving projects in their territories.

NYSERDA is an active participant in the Northeast Energy Efficiency Partnership (NEEP), a regional organization working to promote the efficient use of energy in the northeast through regionally coordinated upstream market transformation programs. NEEP serves as a platform for information sharing and coordination among program administrators and utilities and helps ensure a consistent level of knowledge amongst service providers in adjoining service areas. For example, the Lighting Program works with its northeast partners to transform the lighting market to fully embrace high performance T8 lighting systems. The northeast region also worked together to promote efficient packaged commercial HVAC systems, through information and education to installation contractors. The NEEP Lighting and HVAC working groups continue to be a primary source of dialogue relating to coordination of regional program activity and development.

3.13. FUEL INTEGRATION

No fuel integration activity is proposed for the lighting and motors programs because they are market development programs based on electric technologies. The HVAC program will achieve incidental gas savings along with the electric savings attributable to the installation of measures and other programmatic activities.

3.14. TRANSPARENCY

Information regarding Business Partner programs, including program design, benefit/cost analysis, and supporting data, are available for public review and accessible to other program administrators. Program results will be made available by NYSERDA on its Web site. NYSERDA is also working with DPS Staff toward development of a uniform tracking system to increase transparency of program results.

3.15. PROCUREMENT

Program delivery will be accomplished through individual contractors that are procured competitively.

3.16. APPENDIX 3 EFFICIENCY PROGRAM SELECTION CRITERIA

This section provides screening metrics for the Business Partners Program required per Appendix 3 of the Commission's June 23, 2008 EEPS Order. As discussed earlier, NYSERDA intends to provide screening metrics related to electric and gas rate impacts (Screening Metrics 2, 3, 4, 8, 10, 11, and for the suite of programs Screening Metrics 1 and 2) in a separate supplemental filing. Also, for reasons described earlier, estimated MWh and coincident peak MW reductions in 2015 if the program continues to expand and extends through 2015 (Screening Metrics 5a and 6a) are not included.

Total Resource Cost Test Benefit/Cost Ratio (Screening Metric 1)

Table III-19 shows the resource savings and average measure life used as inputs for the benefit/cost analysis.

Table III-20 shows the present value of the costs and benefits used in the analysis. Table III-21 shows the Program Administrator Cost (PAC) and Total Resource Cost (TRC) results. Appendix A provides additional information on benefit/cost definitions and inputs.

Table III-19. Business Partners Program Cumulative Annual Savings

	Program Years	Average Life of Electric/Gas Measures (Years)	Cumulative Annual GWh/Year	Cumulative MW	Cumulative Annual Fuel Savings (MMBtu)	% Downstate (Con Edison)
Electric Funding Only	2009-2011	15	70.5	13.1	--	38%

Table III-20. Business Partners Program: Program and Participant Costs ($2008)

	Present Value of Program Administrator Cost ($millions)	Present Value of Program and Participant Costs ($millions)	Present Value of Resource Benefits ($millions)
Electric Funding Only	$10.2	$18.1	$90.6

Table III-21. Business Partners Program Benefit-Cost Ratios

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
Electric Funding Only	8.9	5.0

Total Resource Cost Test Benefit-Cost Ratio with Carbon Externality (Screening Metric 8)

Table III-22 shows the PAC and TRC test results when the estimated benefits of carbon reduction are included. Carbon was valued at $15 per ton, as directed by DPS in the Order, resulting in a total present value of carbon benefits of $6.9 million.

Table III-22. Business Partners Program Benefit-Cost Ratios with Carbon

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
Electric Funding Only	9.6	5.4

MWh Saved in 2015 (Screening Metric 5b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 70,533 MWh (cumulative annual) in 2015.

MW of Coincident NYISO Peak Saved in 2015 (Screening Metric 6b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 13.1 MW (cumulative) of coincident peak reduction in 2015.[14]

[14] NYSERDA defines the coincident on-peak period as from 12:00 noon to 6:00 PM on summer non-holiday weekdays.

Peak Coincidence Factor of MWh Saved in 2015 (Screening Metric 7)

The peak coincidence factor is a measure of the extent to which the MWh savings is concentrated at the time of system peak. The peak coincidence factor for the program is 0.61.[15]

Number of Participants as a Percentage of Customers in the Class (Screening Metric 9)

Table III-23 shows the number of expected program participants as a percentage of the number of customers in the class. The number of expected program participants represents NYSERDA's best estimate of participation for the current funding request through 2011.

Table III-23. Business Partners Program Participants as a Percentage of Customers in Class

Customer Class	Number of Customers in Class[1]	Number of Anticipated Program Participants	Participants as a Percentage of Number of Customers in Class
Commercial - Electricity	1,002,856	900	<0.1%

[1] Sources: DPS Five Year Index Book of Files and DPS Electricity and Natural Gas Retail Access Migration Reports. Electricity figures do not include LIPA, municipal electric utility, rural electric cooperative, or NYPA customers. Gas figures do not include Keyspan/Long Island customers. Retail Access Migration Reports do not separate commercial and industrial customers and label all-such customers as "non-residential". Commercial and industrial customers estimated by NYSERDA.

[15] Peak coincidence factor = annual MWh saved/(MW saved on peak)(8,760 hours). For this equation, annual MWh saved is the cumulative annual savings expected in 2015 if the program is offered only as long as proposed, i.e., Screening Metric 5b.

4. EXISTING FACILITIES PROGRAM (ELECTRIC AND NATURAL GAS)

4.1. DESCRIPTION OF PROGRAM

The Existing Facilities Program (Program) procures kWh and MMBtu savings by implementing energy efficiency measures through a comprehensive strategy that allows customers to approach their energy projects in an integrated fashion. The expanded program will provide incentives for enabling technologies and measurement tools that allow customers to realize kWh savings through more efficient day-to-day operations in existing facilities. Incentives for the expanded program will be tied to rigorous measurement and verification.

The program focuses on lower cost pre-qualified technology solutions that can be quickly implemented to result in immediate energy savings and on long-term comprehensive performance-based energy projects that require more time to implement but realize higher levels of energy savings over time. The program builds upon the successes of the pre-qualified and performance-based incentives for energy efficiency now offered through the **New York Energy Smart**[SM] Program.

As a further enhancement, the Program will allow end-use customers to apply for incentives directly rather than through contractors.

In addition to expanding current offerings, an additional module will offer assistance to facilities to install or enhance Building Management Systems (BMS) and monitoring equipment to optimize day-to-day operation of facilities. Incentives will be offered to install data gathering technologies that provide critical data to monitor and alter building operation. Covered technologies include temperature sensors for chilled water supplies, condenser water, flow rates, chilled and condenser water temperatures, and wet and dry bulb temperatures. Vendors who provide services to monitor and optimize building operations will be eligible to receive performance-based incentives for kWh savings.

The expanded program will coordinate with other NYSERDA offerings such as the Loan Fund and the FlexTech and Technical Assistance Programs to maximize technical and financial assistance to customers and to implement strategies that maximize energy savings in existing facilities.

4.2. DEMAND REDUCTION AND SYSTEM BENEFITS

The Program will achieve achieving approximately 100,000 MWh and 350,000 MMBtu savings each year or approximately 300,000 MWh and 1,050,000 MMBtu through 2011.

NYSERDA has demonstrated success in providing critical summer peak-demand reduction throughout the state. As an example, NYSERDA's 150MW goal established by the PSC for the Con Edison System Wide Program was exceeded with the majority of the resources obtained through commercial and industrial facilities participating in the Program. The MWs obtained followed rigorous measurement, verification, and evaluation standards. The Program provides financial incentives to measures such as HVAC chillers that inherently reduce summer peak demand. In addition, recent advances in technology integrate energy efficiency and enable customers to participate in demand reduction The realized savings benefits from energy efficiency and demand reductions result in reduced capacity requirements for the NYISO and potentially defer utility T&D infrastructure upgrades. The Program does not seek EEPS funding for demand response-only measures but will support integrated energy efficiency and demand response measures.

Table III-24. Existing Facilities Program — Total Program Expenditures (Projected and net of administration and evaluation) 2009-2015

Annual EEPS Spending	2009	2010	2011	2012	2013	2014	2015	Total
	$4.20M	$8.40M	$17.80M	$17.80M	$7.20M	$2.15M	0	$57.55M
Projected Outreach/Marketing costs: $1.85M in 2009; $1.05M in 2010; $553,120 in 2011.								

Table III-25. Existing Facilities Program – MWh Impacts (Projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings Installed in the Current Year	25,000	50,000	100,000	100,000	25,000	0	0
Annual Savings Installed in Prior Years	n/a	25,000	75,000	175,000	275,000	300,000	300,000
Cumulative Annual Savings	25,000	75,000	175,000	275,000	300,000	300,000	300,000

Table III-26. Existing Facilities Program — Natural Gas Program Expenditures (Projected and net of evaluation and administration) 2009-2015

Annual EEPS Spending	2009	2010	2011	2012	2013	2014	2015	Total
	$1M	$1.9M	$3.6M	$3.4M	$.57M	0	0	$10.47M
Projected Outreach/Marketing costs: $100,000 in 2009; $50,000 in 2010; $35,260 in 2011.								

Table III-27. Existing Facilities Program — Natural Gas Installed MMBtu Impacts (Projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings Installed in the Current Year	90,000	175,000	350,000	350,000	85,000	0	0
Annual Savings Installed in Prior Years	n/a	90,000	265,000	615,000	965,000	1,050,000	1,050,000
Cumulative Annual Savings	90,000	265,000	615,000	965,000	1,050,000	1,050,000	1,050,000

NYSERDA has developed initial evaluation plans with the intention of providing the necessary rigor and reliability for metrics used by the NYISO and transmission and distribution system planners. NYSERDA will continue to work with DPS Staff and the EEPS Evaluation Advisory Group to devise final evaluation

plans that meet established protocols and produce results that can be used as inputs for system planning and forecasting.

4.3. EXISTING FACILITIES EVALUATION PLAN (ELECTRIC AND NATURAL GAS)

4.4. GENERAL EVALUATION APPROACH

Evaluation Goals

The primary goal of the Existing Facilities Program evaluation is to assess the energy and demand savings attributable to program activities. Secondary goals are understanding the market for tailoring the program to the needs of the audience and fostering an efficient program delivery mechanism.

Brief Overview of the Evaluation Approach

The evaluation approach presented in this section was designed based on NYSERDA's current plans for the design and administration of the Existing Facilities Program, and in the absence of complete knowledge about final evaluation protocols, and potential funding set-asides and plans for overarching evaluation projects that would serve the needs of all EEPS program administrators. Thus, these plans have been prepared in order to afford NYSERDA and its independent contractors flexibility to adapt the evaluation approaches that best suit the program as implemented once a greater understanding is in place regarding final evaluation protocols and funding.

To the extent that NYSERDA's original and ongoing SBC-funded Existing Facilities Program can be evaluated using the same approaches and time lines outlined in this section, NYSERDA will supplement this plan to include additional resources from the enhanced SBC3 evaluation funding. NYSERDA's estimated evaluation budget for this program includes a set-aside for developing a full evaluation plan, an effort that will involve DPS Staff and the EEPS Evaluation Advisory Group.

Evaluation Budget

NYSERDA expects the evaluation budget for the Existing Facilities Program to be less than 5% of the program funding level, minus funds set aside for statewide studies and other overarching costs borne by program administrators. It is expected that the majority of the Existing Facilities Program evaluation budget will be allocated to Impact Evaluation (approximately 70%). The remaining program evaluation funds will be split approximately equally between Process Evaluation and Market Evaluation.

Evaluation Schedule

Evaluation studies included as part of the Existing Facilities Program evaluation plan are shown in the table below along with the time frame for their anticipated completion.

Table III-28. Existing Facilities Program Evaluation Schedule

Evaluation Element	Expected Completion			
	2009	2010	2011	2012
Impact - M&V	Pre-measurements	X		X
Impact - Net-to-Gross		X		X
Process Evaluation	X		X	
Market Evaluation		X		

Impact Evaluation

Impact evaluation activities will consist of measurement and verification and net-to-gross analysis as described in the following sections.

Measurement and Verification

In general, projected savings for the legacy **New York Energy $mart**[SM] programs that are the basis for this proposed program use sound engineering calculations and rigorous post-installation verification activities. At the same time, the increased evaluation funding can substantially add to the overall reliability in the independent evaluation savings estimates by funding significant expansions in the M&V methods. More sophisticated methods with greater measurement support can greatly reduce any unknown risks of potential bias that can go unobserved within more simplistic methods.

The planned M&V evaluation will include significant site survey work with a research design that incorporates (where possible) pre- and post-measurement billing analysis of comparative samples of participants and matched non-participants, and post-installation measurement. The M&V evaluation method chosen would likely involve billing analysis for more homogenous groups or follow IPMVP Option B: Retrofit Isolation where complete measurement is possible for more heterogeneous groups. Alternatively, M&V will support the use of IPMVP Option A by undertaking metering/monitoring measurement to mitigate the greatest sources of uncertainty, as appropriate. The projects that participate in the new Building Management System module can provide important post-retrofit monitored data that can be leveraged for evaluation. Efficient sample sizes can be chosen using stratified ratio estimation (SRE) on electricity savings and target a 90/10 confidence/sampling precision level for the statewide program. If budget permits, the sample could be expanded to target 90/10 at the utility territory level. The results will be applied to all of the energy savings reported for the program. As projects have a long timeframe for completion, the first post-installation M&V study will be conducted in 2010, with pre-measurements starting in 2009. Until these planned evaluations are completed, NYSERDA could use the savings-weighted realization rate derived from past evaluation work on the legacy programs to report savings.

Net-to-Gross

NYSERDA intends to explore participant and non-participant spillover and participant freeridership by using an enhanced self-report survey process with multiple decision-makers including building owners,

chief financial officers, vendors, technical assistance providers, etc. involved in adopting energy efficiency measures. Sample sizes will be calculated to target 90% confidence and 10% sampling precision at the program level. If budget permits, 90/10 confidence could be achieved at the utility level. Examinations will be made to assess self-selection bias between the participating and non-participating matched groups. These alternative methods will be used to derive a final triangulated net-to-gross (NTG) ratio to provide a high level of construct validity for the NTG estimates. Given the long-term nature of projects, attribution analysis will not be completed until 2010. If budget permits, this work could be updated in 2012. Until these planned evaluations are completed, NYSERDA could use a savings-weighted NTG ratio derived from past evaluation work on the legacy programs to report savings. Alternatively, a different deemed NTG could be applied as justifiable until the actual program NTG can be determined in 2010.

Process Evaluation

Process evaluation will focus on the participation and decision making processes of the end users and the energy services companies. Those that have not participated in the program or applicants that never installed measures will form the partial participant/non-participant population. Areas of inquiry expected for the process evaluation work include:

- Attrition analysis focusing on the reasons for non-participation and drop out at different stages of the program
- Barriers to participation and program awareness
- Adequacy of the performance incentive to encourage participation
- Overall customer satisfaction with the program participation process
- Role of technical consultants and their management of project process
- Examination of energy service company decision making and expansion plans for upstate and downstate areas
- Examination of customer decision making

The process evaluation work will generate actionable recommendations for improvements to the program. It is expected that process evaluation will be conducted at two points in time, first approximately a year after the program start date so as to provide early feedback regarding the program processes and participation rates and second in approximately the third year to further explore reasons for attrition.

Market Evaluation

In the Supplemental Revision submitted on August 22, 2008[16], NYSERDA proposed that an extensive statewide commercial/industrial baseline and measure saturation study be considered for joint sponsorship by all EEPS program administrators. The proposed study could be based on site visits coupled with surveys of key market actor groups. The purpose of the study would be to fully characterize buildings and facilities in the commercial/industrial sector, including: the end-use equipment in use, vintage and efficiency level; and other factors such as current equipment maintenance and replacement practices, customer and market response to program offerings and external influences, and customer and market decision making processes.

[16] NYSERDA, *System Benefits Charge Supplemental Revision for the* ***New York Energy Smart***^{SM} *Programs (2008-2011)*, As Amended, August 22, 2008.

If the proposed statewide baseline and measure saturation study is pursued, then it would likely fulfill the market evaluation needs of the Existing Facilities Program, and would also support impact evaluation efforts. If the statewide study is not implemented, then a small amount of funds from the Existing Facilities Program evaluation budget would be used to:

- Characterize the market eligible to participate in the program via reviews of secondary data sources as well as surveys of key market actor groups,
- Continue time-series measurements of key progress indicators and researchable issues examined in prior research efforts conducted for NYSERDA's Commercial and Industrial programs,
- Research current equipment maintenance and replacement practices,
- Explore customer and market response to program offerings and external influences, and
- Examine customer and market decision making processes.

This more limited study, if needed, would be completed in 2010.

Evaluation Plan Variations

Given the level of uncertainty regarding final evaluation protocols, statewide studies to be conducted by all program administrators, and funding levels needed to support overarching evaluation studies and activities, the evaluation plan presented in this section should be viewed as scalable and flexible. Specifically, if the total evaluation budget for this program were reduced, NYSERDA would first remove funds from the market and process evaluation work areas. These areas could be limited in terms of their sample sizes and evaluation frequency, if needed. Conversely, if more of NYSERDA's total evaluation funding for could be allocated to this program, the additional funds would be used to expand and increase the rigor of impact evaluation work and to provide for a follow-up market study in 2012.

4.5. Market Segment Need

Historical experience has illustrated that at least 65% of the energy savings are attributable to the commercial and industrial sectors and offer the greatest opportunity for cost-effective savings. The market potential for operational improvements in existing buildings is significant. Many operational improvements through commissioning have been implemented in recent years. The proposed effort is intended to complement and further program goals and objectives through commissioning and specifically to attain persistence of savings and operational optimization.

4.6. Coordination

NYSERDA will closely coordinate efforts with each of the investor-owned utilities to eliminate confusion and minimize possible customer conflicts. Efficiency requirements and eligibility standards will be uniform where practical, and a transition plan will be developed so that customers eligible for utility offerings, such as the expedited Small Business Programs, do not overlap with the Program. This program will also be coordinated with trade associations such as the Association of Engineers, REBNY, and BOMA and with NYSERDA's contractors marketing other EEPS programs.

4.7. Co-Benefits

The Program will develop employment opportunities in the energy services industry in New York by engaging energy service providers such as energy services companies and HVAC and lighting contractors. In addition, the Program will help develop a new business sector in the energy services industry similar to the New York Independent System Operator demand response markets. Under that

initiative, NYSERDA encouraged more than 30 active private sector businesses to provide demand response services. This effort has the same potential for business development in the building operations optimization marketplace.

4.8. Portfolio Balance

NYSERDA offers a portfolio of programs that complement each other and provide customers with a holistic approach to implementing their energy projects. Programs include Technical Assistance, which identifies energy efficiency opportunities, and programs that provide financial incentives to help defray implementation costs of the identical opportunities. By offering a comprehensive range of programs, customers of all classes can determine what opportunities will best suit their needs. Additionally, the efficient operation of facilities has tremendous potential for energy savings. NYSERDA has provided limited building operation services through commissioning services in the past. The expanded Program includes a new service that will require rigorous M&V and program oversight to ensure persistence of savings.

4.9. Depth of Savings

NYSERDA encourages a comprehensive strategic approach to energy projects that enables customers to operate within their budgets. Energy efficiency measures eligible for financial incentives include lighting, energy management systems, and complex HVAC systems. As stated above, tremendous savings potential exists from operational improvements to existing facilities. Savings from operational improvements have been addressed in other program to some degree through commissioning efforts, but persistence of the resulting savings has been questioned. While this effort is similar to commissioning, the program structure will incorporate M&V requirements and service provider commitments that will address persistence of savings.

4.10. Underserved Markets

While the market for these services has been served in the past by providing capital incentives, the enhanced program offers a valuable new energy service to this market. Facility operational optimization using detailed measurement and monitoring technologies has not previously been available to consumers.

4.11. Commitment

The term of the program is through 2011. Customers and contractors are familiar with NYSERDA's programs and can quickly engage NYSERDA in their energy projects. Individual operational projects will require contractual services that extend over a period of from four to six years. This time frame will permit introduction of a structured process to maintain savings and implement new procedures and processes that may yield additional energy savings.

4.12. Customer Outreach

Marketing, outreach, and education activities for the Program will rely upon NYSERDA's marketing and outreach experience and build upon its strong alliance with energy service providers and contractors. NYSERDA's established contacts and relationships with trade associations, key stakeholders and contractor groups such as ASHRAE, the Association of Energy Engineers, the New York Energy Consumers Council, The Real Estate Board of New York, and the New York City Economic Development Corporation will be used to market the program.

NYSERDA's Benchmarking and Operations Management program, which provides outreach and education to diverse customer sectors including education, health care, industry, commercial businesses,

real estate, and water/wastewater management, will provide another path for promoting and encouraging participation in the Program. NYSERDA will closely coordinate with the state's utilities to market and provide outreach on each program administrator's respective programs.

4.13. COLLABORATIVE APPROACH

NYSERDA participated in numerous collaborative meetings with representatives of investor-owned utilities and key stakeholders, such as NYCEDC, to identify a cooperative strategy to serve customers. NYSERDA program staff historically have worked with consultants, contractors, building owners, utility staff, trade associations, and vendors to deliver SBC programs and have established significant expertise in program development. Staff experience plus workshops and seminars, attendance at trade shows, and formal meetings with stakeholders provide the impetus for the concept proposed for the Program.

4.14. FUEL INTEGRATION

The Program proposal would expand performance-based incentives for natural gas improvements statewide and allow customers and energy service providers to address their energy projects in a comprehensive manner. Operational optimization primarily involves electric energy savings, but the technologies used to generate electric savings are easily transferable to non-electric end uses. Gas savings could easily be incorporated into the proposed program.

4.15. TRANSPARENCY

The program description will be available to all interested parties on our Web site and program savings and costs will be available to the public through detailed reports developed by NYSERDA and external evaluators. Current **New York Energy Smart**[SM] evaluations include Benefit/Cost Analyses, Impact Evaluations, and Year-End Impact Evaluations in keeping with NYSERDA's open governance policy. NYSERDA will work with DPS to develop a uniform tracking system to make results available to the public.

4.16. PROCUREMENT

Services and incentives through the Program are offered first-come, first-served to all entities, customers, and energy services providers who wish to participate in the program. This standard-offer approach enables customers to make financial decisions quickly and to promptly implement their energy projects. The services of the technical quality assurance contractors who support various NYSERDA programs have been competitively procured.

4.17. APPENDIX 3 EFFICIENCY PROGRAM SELECTION CRITERIA

This section provides screening metrics for the Existing Facilities Program required per Appendix 3 of the Commission's June 23, 2008 EEPS Order. NYSERDA will provide screening metrics related to electric and gas rate impacts (Screening Metrics 2, 3, 4, 8, 10, 11, and for the suite of programs Screening Metrics 1 and 2) in a separate supplemental filing. Also, estimated MWh and coincident peak MW reductions in 2015 if the program continues to expand and extends through 2015 (Screening Metrics 5a and 6a) are not included.

Total Resource Cost Test Benefit/Cost Ratio (Screening Metric 1)

Table III-29 shows the resource savings and average measure life used as inputs for the benefit/cost analysis. Table III-30 shows the present value of the costs and benefits used in the analysis. Table III-31

shows the Program Administrator Cost (PAC) and Total Resource Cost (TRC) results. Appendix A provides additional information on benefit/cost definitions and inputs.

Table III-29. Existing Facilities Program Cumulative Annual Savings

	Program Years	Average Life of Electric/Gas Measures (Years)	Cumulative Annual GWh/Year	Cumulative MW	Cumulative Annual Fuel Savings (MMBtu)	% Downstate (Con Edison)
With Electric and Gas Funding	2009-2011	16 / 18	300.0	100.0	1,050,000	38%
Electric Funding Only	2009-2011	16	300.0	100.0	--	38%

Table III-30. Existing Facilities Program: Program and Participant Costs ($2008)

	Present Value of Program Administrator Cost ($millions)	Present Value of Program and Participant Costs ($millions)	Present Value of Resource Benefits ($millions)
With Electric and Gas Funding	$59.6	$239.7	$643.6
Electric Funding Only	$48.5	195.30	$481.2

Table III-31. Existing Facilities Program Benefit-Cost Ratios

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
With Electric and Gas Funding	10.8	2.7
Electric Funding Only	9.9	2.5

Total Resource Cost Test Benefit-Cost Ratio with Carbon Externality (Screening Metric 8)

Table III-32. shows the PAC and TRC test results when the estimated benefits of carbon reduction are included. Carbon was valued at $15 per ton, as directed by DPS in the Order, resulting in a total present value of carbon benefits of $36.2 million for gas and electric funding and $25.9 million with electric funding only.

Table III-32. Existing Facilities Program Benefit-Cost Ratios with Carbon

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
With Electric and Gas Funding	11.4	2.8
Electric Funding Only	10.5	2.6

MWh Saved in 2015 (Screening Metric 5b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 300,000 MWh (cumulative annual) in 2015.

MW of Coincident NYISO Peak Saved in 2015 (Screening Metric 6b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 100.0 MW (cumulative) of coincident peak reduction in 2015.[17]

Peak Coincidence Factor of MWh Saved in 2015 (Screening Metric 7)

The peak coincidence factor is a measure of the extent to which the MWh savings is concentrated at the time of system peak. The peak coincidence factor for the program is 0.34.[18]

Number of Participants as a Percentage of Customers in the Class (Screening Metric 9)

Table III-33 shows the number of expected program participants as a percentage of the number of customers in the class. The number of expected program participants represents NYSERDA's best estimate of participation for the current funding request through 2011.

Table III-33. Existing Facilities Program Participants as a Percentage of Customers in Class

Customer Class	Number of Customers in Class[1]	Number of Anticipated Program Participants	Participants as a Percentage of Number of Customers in Class
Commercial - Electricity	1,002,856	1,530	0.2%
Industrial - Electricity	7,715	270	3.5%
Commercial – Natural Gas	358,504	1,530	0.4%
Industrial – Natural Gas	14,357	270	1.9%

Sources: DPS Five Year Index Book of Files and DPS Electricity and Natural Gas Retail Access Migration Reports. Electricity figures do not include LIPA, municipal electric utility, rural electric cooperative, or NYPA customers. Gas figures do not include Keyspan/Long Island customers. Retail Access Migration Reports do not separate commercial and industrial customers and label all-such customers as "non-residential". Commercial and industrial customers estimated by NYSERDA.

[17] NYSERDA defines coincident on-peak period as being between 12:00 noon to 6:00 PM on summer non-holiday weekdays.

[18] Peak coincidence factor = annual MWh saved/(MW saved on peak)(8,760 hours). For this equation, annual MWh saved is the cumulative annual savings expected in 2015 if the program is offered only as long as proposed, i.e., Screening Metric 5b.

5. COMMERCIAL LOAN FUND AND FINANCE PROGRAM (ELECTRIC AND NATURAL GAS)

5.1. PROGRAM DESCRIPTION

The Loan Fund and Finance Program (Program) encourages the installation of energy-efficient equipment and process improvements in commercial buildings by increasing the availability of low-interest capital. The Program has developed a network of participating lenders that are able to offer reduced-interest rate financing for their customers. There are currently 150 lenders and leasing companies participating in the program; current interest-rate reductions are 6.5% in Con Edison territory and 4.0% in the remaining utility territories. The subsidy is paid to the lender upon evidence that the customer has received the reduced interest rate on the loan or lease issued by the financial institution. Loans or leases for up to $1,000,000 are eligible for the subsidy through the Loan Fund. Depending on the terms of the loan, a subsidy typically equates to approximately 26% of the principal financed for Con Edison customers and 18% for non-Con Edison customers. Over 610 commercial/industrial, 2,400 residential, and 180 multifamily customers have received a reduced-rate loan. For the commercial sector, $27 million in interest-rate subsidies has leveraged over $172 million in loan activity. The savings associated with these loans is 104,441 MWh, 34 MW, and 216,000 MMBTUs (gas and oil).

NYSERDA proposes to build upon the success of the Program, as it was developed in the **New York Energy $mart**[SM] program, by identifying new lenders and targeting commercial customers in underserved markets and sectors where energy efficiency opportunities are largely untapped. To date, the Program has allowed customers to receive an interest rate reduction for projects receiving incentives from other NYSERDA programs, as well as "stand-alone" projects. Under EEPS, overlap at the program level will be eliminated for commercial programs. Customers who are installing measures that are deemed eligible, will be guided to apply to either the Loan Fund, or to one of the other commercial programs that provide direct incentives (e.g. High Performance New Construction Program or High Performance Existing Facilities Program). The availability of the Loan Fund as an option will help customers who prefer or need up-front capital to implement efficiency projects, as contrasted with use of the incentive programs that provide reimbursement for a portion of installation cost. The amount of the interest rate reduction will be reviewed to ensure it reflects current market conditions. Other financing opportunities that could benefit commercial customers and encourage investment in energy efficiency measures, such as partnering with other entities on "green bonds" and loan guarantees, will be explored.

5.2. DEMAND REDUCTION AND SYSTEM BENEFITS

Energy and demand savings of 9,913 MWh and 3.8 MW annually are anticipated from commercial projects financed using the Loan Fund. The addition of statewide gas funding will allow the Loan Fund to expand its offering of efficient gas measures. This will increase the opportunities for several sectors - institutions, schools, hotels, and restaurants - across the state to address not only building envelope and central plant efficiencies, but the efficiencies of their commercial kitchens. This additional funding is estimated to result in savings of 161,000 MMBtus annually.

Table III-34. Loan Fund – Total Program Expenditures (Projected and net of administration and evaluation) 2009-2015

	2009	2010	2011	2012	2013	2014	2015	Total
Annual EEPS Spending	$4.05M	$4.05M	$4.05M	0	0	0	0	$12.14M
Projected Outreach/Marketing costs: $0.24M in 2009; $0.24M in year 2010; $0.24M in 2011.								

Table III-35. Loan Fund — Installed MWh Impacts (Projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings Installed in the Current Year	9,913	9,913	9,913	0	0	0	0
Annual Savings Installed in Prior Years	0	0	0	0	0	0	0
Cumulative Annual Savings	9,919	19,826	29,739	29,739	29,739	29,739	29,739

Table III-36. Loan Fund – Natural Gas Program Expenditures (Projected and net of administration and evaluation) 2009-2015

	2009	2010	2011	2012	2013	2014	2015	Total
Annual EEPS Spending	$0.47M	$0.47M	$0.47M	0	0	0	0	$1.421M
Projected Outreach/Marketing costs: $0.03M in 2009; $0.03M in 2010; $0.03M in 2011.								

Table III-37. Loan Fund – Natural Gas Installed MMBtu Impacts (Projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings Installed in the Current Year	161,000	161,000	161,000				
Annual Savings Installed in Prior Years	n/a						
Cumulative Annual Savings	161,000	322,000	483,000				

NYSERDA has developed initial evaluation plans with the intention of providing the necessary rigor and reliability for metrics used by the NYISO and transmission and distribution system planners. NYSERDA will continue to work with DPS Staff and the EEPS Evaluation Advisory Group to devise final evaluation

plans that meet established protocols and produce results that can be used as inputs for system planning and forecasting.

5.3. General Evaluation Approach

Evaluation Goals

The primary goal of the Loan Fund Program evaluation is to assess the energy and demand savings attributable to program activities. Secondary goals are developing an understanding of the market for tailoring the program to the needs of the audience and maintaining an efficient program delivery mechanism.

Brief Overview of the Evaluation Approach

The evaluation approach presented in this section was designed based on NYSERDA's current plans for the design and administration of the Loan Fund Program, and in the absence of complete knowledge about final evaluation protocols, and potential funding set-asides and plans for overarching evaluation projects that would serve the needs of all EEPS program administrators. Thus, these plans have been prepared in order to afford NYSERDA and its independent contractors flexibility to adapt the evaluation approaches that best suit the program as implemented once a greater understanding is in place regarding final evaluation protocols and funding.

To the extent that NYSERDA's original **New York Energy $mart**[SM] Loan Fund Program can be evaluated using the same approaches and time lines outlined in this section, NYSERDA will supplement this plan to include additional resources from the enhanced SBC3 evaluation funding. NYSERDA's estimated evaluation budget for this program includes a set-aside for developing a full evaluation plan, an effort that will involve DPS Staff and the EEPS Evaluation Advisory Group.

Evaluation Budget

To adequately cover the plans described herein, NYSERDA expects the Loan Fund evaluation budget may need to be greater than 5% of program funding minus the set-aside for statewide studies and other overarching costs borne by program administrators. The majority of the Loan Fund Program evaluation budget likely will be allocated to impact evaluation (approximately 70%). The remaining program evaluation funds will be split between process evaluation (20%) and market evaluation (10%).

Evaluation Schedule

Evaluation studies included as part of the Loan Fund Program evaluation plan are shown in the table below along with the time frame for their anticipated completion.

Table III-38, Loan Fund Program Evaluation Schedule

Evaluation Element	Expected Completion		
	2009	2010	2011
Impact - M&V	X (if pre-post design possible)	X (if pre-post design possible)	X
Impact - Net-to-Gross	FR	FR, SO	FR,SO

Process Evaluation	X		
Market Evaluation		X	

FR = Freeridership study SO = Spillover study

Impact Evaluation

Measurement and Verification

The great diversity in types of projects, sectors and technologies expected to be funded through the Loan Fund presents a challenge in terms of conducting a comprehensive, rigorous evaluation with limited evaluation budget. Participation in the existing SBC Loan Fund program will be examined during the detailed evaluation planning process. This examination will be used to determine the likely distribution of future Loan Fund participants by sector and technology. The measurement and verification plans will be developed based upon surveying samples stratified across these distributions. The most efficient and rigorous evaluation design will be to group projects into homogenous groups. And the most efficient and rigorous methods depend upon the availability of usage data, the project type, sector and technology. Those groups with the largest expected savings will be targeted for rigorous evaluation efforts. The process of applying for a loan and waiting for approval may allow collection of pre- and post-installation data to be undertaken if well-coordinated with the program effort. This would allow NYSERDA to conduct billing analyses for each homogeneous group, resulting in a realization rate specific to that group. This could offer the highest rigor evaluation.

Efficient sample sizes will be chosen using stratified ratio estimation (SRE) on electricity savings, targeting a 90/10 confidence / sampling precision level for the statewide program for each targeted homogenous evaluation group. If budget permits, the sample could be expanded to target 90/10 at the utility territory level.

Measurement & Verification will be completed in 2011. Until the planned evaluations are completed, NYSERDA can use the realization rate derived from past Loan Fund evaluation work to report savings.

Net-to-Gross

NYSERDA intends to explore participant and non-participant spillover and participant freeridership by using an enhanced self-report survey process with multiple decision-makers including building owners, chief financial officers, bank officials, etc. involved in adopting energy efficiency measures. Proper examination of the multiple decision-makers, their level of influence and when decisions occur can provide higher quality freeridership estimates. The surveys will include alternative inquiries to test and provide construct validity for the net-to-gross (NTG) estimates. Sample sizes will be calculated to target 90% confidence and 10% sampling precision for the statewide program. If budget permits, 90/10 confidence/precision could be achieved at the utility level.

Inquiries on influences in decision making will likely produce the most reliable recall when they are conducted closer to the point of the decision. Thus, freeridership inquiries will be completed in 2009, 2010 and 2011 for projects completed in each of those three years. Spillover decisions, however, are made after project implementation. The spillover inquiries are planned for 2010 and 2011. The 2012 spillover rate for 2011 participation can be based upon the findings from the 2010 and 2011 spillover studies.

Until the planned evaluations are completed, NYSERDA can use a savings-weighted NTG ratio derived from past Loan Fund evaluation work.

Process Evaluation

Process evaluation will focus on the participation and decision making process of the borrowers and the financial institutions who work with them. Additionally, those who have not participated in the program (but installed measures through a NYSERDA incentive programs) or applicants to the Loan Fund that never installed measures will form a partial participant population. Those who never applied for a loan will form a non-participant population that will also be part of the process evaluation effort. Areas of inquiry expected for the process evaluation work include:

- Attrition analysis focusing on the reasons for non-participation and drop out at different stages of the program
- Barriers to participation and program awareness
- Effectiveness of loan in reducing barriers to installation of energy efficiency measures
- Overall customer satisfaction with the program participation process
- Role of financial institutions and their management of project process
- Overall satisfaction by financial institutions with the program processes
- Examination of customer decision making
- Comparison of the customer characteristics for participants of the Loan Fund Program versus the participant characteristics among the alternative incentive programs[19]
- Comparison of the decision making between these two groups to understand the customer choice between these alternatives

The process evaluation work will generate actionable recommendations for improvements to the program. It is expected that process evaluation will be conducted approximately a year after the program start date so as to provide early feedback regarding the program processes and participation rates.

Market Assessment

The market characterization and assessment evaluation will collect primary data via interviews with key market actor groups, focusing on expected program outputs and outcomes, market indicators, and researchable issues identified in the program theory and logic model. The effort will examine progress made toward achieving the expected outputs and outcomes by comparing current results with baseline measurements developed in prior program evaluations. In addition, the data collection effort will further explore issues raised during the process evaluation (which is scheduled to occur in 2009, one year before the market work), to expand on process-related recommendations for program improvements and provide guidance for program design and targeting. Given the limited evaluation budget, these market assessment inquiries will be a component of the NTG surveys being conducted for the impact evaluation.

Evaluation Plan Variations

Given the level of uncertainty regarding final evaluation protocols, statewide studies to be conducted by all program administrators, and funding levels needed to support overarching evaluation studies and activities, the evaluation plan presented in this section should be viewed as scalable and flexible. Specifically, if the total evaluation budget for this program were reduced, NYSERDA would first remove funds from the market and then process evaluation work areas. These areas could be limited in terms of

[19] The evaluation planning and instrument development will be coordinated across program evaluations so the data is available to make these comparisons.

their sample sizes, if needed. Conversely, if more of NYSERDA's total evaluation funding could be allocated to this program, the additional funds would be used to expand and increase the rigor of impact evaluation work.

5.4. Market Segment Need

Historically the Loan Fund has been viewed as an enabling program, working with lenders to offer financing at attractive rates to improve the paybacks on energy efficiency projects. The Loan Fund will continue to enable customers to implement energy efficiency projects that might not fit into any other commercial incentive programs. Lenders will continue to work with NYSERDA and recognize the benefits of investing in energy efficiency.

5.5. Coordination

The Loan Fund will coordinate with other incentive programs administered by NYSERDA to ensure no overlap. As the EEPS On-Bill Financing model is developed, further coordination with the utilities will be necessary to avoid conflicting financing programs. This coordination has already begun as NYSERDA is a participant in the On-Bill Financing Working Group.

5.6. Co-Benefits

The Loan Fund has historically included fuel integration and non-energy benefits in its program design. Certain pre-qualified non-electric measures related to the building envelope and heating have been a part of the Loan Fund since its inception. Additionally the Loan Fund has evaluated the eligibility of custom gas equipment for the reduced interest rate financing. For certain projects that may not meet a 10-year payback strictly on energy savings, other non-energy related criteria could be used to make the project eligible: job creation or retention; health, safety, and environmental benefits; renewable measures; green building measures; and increased capacity or process improvements. The Loan Fund is also used to educate the lending community on how energy efficiency improvements improve building values and their customers' operating income.

5.7. Portfolio Balance

The Loan Fund will give customers who require up-front financing an opportunity to obtain low-cost financing. The Loan Fund will also fill the gap in incentive programs for those customers whose project cannot qualify for commercial incentive programs. The Loan Fund may also be able to complement utility financing programs once the components of On-Bill Financing are developed.

5.8. Depth Of Savings

The Loan Fund will continue to assist customers in implementing comprehensive energy efficiency projects. With the addition of gas funding, the Loan Fund will also be able to reach customers desiring to improve the efficiencies of commercial kitchens and manufacturing processes. The Loan Fund will allow customers with no other access to financial assistance for their energy project the opportunity to receive low cost financing. The Loan Fund will enable customers to implement recommendations from technical assistance audits.

5.9. Underserved Markets

Local economic development corporations, or LDCs, typically are one of the first organizations contacted by small businesses seeking assistance to locate or expand their companies. Many LDCs can provide loans to small businesses, and some meet the current definition for participation as lenders in the Loan

Fund and have chosen not to participate. NYSERDA sees participation by these organizations as means to reach a large underserved population across the state. Staff will make special efforts to recruit LDCs into the Loan Fund and the Loan Fund will revisit its requirements for participation by lenders to permit inclusion of more LDCs.

5.10. COMMITMENT

The Loan Fund already has the momentum, lender network, support contractor, and exposure to quickly incorporate funds under EEPS and assist customers. The design of the Loan Fund and the evaluation criteria would be adjusted to reflect the decision to remove overlapping program incentives.

5.11. CUSTOMER OUTREACH

The Loan Fund support contractor currently works with lenders and economic development organizations to reach out to customers. The contractor will be engaged to expand its outreach, using its network of contacts in the industrial, manufacturing, construction, and finance sectors to reach additional customers and lenders. In addition, NYSERDA will expand its current efforts and use an integrated marketing and outreach approach to increase the number of commercial/industrial customers that participate in its programs. Marketing and outreach will largely be accomplished through the Energy Smart Focus initiatives which target various sectors of the commercial/industrial market with tailored messages, one-on-one interactions, and other strategies that encourage efficiency practices. Based on experience to date, an additional investment in the Energy Smart Focus initiatives is expected to result in a direct increase in both the quantity and quality of projects entering core incentive programs. (Early indicators suggest a 30-60% participation rate after receiving assistance through the Energy Smart Focus initiatives.).

Sectors to be targeted include K-12 schools, healthcare facilities, commercial real estate, the hospitality industry, local governments, state buildings, and water/waste-water facilities. The Focus initiatives will educate customers about advanced technologies and processes that provide the most cost-effective efficiency projects. Additional funding for marketing and outreach will be used to develop new methods that improve a streamlined handoff process to direct incentive programs. In addition to the sector approaches, each of the incentive programs will implement targeted outreach and marketing strategies to disseminate information about the benefits of participation Marketing and outreach will also occur at the divisional and Authority level to more generally expand understanding of services available from NYSERDA.

5.12. COLLABORATIVE APPROACH

The Loan Fund has engaged consultants, members of the lending community, and consumers in the development of aud modifications to the Loan Fund. Discussions with members of Working Group VI (On-Bill Financing) indicate a desire to continue the Loan Fund with a complementary on-bill mechanism. As those details are determined, further adjustments to the Loan Fund may be necessary.

5.13. FUEL INTEGRATION

The Loan Fund has historically been a mechanism for both electric and gas energy-efficiency. As funds have become available, gas measures have been expanded beyond those related to the building envelope to include commercial kitchen equipment. Restaurants and institutions have availed themselves of these offerings to improve the efficiency of food service equipment. The addition of statewide gas funding will allow the Loan Fund to offer reduced-rate financing for these types of measures to a greater range of customers engaging in comprehensive projects that include both electric and gas measures.

5.14. TRANSPARENCY

Evaluations for the Loan Fund are available upon request from NYSERDA and include Market Characterization, Market Assessment, and Causality; Program Cost-Effectiveness Assessment; Logic Model Development; and Process Evaluations. Program results will be made available by NYSERDA on its Web site. NYSERDA is also working with DPS Staff toward development of a uniform tracking system to increase transparency of program results.

5.15. PROCUREMENT

Program delivery will be accomplished by a contractor procured competitively.

5.16. APPENDIX 3 EFFICIENCY PROGRAM SELECTION CRITERIA

This section provides screening metrics for the Loan Fund Program required per Appendix 3 of the Commission's June 23, 2008 EEPS Order. As discussed earlier, NYSERDA intends to provide screening metrics related to electric and gas rate impacts (Screening Metrics 2, 3, 4, 8, 10, 11, and for the suite of programs Screening Metrics 1 and 2) in a separate supplemental filing. Also, for reasons described earlier, estimated MWh and coincident peak MW reductions in 2015 if the program continues to expand and extends through 2015 (Screening Metrics 5a and 6a) are not included.

Total Resource Cost Test Benefit/Cost Ratio (Screening Metric 1)

Table III-39 shows the resource savings and average measure life used as inputs for the benefit/cost analysis. Table III-40 shows the present value of the costs and benefits used in the analysis. Table III-41 shows the Program Administrator Cost (PAC) and Total Resource Cost (TRC) results. Appendix A provides additional information on benefit/cost definitions and inputs.

Table III-39. Loan Fund Program Cumulative Annual Savings

	Program Years	Average Life of Electric/Gas Measures (Years)	Cumulative Annual GWh/Year	Cumulative MW	Cumulative Annual Fuel Savings (MMBtu)	% Downstate (Con Edison)
With Electric and Gas Funding	2009-2011	16 / 18	29.7	11.3	483,000	20%
Electric Funding Only	2009-2011	16 / 18	29.7	11.3	366,000	20%

Table III-40. Loan Fund Program: Program and Participant Costs ($2008)

	Present Value of Program Administrator Cost ($millions)	Present Value of Program and Participant Costs ($millions)	Present Value of Resouree Benefits ($millions)
With Electric and Gas Funding	$12.6	$35.1	$120.0
Electric Funding Only	$11.1	$31.7	$101.9

Table III-41. Loan Fund Program Benefit-Cost Ratios

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
With Electric and Gas Funding	9.5	3.4
Electric Funding Only	10.1	3.6

Total Resource Cost Test Benefit-Cost Ratio with Carbon Externality (Screening Metric 8)

Table III-42 shows the PAC and TRC test results when the estimated benefits of carbon reduction are included. Carbon was valued at $15 per ton, as directed by DPS in the Order, resulting in a total present value of carbon benefits of $7.3 million for both electric and gas funding or $6.2 million for electricity funding alone.

Table III-42. Loan Fund Program Benefit-Cost Ratios with Carbon

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
With Electric and Gas Funding	10.1	3.6
Electric Funding Only	9.7	3.4

MWh Saved in 2015 (Screening Metric 5b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 23,124 MWh (cumulative annual) in 2015.

MW of Coincident NYISO Peak Saved in 2015 (Screening Metric 6b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 4.8 MW (cumulative) of coincident peak reduction in 2015.[20]

Peak Coincidence Factor of MWh Saved in 2015 (Screening Metric 7)

The peak coincidence factor is a measure of the extent to which the MWh savings is concentrated at the time of system peak. The peak coincidence factor for the program is 0.55.[21]

Number of Participants as a Percentage of Customers in the Class (Screening Metric 9)

Table III-43 shows the number of expected program participants as a percentage of the number of customers in the class. The number of expected program participants represents NYSERDA's best estimate of participation for the current funding request through 2011 excluding those projects that historically accessed two or more programs.

Table III-43 Loan Fund Program Participants as a Percentage of Customers in Class

Customer Class	Number of Customers in Class[1]	Number of Anticipated Program Participants	Participants as a Percentage of Number of Customers in Class
Commercial - Electricity	1,002,856	90	0.0%
Industrial - Electricity	7,715	135	1.7%
Commercial – Natural Gas	358,504	90	0.03%
Industrial – Natural Gas	14,357	135	0.9%

[1] Sources: DPS Five Year Index Book of Files and DPS Electricity and Natural Gas Retail Access Migration Reports. Electricity figures do not include LIPA, municipal electric utility, rural electric cooperative, or NYPA customers. Gas figures do not include Keyspan/Long Island customers. Retail Access Migration Reports do not separate commercial and industrial customers and label all-such customers as "non-residential". Commercial and industrial customers estimated by NYSERDA.

[20] NYSERDA defines coincident on-peak period as being between 12:00 noon to 6:00 PM on non-holiday weekdays from June 1 through August 31.

[21] Peak coincidence factor = annual MWh saved/(MW saved on peak)(8,760 hours). For this equation, annual MWh saved is the cumulative annual savings expected in 2015 if the program is offered only as long as proposed, i.e., Screening Metric 5b.

6. BIDDING PROGRAM (ELECTRIC AND NATURAL GAS)

In its June 23, 2008 Order[22] (Order), the Commission established the EEPS and approved an expansion of existing energy efficiency programs. Pursuant to the Order, NYSERDA presented a plan in its 60 Day Filing to expand its existing activities in industrial and process efficiency.

As part of the development of and subsequent to the NYSERDA 60 Day Filing, discussions with stakeholders and DPS Staff indicate an interest in enhancing program activities provided for in the Order by developing a new block bidding program for industrial and process efficiency participants. NYSERDA proposes to work with the Commission, DPS Staff, and interested stakeholders to develop a bidding program as an innovative means to help accomplish the MWh goals for the Industrial and Process Efficiency Program as identified in the Order and the NYSERDA 60 Day Filing.

In addition to Industrial and Process Efficiency electric efficiency incentives, the Bidding Program will provide energy savings by offering:

- Gas efficiency incentives to Industrial and Process Efficiency Program participants
- Electricity and gas efficiency incentives to large commercial and institutional participants.

6.1. DESCRIPTION OF PROGRAM

The Bidding Program will be designed based on:

- Bidding programs administered by NYSERDA such as the Aggregated Load Reduction Program, Renewable Portfolio Standard, and the Regional Greenhouse Gas Initiative.
- Past New York State demandside management bidding experience of NYSERDA as bidder and contracted MWh deliverer, utilities as administrators, and PSC and DPS as regulator and manager.
- Other bidding programs such as Con Edison's Targeted Program, Xcel Energy's Custom Efficiency Program, and Connecticut Light and Power's Request for Proposal Program.

Final program design and solicitation release is planned for 2009 based on research described above as well as input from stakeholders, the Commission, and DPS Staff. It is anticipated that customers will be invited to compete on their own or in partnership with third party contractors for performance-based energy efficiency funding. Participants will be required to specify the amount of funding needed to implement specific projects within PSC Order(s) and the subsequent set of program guidelines to be designed. Program design and bid selection criteria will be developed to assure a transparent process that results in technically sound proposals that provide the best return on investment for ratepayer funds.

Selected projects will receive incentives for delivering measured and verified energy efficiency resources. Incentive payments will be performance-based and will be paid over a multi-year performance period. Payments would occur in multiple stages, at project completion, field verification and on a performance basis over the monitoring period.

[22] Case 07-M-0548, Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard, *Order Establishing Energy Efficiency Portfolio Standard and Approving Programs*, (issued and effective June 23, 2008).

6.2. DEMAND REDUCTION AND SYSTEM BENEFITS

NYSERDA has demonstrated success in delivering summer peak-demand reductions throughout the state. NYSERDA exceeded the 150MW goal established by the PSC for the System Wide Program in Con Edison's service territory. NYSERDA provides financial incentives for measures such as chiller efficiency improvements that reduce summer peak demand. In addition, NYSERDA promotes recent advances in technology that integrate energy efficiency and demand response.

Peak-demand reductions from energy efficiency projects can result in reduced capacity requirements for the New York Independent System Operator (NYISO) and potentially defer utility transmission and distribution infrastructure upgrades. NYSERDA is working with the NYISO and the evaluation task force to ensure that EEPS-funded resources can be used in system planning.

The industrial electric MWh for the Bidding Program will be procured within the MWh and funding levels established in the Order and the NYSERDA 60 Day Filing. NYSERDA proposes to allocate a portion of electric budget savings goals from the Industrial and Process Program in the NYSERDA 60 Day Filing based on 33% of the budget and goals from the final two years (2010 and 2011). This allocation of budget and goals between the new proposed bidding program and the previously Ordered program would be subject to appropriate discussion among the PSC, DPS, stakeholders, and NYSERDA.

The industrial natural gas MMBTU will be procured using Industrial and Process Efficiency Program funds requested in this NYSERDA 90-day Proposal. Natural gas funds and goals would use the same allocation method as electric funds and goals.

The commercial and institutional electric MWh and natural gas mmBtu savings will be achieved with new funds and resource deliveries not otherwise contained in the June 23, 2008 Order or elsewhere in this proposal.

Table III-44 Commercial and Institutional Segment of the Bidding Program — Total Program Expenditures (projected and net of administration and evaluation) 2009-2015

Annual EEPS Spending	2009	2010	2011	2012	2013	2014	2015	Total
	$403,920	$5,183,640	$7,876,440	$0	$0	$0	$0	$13,464,000
Projected Outreach/Marketing costs: $202,500 in 2009; $202,500 in 2010; $31,234 in 2011.								

Table III-45. Commercial and Institutional Segment of the Bidding Program — Installed MWh Impacts (projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings installed in the current year	0	24,000	36,000	0	0	0	0
Annual Savings installed in prior years	n/a	0	24,000	36,000	60,000	60,000	60,000
Cumulative Annual Savings	0	24,000	60,000	60,000	60,000	60,000	60,000

Table III-46 Commercial and Institutional Segment of the Bidding Program — Natural Gas Expenditures (projected and net of administration and evaluation) 2009-2015

Annual EEPS Spending	2009	2010	2011	2012	2013	2014	2015	Total
	$76,745	$984,892	$1,496,524	$0	$0	$0	$0	$2,558,160
Projected Outreach/Marketing costs: $202,500 in 2009; $202,500 in 2010; $31,234 in 2011.								

Table III-47. Commercial and Institutional Segment of the Bidding Program — Natural Gas Installed mmBtu Impacts (projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings installed in the current year	0	84,000	126,000	0	0	0	0
Annual Savings installed in prior years	N/A	0	84,000	210,000	210,000	210,000	210,000
Cumulative Annual Savings	0	84,000	210,000	210,000	210,000	210,000	210,000

NYSERDA has developed initial evaluation plans with the intention of providing the necessary rigor and reliability for metrics used by the NYISO and transmission and distribution system planners. NYSERDA will continue to work with DPS Staff and the EEPS Evaluation Advisory Group to devise final evaluation plans that meet established protocols and produce results that can be used as inputs for system planning and forecasting.

6.3. EVALUATION

The primary goal of the evaluation will be to measure and verify energy savings attributable to the program. A secondary goal will be to assess and provide information to improve program implementation processes for this new offering.

Given the significant amount of energy savings expected from the selected projects, and the stratified sampling approach planned for impact evaluation, NYSERDA expects that most projects selected through the Bidding Program will be examined in the overall evaluation. NYSERDA further expects that the projects selected through the RFP will have unique process issues and research questions and will ensure that these are sufficiently addressed as part of the overall process evaluation of the incentive programs.

The timing of impact and process evaluation efforts will likely follow the timing outlined for the incentive programs where the selected projects receive their funding. However, as the RFP process and resultant projects are implemented, NYSERDA will more fully assess timing and design of the evaluation on this program element and refine as necessary.

6.4. MARKET SEGMENT NEED

As part of the development of and subsequent to the NYSERDA 60 Day Filing, discussions with stakeholders and DPS Staff indicate an interest in enhancing program activities provided for in the Order

by developing a new bidding program, which will allow NYSERDA to achieve MWh at a lower incentive level than the standard offer. NYSERDA proposes to work with the Commission, DPS Staff and interested stakeholders to develop a bidding program as an alternative procurement approach.

6.5. COORDINATION

NYSERDA will closely coordinate efforts with each of the investor owned utilities to enhance participation. Working with the largest industrial, commercial, and institutional users will be highly site specific and require flexible approaches. NYSERDA is currently engaged in collaborative discussions with utilities to determine how best to coordinate program delivery to maximize resources acquired and minimize confusion. At a minimum, NYSERDA will continue this collaboration.

This effort will also coordinate outreach with trade associations (Multiple Intervenors (MI), the Manufacturers' Association of Central New York (MACNY) and the Business Council of New York State (BCNYS), REBNY, BOMA, ASHRAE, Association of Energy Engineers, the New York Energy Consumers Council, etc.), and NYSERDA's contractors.

6.6. CO-BENEFITS

The benefits of this Program include economic development, improved competition for New York firms as a result of lower operating costs, increased productivity, and increased employment. The industrial sector is highly stressed by global competition. The Bidding Program will assist in retention and growth in New York of industrial and process businesses.

6.7. PORTFOLIO BALANCE

NYSERDA offers a portfolio of complementary programs that provide customers with a holistic approach to their energy projects. By offering a variety of programs, all customer classes can identify opportunities that meet their needs. The Bidding Program will add another component and further balance the EEPS portfolio.

6.8. DEPTH OF SAVINGS

In order to maximize competition and achieved the savings in the bidding program, industrial and commercial customers will be encouraged to participate and include a broad range of cost-effective, technically sound measures into their proposals.

6.9. UNDERSERVED MARKETS

Since the inception of the **New York Energy Smart**[SM] program, NYSERDA has offered a portfolio of programs for commercial and industrial customers. These programs range from FlexTech, which can identify energy efficiency opportunities, to financial incentives that reduce implementation costs.

NYSERDA has enjoyed working successfully with industrial, commercial, and institutional users but believes that these markets can be served more efficiently and more cost-effectively. The bidding program will provide an opportunity for industrial and commercial participants with a new, flexible and mutually beneficial program option. Eligible participants will be encouraged to propose large, comprehensive energy projects that maximize return on ratepayer investment.

6.10. COMMITMENT

Sufficient time and surety of program availability for an extended timeframe will be a key to program success.

6.11. CUSTOMER OUTREACH

Due to the specific nature of the Bidding Program, outreach[23] to industrial and commercial participants will use a targeted approach emphasizing the bidding program where appropriate within the context of the entire EEPS portfolio. These efforts will utilize and develop strong relationships with key market players. NYSERDA's outreach strategy will focus on direct and continuous customer contact.

NYSERDA will build upon its relationships within the industrial, commercial, and institutional sectors through the use of common stakeholders, industry-specific organizations, civic organizations, and trade associations such as ASHRAE, Association of Energy Engineers, the New York Energy Consumers Council, Multiple Intervenors (MI), the Manufacturers' Association of Central New York (MACNY) and the Business Council of New York State (BCNYS).

6.12. COLLABORATIVE APPROACH

In the fall of 2008 in Syracuse, NYSERDA, with partnership and assistance from the Manufacturer's Association of Central New York (MACNY), will be conducting a meeting of industrial stakeholders. The meeting will review and seek input to strengthen NYSERDA industrial program offerings including the Bidding Program. Promoting industrial process improvements for the purpose of energy-efficient state economic development will be a primary focus. Representatives working in many facets of the manufacturing sector and its energy use have been invited in order to gain a broad perspective. The introduction will be followed by an overview of existing and new program activities. In the second half of the meeting, NYSERDA will solicit perspectives in a roundtable discussion.

NYSERDA has participated in numerous collaborative meetings with representatives of New York's investor-owned utilities and key stakeholders such as the New York City Economic Development Corporation to discuss cooperatively a strategy to best serve customers. NYSERDA program staff have been in contact with consultants, contractors, building owners, utility staff, trade associations, and vendors throughout delivery of the **New York Energy $mart**[SM] programs and have built an important knowledge base for program development. NYSERDA will build on and continue this collaboration through the EEPS time frame.

6.13. FUEL INTEGRATION

Fuel Integration will be particularly important to the Bidding Program. Limiting this program to electric-only incentives will limit the number of projects eligible and the interest of the target sector. Supporting sophisticated energy users in their decision making process through a fuel neutral bidding program will encourage participants to develop projects that are most cost effective, beneficial and timely regardless of fuel source.

Integrated gas and electric funding is particularly important to the manufacturing sector. Integrated funding will deliver the greatest cost-effective market penetration and maximize the benefits of ratepayer investment. Gas consumption in many manufacturing processes costs more annually than electricity.

Based on NYSERDA's 30-year relationship with industry in New York, the inability of a program to comprehensively address efficiency opportunities in a manufacturing facility will dampen interest in the program and raise the cost to ratepayers of meeting 15 x 15 goals.

HVAC, envelope, and industrial systems generally involve the use of heating and cooling, often in the same system. In order to be objective and effective, customer decisions about the costs and impacts of energy efficiency measures require an integrated approach.

Service providers such as architecture and engineering firms, energy service companies, construction firms, HVAC contractors, and supply houses generally provide integrated services and address all energy sources. They are involved in the same integrated decisions as customers.

Integrated gas and electric funding will deliver the greatest cost-effective market penetration and maximize the benefits of ratepayer investment.

6.14. TRANSPARENCY

Program descriptions are available on NYSERDA's Web site. Historical data on the Industrial Process and Product Innovation Research and Development Program and the Existing Facilities Program are available in past New York Energy $mart^{SM} evaluations. Future evaluations of this program will be available on-line. Program results will be made available by NYSERDA on its Web site. NYSERDA is also working with DPS Staff toward development of a uniform tracking system to increase transparency of program results.

6.15. PROCUREMENT

Final program design and solicitation release is planned for 2009 based on research described above as well as input from stakeholders, the Commission, and DPS Staff. It is anticipated that customers will be invited to compete on their own or in partnership with third party contractors for performance-based energy efficiency funding. Participants will be required to specify the amount of funding needed to implement specific projects, within the bounds of PSC Order(s) and the subsequent set of program guidelines to be designed. Program design and bid selection criteria will be developed to assure a transparent process that results in technically sound proposals that provide the best return on investment for ratepayer funds.

Selected projects will receive incentives for delivering measured and verified energy efficiency resources. Incentive payments will be performance-based and will be paid over a multi-year performance period. Payments would occur in multiple stages, at project completion, field verification and on a performance basis over the monitoring period.

6.16. APPENDIX 3 EFFICIENCY PROGRAM SELECTION CRITERIA

This section provides screening metrics for the Bidding Program for Institutional projects required per Appendix 3 of the Commission's June 23, 2008 EEPS Order. As discussed earlier, NYSERDA intends to provide screening metrics related to electric and gas rate impacts (Screening Metrics 2, 3, 4, 8, 10, 11, and for the suite of programs Screening Metrics 1 and 2) in a separate supplemental filing. Also, for reasons described earlier, estimated MWh and coincident peak MW reductions in 2015 if the program continues to expand and extends through 2015 (Screening Metrics 5a and 6a) are not included.

Total Resource Cost Test Benefit/Cost Ratio (Screening Metric 1)

Table III-48shows the resource savings and average measure life used as inputs for the benefit/cost analysis. Table III-49 shows the present value of the costs and benefits used in the analysis. Table III-50 shows the Program Administrator Cost (PAC) and Total Resource Cost (TRC) results. Appendix A provides additional information on benefit/cost definitions and inputs.

Table III-48. Bidding Program — Commercial and Institutional Segment: Cumulative Annual Savings

	Program Years	Average Life of Electric / Gas Measures (Years)	Cumulative Annual GWh/Year	Cumulative MW	Cumulative Annual Fuel Savings (MMBtu)	% Downstate (Con Edison)
Electric and Gas Funding	2009-1020	16-18	60.0	19.8	210,000	38%
Electric Funding Only	2009-2011	16	60.0	19.8	210,000	38%

Table III-49. Bidding Program — Commercial and Institutional Segment: Program and Participant Costs ($2008)

	Present Value of Program Administrator Cost ($millions)	Present Value of Program and Participant Costs ($millions)	Present Value of Resource Benefits ($millions)
Electric and Gas Funding	$13.9	57.0	$130.2
Electric Funding Only	$11.3	$46.2	$95.1

Table III-50. Bidding Program — Institutional: Benefit-Cost Ratios

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
Electric and Gas Funding	9.9	2.4
Electric Funding Only	8.9	2.2

Total Resource Cost Test Benefit-Cost Ratio with Carbon Externality (Screening Metric 8)

Table III-51 shows the PAC and TRC test results when the estimated benefits of carbon reduction are included. Carbon was valued at $15 per ton, as directed by DPS in the Order, as directed by DPS in the Order, resulting in a total present value of carbon benefits of $7.6 million for electric and gas savings and $5.5 million for electric only.

Table III-51. Bidding Program — Commercial and Institutional Segment: Benefit-Cost Ratios with Carbon

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
Electric and Gas Funding	9.9	2.4
Electric Funding Only	8.9	2.2

MWh Saved in 2015 (Screening Metric 5b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 60,000 MWh (cumulative annual) in 2015.

MW of Coincident NYISO Peak Saved in 2015 (Screening Metric 6b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 19.8 MW (cumulative) of coincident peak reduction in 2015.[24]

Peak Coincidence Factor of MWh Saved in 2015 (Screening Metric 7)

The peak coincidence factor is a measure of the extent to which the MWh savings is concentrated at the time of system peak. The peak coincidence factor for the program is 0.35.[25]

Number of Participants as a Percentage of Customers in the Class (Screening Metric 9)

Table III-52 shows the number of expected program participants as a percentage of the number of customers in the class. The number of expected program participants represents NYSERDA's best estimate of participation for the current funding request through 2011.

Table III-52. Bidding Program for Commercial and Institutional Participants as a Percentage of Customers in Class

Customer Class	Number of Customers in Class[1]	Number of Anticipated Program Participants	Participants as a Percentage of Number of Customers in Class
Industrial — Electricity	7,715	36	0.5%
Industrial — Natural Gas	14,357	36	0.3%

Sources. DPS Five Year Index Book of Files and DPS Electricity and Natural Gas Retail Access Migration Reports. Electricity figures do not include LIPA, municipal electric utility, rural electric cooperative, or NYPA customers. Gas figures do not include Keyspan/Long Island customers. Retail Access Migration Reports do not separate commercial and industrial customers and label all-such customers as "non-residential". Commercial and industrial customers estimated by NYSERDA.

[24] NYSERDA defines coincident on-peak period as being between 12:00 noon to 6:00 PM on summer non-holiday weekdays.

[25] Peak coincidence factor = annual MWh saved/(MW saved on peak)(8,760 hours). For this equation, annual MWh saved is the cumulative annual savings expected in 2015 if the program is offered only as long as proposed, i.e., Screening Metric 5b.

7. Solar Thermal for Commercial and Industrial Applications (Electric and Natural Gas)

7.1. Program Elements

Program Description.

The Solar Thermal (ST) Program will achieve savings of grid-supplied electric energy (MWh) and pipeline-delivered natural gas (MMBtu). The Program will deliver permanent installation of equipment in commercial and industrial applications with high hot water use, such as laundries, dairies, and hotels. The equipment applications in this Program will provide the necessary experience to determine optimal scenarios for technology use beyond residential settings. This experience will also identify technology gaps where product improvements could be supported through other programs, coordinating with on-going SBC efforts. The Program will accrue energy savings attributable to displacement of electric and natural gas heating by collected solar energy and aligns with recommendations in the Governor's Renewable Energy Task Force initiative.

Program Goals and Objectives.

The Program will deliver permanent installation of energy-efficient equipment with an anticipated life of 20 years. Electric savings attributable to the Program will alleviate electric grid constraints and preventing losses otherwise attributable to T&D resistance. Each year, the Program will install four systems, three of which are expected to be solar thermal hot water systems, the other a solar wall system.

Program Theory.

The Program will use an annual competitive solicitation, allowing NYSERDA to select the most promising projects to deliver the expected savings, while also providing market intelligence to accelerate adoption rates for various applicable technologies. Milestone-based contracts will be issued, with the majority payment tied to the installation and commissioning of the equipment. Contracts will include rigorous measurement, verification, and data reporting requirements. Program design and administration will be subject to change contingent upon market response (e.g., quantity and quality of proposals received).

Anticipated Spending and Savings.

With an approximate annual program budget of $322,581 (30% derived from electric funds, 70% derived from natural gas funds), the program will provide about $300,000 of customer incentives. Of the four anticipated installations, it is expected that one one will deliver electric use reduction of 40 MWh/yr, and three will each deliver natural gas savings of 140 MMBtu/yr. Based on those assumptions, the Program will deliver about 40 MWh of electric savings and 420 MMBtu of natural gas savings. Projects will be eligible to receive $60,000, or 50% of the overall cost of the project, whichever is less.

Program Schedule.

It is expected that the Program will begin in the first quarter of 2009, with an 18-month lag before equipment is operational. The Program will operate for three years, from 2009 through 2011.

7.2. Demand Reduction and System Benefits.

Solar wall systems will likely displace natural gas for heating, unless the distribution fan replaces an existing inefficient ventilation fan which would result in reduced electric load. The impact on peak load

and system load factor by solar thermal hot water system in commercial/industrial applications will vary based on site. Due to the anticipated small number of projects, program results could not be relied upon by T&D system planners.

Table III-53. Solar Thermal Program -- Total Program Expenditures (Projected and net of administration and evaluation) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual EEPS Spending	$300,000	$300,000	$300,000	0	0	0	$900,000
Note: no marketing.							

Table III-54 Solar Thermal Program -- Installed MWh Impacts (Projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings installed in current year	0	20	40	40	20	0	0
Annual Savings installed in prior years	n/a	0	20	60	100	120	120
Cumulative Annual Savings	0	20	60	100	120	120	120

Table III-55 Solar Thermal Program – Natural Gas Program Expenditures (Projected and net of administration and evaluation) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual EEPS Spending	$0.2M	$0.2M	$0.2M	0	0	0	$0.6M
Note: no marketing							

Table III-56 Solar Thermal Program – Natural Gas Installed MMBtu Impacts (Projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings installed in current year	0	210	420	420	210	0	0
Annual Savings installed in prior years		0	210	630	1,050	1,260	1,260
Cumulative Annual Savings		210	630	1,050	1,260	1,260	1,260

NYSERDA has developed initial evaluation plans with the intention of providing the necessary rigor and reliability for metrics used by the NYISO and transmission and distribution system planners. NYSERDA will continue to work with DPS Staff and the EEPS Evaluation Advisory Group to devise final evaluation plans that meet established protocols and produce results that can be used as inputs for system planning and forecasting.

7.3. EVALUATION.

General Evaluation Approach

Evaluation of early demonstrations of technologies necessitates flexibility: work varies with the technology and project types/stages such as product development/characterization, demonstration, and business model. A technology that saves energy but is not cost effective or is too complicated thwarts market adoption. The presentation of persuasive, solidly compelling data to identify target markets is crucial for commercializing a technology and moving it into new sectors.

Evaluation Goals

The primary goal of the Solar Thermal (ST) Program evaluation is to verify the electricity and natural gas savings resulting from permanently installed energy-efficient equipment while providing evaluation support for this early-stage of market development.

Since a key ST Program goal is to provide substantial data that encourages New York's commercial and industrial sectors to move toward solar thermal hot water systems and solar wall systems for heating air, the evaluation will review knowledge benefits[26] garnered from ST projects and the conclusions drawn.

Brief Overview of the Evaluation Approach

The evaluation approach presented in this section was designed based on NYSERDA's current plans for the Solar Thermal Program, and in the absence of complete knowledge about final evaluation protocols, and potential funding set-asides and plans for overarching evaluation projects that would serve the needs of all EEPS program administrators. Thus, these plans have been prepared in order to afford NYSERDA and its independent contractors flexibility to adapt the evaluation approaches that best suit the program as implemented once a greater understanding is in place regarding final evaluation protocols and funding. NYSERDA's estimated evaluation budget for this program includes a set-aside for developing a full evaluation plan, an effort that will involve DPS Staff and the EEPS Evaluation Advisory Group.

The evaluation approach for the ST Program is, first, to conduct an early assessment of the program-collected metering and monitoring data to verify the data quality will allow a low-cost engineering of verified savings. This will then permit the majority of the program evaluation funding to be allocated to process evaluation for a review of the sectors selected to target and the suggested matching of technologies to the target sectors, and an assessment of the knowledge benefits and the proposed method of disseminating that information to foster product and market advances. These elements are critical for the current stage of cost-effectiveness of the technology, it applications, and market preparedness.

Evaluation Budget

NYSERDA expects the evaluation budget for the Solar Thermal Program to exceed 5% of the program funding level, less yet-to-be-determined funds set aside for statewide studies and other overarching costs borne by program administrators. It is expected that the Solar Thermal evaluation budget will be

[26] Knowledge benefits are real world learning of placement/performance of systems to determine optimization scenarios for deployment in new settings. In the case of solar thermal technology, knowledge benefits could foster eventual expansion beyond residential settings. Other states have robust solar thermal deployment programs and it is appropriate for New York to pursue more widespread use of this technology.

designed to account for the specific needs of the program, and allocated primarily to Process Evaluation (67%) and the remainder for Impact Evaluation.

Evaluation Schedule

The Solar Thermal evaluation plan consists of two major measurement and verification studies, and one process evaluation study. Their anticipated completion dates are shown in the table below.

Table III-57 Evaluation Schedule for Solar Thermal Program

Evaluation Element	Expected Completion				
	2009	2010	2011	2012	2013
M&V (Impact)	X		X		X
Process Evaluation			X		

Impact Evaluation

Impact evaluation of the Solar Thermal Program will consist of measurement and verification evaluation only. Net-to-gross analysis will not be performed for reasons cited below.

Measurement and Verification

The Solar Thermal Program design includes extensive measurement as part of program requirements and will include sensors and data loggers for measuring energy impacts. For solar thermal water heating systems, Btu meters, flow meters, temperature probes, current transformers (for electric water heating systems), fuel meters (for natural gas fired water heating systems) and run time counters can be installed to measure renewable energy produced, back-up fuel use, and electricity consumption of ancillary components. Installed systems would be monitored for a minimum of twelve months. For SolarWall systems, air temperature probes, fuel meters, run time counters, and periodic spot measurements of airflow can be used to measure renewable energy produced, back-up fuel use, and electricity consumption of ancillary components. Installed systems would be monitored for a minimum of one heating season.

The initial evaluation effort will be an early assessment of the extensive metering and monitoring program data to ensure the collection of evaluation-quality data. This will allow a low-cost engineering review to verify the claimed annual gas (MMBtu), electricity (MWh) and associated demand (MW) savings. The impact evaluation based on the engineering review is expected to be conducted based on all the program data collected in 2011 and 2013.

Sampling will not be necessary as all systems installed under the program are expected to undergo extensive metering/monitoring. Thus, the measurement and verification evaluation effort will be based on a census engineering review evaluation.

The initial evaluation review of the program M&V data collection and QA requirements is expected to occur early in 2009. The impact evaluation based on the engineering review is expected to be conducted based on all the program collected data in 2011.

Net-to-Gross

Freeridership is generally expected to be quite low or non-existent for R&D programs, though independent confirmation of this normally should be considered. The ST program theory, however, states that several cycles of investments will likely be needed before cost-effective technology applications and market readiness can be accomplished. Even if there is some proportion of naturally-occurring market acceleration, rather than full NYSERDA attribution to this technology adoption, the expected need for several cycles creates a low net present value for naturally-occurring adoption. Given the small size of the program and this long-term adoption, NYSERDA suggests it may not be worth spending limited evaluation dollars on confirming a net-to-gross ratio.

Process Evaluation

The purpose of a technology's early demonstration is to assess the technology and its potential. Thus, the process evaluation will focus on assessing technology's potential, and indentifying lessons learned in the final year of the implementation period. This program will provide valuable learning about the barriers to adoption and implementation faced by large scale applications of solar thermal in commercial and industrial facilities,

The process evaluation will review data collected and reports produced by the project contractors, and will help to identify any threats to data reliability in the impact evaluation. Interviews will be conducted with program staff, with the selected contractor(s), and with contacts for the commercial and industrial sites that participate in the demonstration. The evaluation will also develop a program theory and logic model for the program as implemented.

A sampling approach will not be employed due to the small number of expected program participants. Instead, the process evaluation will interview NYSERDA staff and the project contractor(s) as well as contacts at each of the 12 sites that are expected to participate in the demonstration.

Interviews, data collection, and analyses will be conducted based on established protocols and approved evaluation plans. The process evaluation will provide actionable recommendations on the feasibility of the commercial solar thermal technology and will incorporate lessons learned to inform future program development efforts. The process evaluation will be conducted in 2011.

Evaluation Plan Variations

Given the level of uncertainty regarding final evaluation protocols, statewide studies to be conducted by all program administrators, and funding levels needed to support overarching evaluation studies and activities, the evaluation plan presented in this section should be viewed as scalable and flexible. Although measurement and verification of electric savings are critical, evaluation of ST needs to include other assessments (dependent on technology) to judge a technology's viability as a product and its potential for commercialization in various sectors. If evaluation funding were to be reduced, a sample instead of census data collection approach would be employed in the evaluation efforts. Conversely, if more of NYSERDA's total evaluation funding for could be allocated to this program, process evaluation efforts could be expanded to capture qualitative data. Increased funding could also allow for a valuable review of other commercial solar programs in Europe, Asia and North America for comparison of best practices with this program. With the evaluation plan for this program to be determined based on the technologies chosen from yet-to-be-issued solicitations, the specific evaluation resource allocations will be addressed at the time of plan development.

Each installed solar thermal system will include sensors and dataloggers for measuring energy impacts. For solar thermal water heating systems, Btu meters, flow meters, temperature probes, current

transformers (for electric water heating systems), fuel meters (for natural gas fired water heating systems) and run time counters will be installed to measure renewable energy produced, back-up fuel usage, and electric consumptions of ancillary components. Installed systems would be monitored for a minimum of twelve months. For solar wall systems, air temperature probes, fuel meters, run time counters, and periodic spot measurements of airflow would be used to measure renewable energy produced, back-up fuel usage, and electric consumptions of ancillary components. Installed systems would be monitored for a minimum of one heating season.

7.4. Market Segment Need.

The identified markets for solar thermal water heating are large and found throughout New York. It is generally accepted that solar thermal water heaters are most cost-effective in applications with high water usage, and such sites are the most suitable for solar thermal technologies. As all commercial and industrial buildings require ventilation and conditioning of air for ventilating purposes can represent 10-20% of a the heating load, many commercial and industrial buildings throughout New York will be suitable for solar wall systems.

7.5. Coordination.

NYSERDA is not aware of any current or proposed solar thermal resources being offered by other program administrators.

7.6. Co-Benefits.

Solar wall systems are manufactured in New York and this Program may increase market demand which would likely create new manufacturing jobs in Buffalo.

7.7. Portfolio Balance.

The proposed program is complementary to NYSERDA's residential solar thermal program proposal that will focus on providing incentives for solar domestic water heating systems installed in multifamily buildings. Both programs further complement NYSERDA's support for solar domestic water heating systems for single family homes through the Home Performance with Energy Star Program. Together, these programs will provide support for solar thermal applications over a wide range of building types.

7.8. Depth of Savings.

This program will work with a limited number of participants, an estimated four per year, equaling approximately 12 participants through 2011. Participants will be chosen so as to maximize the learning opportunity though technology demonstration and the eligibility of the participant for other measures will not be a limiting factor for participation in this program. Additional programs offered by NYSERDA and other program administrators will be promoted to participants.

7.9. Underserved Markets.

The only known program in New York was established under the SBC R&D program that focused on solar thermal technologies. That program focused on early stage deployment of energy-efficient solar thermal technologies for commercial and industrial sector - those with large hot water or space heating loads - such as dairies, laundries, and industrial and warehouse buildings.

7.10. COMMITMENT.

The time to develop participation in this program will be short given the small number of systems annually installed. This term of the program term will be driven primarily by construction times for systems (up to one year from design inception to operating system) and monitoring periods (six months to one year, depending upon whether a space or water heating system is installed). Several years of program cycle will be necessary to gain sufficient market intelligence so as to advance the technology to a position whereby it will be cost-effectively assessed by a traditional TRC test.

7.11. CUSTOMER OUTREACH.

Program participation will be encouraged by marketing competitive solicitations to stakeholders, such as system installers, contractors, engineering firms, and product manufacturers. Solar trade associations will be contacted to identify members that provide services in New York State. NYSERDA will contract with the equipment installers to design, specify, install, commission, monitor, and report on performance and lessons learned.

7.12. COLLABORATIVE APPROACH.

NYSERDA has increased its activity with solar thermal technologies over the past few years through contacts with solar thermal stakeholders, including product manufacturers, solar equipment installers, engineering firms, solar advocates and industry trade associations. These contacts have lead to increased interactions and exchanges of ideas with solar thermal stakeholders, resulting in the proposed program.

7.13. FUEL INTEGRATION.

A project will either provide electric savings or natural gas savings, and NYSERDA does not expect both electricity and natural gas savings at a single customer site.

7.14. TRANSPARENCY.

Program design, benefit/cost analysis, and supporting data for this program will be available for public review. Program results will be publicly promoted with case studies, periodical articles, conference presentations and final reports. Program results will be made available by NYSERDA on its Web site. NYSERDA is also working with DPS Staff toward development of a uniform tracking system to increase transparency of program results.

7.15. PROCUREMENT.

With the exception of select activities performed directly by NYSERDA, each aspect of the Program will be subject to NYSERDA's competitive process.

7.16. APPENDIX 3 EFFICIENCY PROGRAM SELECTION CRITERIA

This section provides screening metrics for the Solar Thermal Program required per Appendix 3 of the Commission's June 23, 2008 EEPS Order. As discussed earlier, NYSERDA intends to provide screening metrics related to electric and gas rate impacts (Screening Metrics 2, 3, 4, 8, 10, 11, and for the suite of programs Screening Metrics 1 and 2) in a separate supplemental filing. Also, for reasons described earlier, estimated MWh and coincident peak MW reductions in 2015 if the program continues to expand and extends through 2015 (Screening Metrics 5a and 6a) are not included.

Total Resource Cost Test Benefit/Cost Ratio (Screening Metric 1)

The following tables show: the resource savings and average measure life used as inputs for the benefit/cost analysis; present value of the costs and benefits used in the analysis; and the Program Administrator Cost (PAC) and Total Resource Cost (TRC) results. Appendix A provides additional information on benefit/cost definitions and inputs.

Table III-58. Solar Thermal Program Cumulative Annual Savings

	Program Years	Average Life of Electric/Gas Measures (Years)	Cumulative Annual GWh/Year	Cumulative MW	Cumulative Annual Fuel Savings (MMBtu)	% Downstate (Con Edison)
With Electric and Gas Funding	2009-2011	20	0.1	0	1,260	33%
Electric Funding Only	2009-2011	20	0.1	0	--	0%

Table III-59. Solar Thermal Program: Program and Participant Costs ($2008)

	Present Value of Program Administrator Cost ($millions)	Present Value of Program and Participant Costs ($millions)	Present Value of Resource Benefits ($millions)
With Electric and Gas Funding	$0.9	$1.7	$0.3*
Electric Funding Only	$0.3	$0.5	$0.1

*$0.02 per kWh of operations and maintenance costs were subtracted from benefits.

Table III-60. Solar Thermal Program Benefit-Cost Ratios

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
With Electric and Gas Funding	0.3	0.2
Electric Funding Only	0.5	0.2

Total Resource Cost Test Benefit-Cost Ratio with Carbon Externality (Screening Metric 8)

Table III-61 shows the PAC and TRC test results when the estimated benefits of carbon reduction are included. Carbon was valued at $15 per ton, as directed by DPS in the Order, resulting in a total present value of carbon benefits of less than $25,000 for either funding case.

Table III-61. Solar Thermal Program Benefit-Cost Ratios with Carbon

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
With Electric and Gas Funding	0.3	0.2
Electric Funding Only	0.5	0.3

Use of a traditional TRC test is not appropriate in the near term as this program addresses technology demonstration at the pre-deployment stage. In addition to achieving savings from permanent installation of energy-efficient equipment, this program is intended to learn about and advance the technology so that, in the near future, it will become cost effective using a traditional TRC test.

MWh Saved in 2015 (Screening Metric 5b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 120 MWh (cumulative annual) in 2015.

MW of Coincident NYISO Peak Saved in 2015 (Screening Metric 6b)

Three of the four projects planned for the program are expected to displace fuel. The coincident peak savings from the electric project will depend on the type of facility.

Peak Coincidence Factor of MWh Saved in 2015 (Screening Metric 7)

The peak coincidence factor is a measure of the extent to which the MWh savings is concentrated at the time of system peak. Given that this program is not expected to save peak demand, the peak coincidence factor for the program is 0.[27]

Number of Participants as a Percentage of the Number of Customers in the Class (Screening Metric 9)

The Solar Thermal Program is a demonstration program under Research and Development and as such is not intended to have numerous participants.

[27] Peak coincidence factor = annual MWh saved/(MW saved on peak)(8,760 hours). For this equation, annual MWh saved is the cumulative annual savings expected in 2015 if the program is offered only as long as proposed, i.e., Screening Metric 5b.

8. WASTE ENERGY RECOVERY PROGRAM (ELECTRIC AND NATURAL GAS)

8.1. PROGRAM ELEMENTS

Program Description.

The Waste Energy Recovery Program (Program) is designed to achieve savings of grid-supplied electric energy (MWh), summertime electric grid peak load reduction (MW), and pipeline-delivered natural gas (MMBtu). Waste energy exists in various forms, such as steam system pressure-reducing-valve pressure drop, flared combustible gas, and dissipated heat. Its capture can displace electric-resistance heating, electric-driven cooling, or be used to produce electricity on-site, yielding savings of grid-supplied electric energy. Its capture can also be used to displace natural-gas-driven heating to make hot water or pre-heat boiler feed water, yielding savings of pipeline-delivered natural gas. NYSERDA experience with applicable technologies including backpressure steam turbines, organic rankine cycle systems, heat exchangers, and absorption chillers will help to focus the Program to harvest wasted energy and promote business models and teaming arrangements which offer a full suite of waste energy recovery technologies and services. Success will enhance prospects for integration leading to facility-wide optimization.

Program Goals and Objectives.

The Program will deliver the permanent installation of waste energy recovery equipment with an expected life of installed measures of approximately 20 years. Electric savings attributable to the Program will help alleviate grid constraints and prevent electric losses otherwise attributable to T&D resistance. Annually the Program will install four systems, and will perform "matchmaking" between facilities with available waste energy and purveyors of energy recovery technology to encourage projects that might proceed in the absence of direct financial incentives.

Program Theory.

The Program will use an annual competitive solicitation, allowing NYSERDA to select the most promising projects to deliver the expected savings. These projects will also provide market intelligence to accelerate adoption rates for applicable technologies. Milestone-based contracts will be issued, with the majority payment tied to the installation and commissioning of the equipment. Contracts will include rigorous measurement, verification, and data reporting requirements. Program design and administration will be subject to change upon market response (for example, the quantity and quality of proposals received). The US EPA is required under the Energy Independence and Security Act (EISA) of 2007 to establish a recoverable waste energy inventory with details of quantities and sources (*e.g.* site names). Once available, the inventory will greatly enhance Program marketing. However, NYSERDA is confident that sufficient marketing for program success is not contingent on the availability of the US EPA inventory.

Anticipated Spending and Savings.

With an annual program budget of approximately $2.15 million (one-half derived from electric funds, one-half derived from natural gas funds) the Program will provide about $2 million of incentives annually. Each program year, the Program will install four systems, and it is anticipated that two will deliver electric peak load reduction of about 200 kW each and operate at 75% annualized capacity factor. The remaining two will each deliver natural gas savings of 20,000 MMBtu/year. Accordingly, the PROGRAM will deliver 2,628 MWh of electric savings, 0.4 MW of peak load reduction, and 40,000 MMBtu of natural gas savings, annually. Individual projects will be eligible to receive $500,000 or 50% of the overall cost of the project, whichever is less.

Program Schedule.

The Program will begin in the first quarter of 2009 with a one-year lag before equipment is installed and operational. The Program will operate for the 2009-2011 period.

8.2. DEMAND AND REDUCTION SYSTEM BENEFITS.

Waste Energy Recovery systems will displace electric-resistance heating or electric-driven cooling, or to produce electricity on-site, and thereby yield savings of grid-supplied electric energy and possibly summertime grid demand reduction. Because of the expected small number of projects, program results could not be relied upon by T&D system planners.

Table III-62. Waste Energy Recovery Program -- Total Program Expenditures (Projected and net of administration and evaluation) 2009-2015 []

	2009	2010	2011	2012	2013	2014	2015	Total
Annual EEPS Spending	$2M	$2M	$2M	0	0	0	0	$6M
Note: Does not include marketing.								

Table III-63. Waste Energy Recovery Program -- Installed MWh Impacts (Projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings installed in current year	0	2,628	2,628	2,628	0	0	0
Annual Savings installed in prior years	n/a	0	2,628	5,256	7,884	7,884	7,884
Cumulative Annual Savings	0	2,628	5,256	7,884	7,884	7,884	7,884

Table III-64 Waste Energy Recovery Program – Natural Gas Program Expenditures (Projected and net of administration and evaluation) 2009-2015

	2009	2010	2011	2012	2013	2014	2015	Total
Annual EEPS Spending	$1.0M	$1.0M	$1.0M	0	0	0	0	$3.0M
Note: Does not include marketing								

Table III-65 Waste Energy Recovery Program – Natural Gas Installed MMBtu Impacts (Projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Annual Savings installed in current year	0	40,000	40,000	40,000	0	0	0
Annual Savings installed in prior years	n/a	0	40,000	80,000	120,000	120,000	120,000
Cumulative Annual Savings	0	40,000	80,000	120,000	120,000	120,000	120,000

NYSERDA has developed initial evaluation plans with the intention of providing the necessary rigor and reliability for metrics used by the NYISO and transmission and distribution system planners. NYSERDA will continue to work with DPS Staff and the EEPS Evaluation Advisory Group to devise final evaluation plans that meet established protocols and produce results that can be used as inputs for system planning and forecasting.

8.3. EVALUATION.

Each installed waste energy recovery system will include sensors and dataloggers for measuring energy impacts. As applicable for each system configuration, Btu meters, flow meters, temperature probes, current transformers, fuel meters, and run time counters will be installed to measure available recoverable energy, as well as captured recoverable energy, energy produced, back-up fuel usage, and electric consumptions of ancillary components. Installed systems would be monitored for a minimum of twelve months.

Use of a traditional TRC test is not appropriate in the near term as this program addresses technology demonstration at the pre-deployment stage. In addition to achieving savings from permanent installation of energy-efficient equipment, this program is intended to learn about and advance the technology so in the near future it will become cost-effective using a traditional TRC test.

General Evaluation Approach

Evaluation plans for early demonstrations of technologies necessitate flexibility because evaluation work varies with the technology and project types/stages such as product development/characterization, demonstration, and business development, and with programmatic adjustments.

Evaluation Goals

The primary evaluation goal is to assess the electricity and natural gas savings attributable to the program. A secondary goal is to review and assess detailed lessons learned about the business models and teaming arrangements that spur technology adoption.

Brief Overview of the Evaluation Approach

The evaluation approach presented in this section was designed based on NYSERDA's current plans for the Waste Energy Recovery Program (WER), and in the absence of complete knowledge about final evaluation protocols, and potential funding set-asides and plans for overarching evaluation projects that would serve the needs of all EEPS program administrators. Thus, these plans have been prepared in order to afford NYSERDA and its independent contractors flexibility to adapt the evaluation approaches that

best suit the program as implemented once a greater understanding is in place regarding final evaluation protocols and funding. NYSERDA's estimated evaluation budget for this program includes a set-aside for developing a full evaluation plan, an effort that will involve DPS Staff and the EEPS Evaluation Advisory Group.

The planned impact evaluation will involve field measurement and verification of claimed savings and an assessment of site replication. A process evaluation will assess feedback on technology applications, information generation, and dissemination and technology transfer of program elements. Consideration is being given to developing evaluation plans tailored to the 12 individual project technologies as they are selected through competitive solicitation.

Evaluation Budget

NYSERDA expects the evaluation budget for the Waste Energy Recovery Program to be somewhat less than 5% of the program funding level, less yet-to-be-determined funds set aside for statewide studies and other overarching costs borne by program administrators. It is expected that the Waste Energy Recovery evaluation budget will be designed to account for the specific needs of the program, and allocated primarily to Impact Evaluation (approximately 65%) and the remainder for Process evaluation.

Evaluation Schedule

The anticipated completion dates of planned evaluations are shown in the table below. More information on the M&V and process evaluation schedules are contained those respective sections.

Table III-66 Evaluation Schedule for the Waste Energy Recovery Program

Evaluation Element	Expected Completion			
	2009	2010	2011	2012
M&V (Impact)	X		X	X (Replication assessment & attribution)
Process Evaluation			X	

Impact Evaluation

In addition to measurement and verification of demonstrations, the impact evaluation may review the extent, type, and attribution of replications.

Measurement and Verification

The WER Program is planning extensive measurement as part of program requirements including sensors and data loggers for measuring energy impacts. Then, depending upon system configuration, Btu meters, flow meters, temperature probes, current transformers, fuel meters, and run time counters will be installed to measure potentially available recoverable energy as well as actually captured recoverable energy, energy produced, back-up fuel use, and electricity consumption of ancillary components for a minimum of 12 months.

The impact evaluation will include an early review and assessment of the quality and comprehensiveness of the Program metering and monitoring data. If the data sets are complete, there may be little value gained in performing additional near-term metering/monitoring. Therefore, M&V work will focus on the baseline assumptions for each project. If needed, strategies will be developed for addressing gaps in the

data, including additional metering and on-site data collection. In addition, it is possible that additional data from the participants may be needed to interpret the metering data.

Site-specific evaluation plans may be designed as part of the detailed evaluation plan development. It is likely that these will include calibrated IPMVP Option B process modeling or full retrofit isolation measurement (but could also utilize IPMVP Option C) depending on pre-post usage data availability and specificity and evaluation cost efficiency by doing so. Evaluating replications will be considered to the extent that they occur and are envisioned in the program design; however, due to funding limitations this element may need to be accomplished via engineering algorithms without field measurements, but based upon the findings from the direct demonstration projects.

Data collection and analyses will be conducted by NYSERDA's independent contractors based on established evaluation protocols and the approved detailed evaluation plan for the direct demonstration projects and their replications. Engineering analysis of performance for each technology application will be conducted as required for its assessment. Sampling will not be necessary as all systems installed under the program are expected to undergo extensive metering/monitoring. Thus, the measurement and verification evaluation effort is anticipated to be based on a census engineering review evaluation.

The initial assessment and any pre-retrofit on-site visits will be in 2009. Since these projects can take up to a year to complete and Program metering/monitoring is scheduled for twelve months, impact evaluation is scheduled for 2011 and 2012 (particularly for any evaluation of replication projects).

Net-to-Gross

Freeridership is generally expected to be quite low for early demonstrations of technologies, though independent confirmation of this should be considered in the detailed evaluation planning process. Replication of technology is part of the program design and intent and included in impact evaluation. Although the concept of replication is similar to spillover, it is not as widely applicable to the market at large due to the early phase of the technologies. Given these circumstances, NYSERDA proposes that it would not be cost-effective to spend limited evaluation funding to perform a net-to-gross analysis.

Process Evaluation

The purpose of an early demonstration R&D program is to assess a technology and its potential. Consequently, the process evaluation will be conducted in the last year of implementation and will assess the technology progress or performance, and identify lessons learned to inform future program implementation. The evaluation will examine the business models and teaming arrangements recommended by the project contractor.

The overall approach will include a review of data collected and reports produced by the project contractor(s), and interviews with program staff, the selected contractor(s), and representatives of each of the sites where the waste energy equipment is installed and tested. The process evaluation will also develop a program theory and logic model for the program as implemented and will identify issues of data reliability for the impact evaluation.

Final process evaluation assessments and reports will be produced based on interviews, data collection, and analyses conducted by NYSERDA's independent evaluation contractors according to the approved evaluation plan and established protocols. The evaluation will also provide actionable recommendations on the feasibility of the technology and will incorporate lessons learned to inform future program development efforts.

A sampling approach will not be employed due to the small number of expected program participants; instead, a census approach will be taken that involves the evaluation of all 12 sites. Evaluation plans will be developed and tailored to the individual technologies as they are selected.

Evaluation Plan Variations

Given the level of uncertainty regarding final evaluation protocols, statewide studies to be conducted by all program administrators, and funding levels needed to support overarching evaluation studies and activities, the evaluation plan presented in this section should be viewed as scalable and flexible. Although measurement and verification of reduced usage of electricity and gas are critical, the evaluation needs to conduct other assessments (dependent on technology) to judge a technology's viability as a product and its potential for commercialization. If evaluation funding for this proposed program were to be reduced, a sample instead of census data collection would be employed. Conversely, an increase in funding would allow for expansion of the research methods and areas that can be evaluated, such as more extensive evaluation of the demonstration communications, replication decision making, technology transfer elements and network analyses. Also, persistence studies for after the required program monitoring period could be considered. With the evaluation plan for this program to be determined based on the technologies chosen from yet-to-be-issued solicitations, the specific evaluation resource allocations will be addressed at the time of plan development.

8.4. Market Segment Need.

The large New York market for waste energy recovery systems is readily identified and include: steam system pressure-reducing-valve pressure drop at paper mills; school and hospital campuses; industrial boilers and district steam systems; flared combustible gas from landfills, wastewater treatment plants; industrial processes; dissipated heat at high temperatures from glass factory furnaces, metal foundry furnaces, and industrial process heating; and low temperature from industrial process ventilation, power plant cooling towers, and steam condensate tempering discharges.

8.5. Coordination:

Certain aspects of waste energy recovery technologies, such as use of efficient heat exchanges in industrial settings, may be eligible for incentives under NYSERDA's existing Industrial Process and Product Innovation Program. This Program focus on harvesting wasted energy and promoting business models and teaming arrangements which offer a full suite of waste energy recovery technologies and services. These efforts will enhance the prospects for integration yielding facility-wide optimization.

8.6. Co-Benefits.

Some equipment may be manufactured in New York State. Supporting demonstration of this and other waste energy recovery technologies may increase market demand which, in turn, may create or retain manufacturing jobs in New York State.

8.7. Portfolio Balance:

The proposed program complements NYSERDA's existing Industrial Process and Product Innovation program, Existing Facilities Program, and Statewide CHP Programs. These existing programs support certain aspects of waste energy recovery technologies, such as efficient heat exchanges in industrial settings, steam backpressure turbines, organic rankine cycle systems, etc. Together, these programs will provide additional support for waste energy recovery applications over a wide range of technologies and provide further guidance to ensure program participants consider the full suite of waste energy recovery technologies and services.

8.8. DEPTH OF SAVINGS.

This program will work with a limited number of participants, an estimated four per year, equaling approximately 12 participants through 2011. Participants will be chosen so as to maximize the learning opportunity though technology demonstration and the eligibility of the participant for other measures will not be a limiting factor for participation in this program. Additional programs offered by NYSERDA and other program administrators will be promoted to participants.

8.9. UNDERSERVED MARKETS.

Not applicable.

8.10. COMMITMENT.

The time to develop participation in this program is likely to be short given the small number of systems annually installed. This program's term will be driven mostly by construction times for systems (sometimes up to one year from design inception to an installed and operating system) and monitoring periods (six months to one year depending upon the seasonality of the available waste energy). Several years of program cycle will be necessary to gain the marketplace intelligence that is being sought so as to advance the technology to being cost-effective as assessed by a traditional TRC test.

8.11. CUSTOMER OUTREACH.

Program participation will be encouraged by marketing the competitive solicitations to stakeholders such as system installers, contractors, engineering firms, and product manufacturers. NYSERDA intends to contract with the equipment installers or host sites to design, specify, install, commission, monitor, and report on performance and lessons learned.

8.12. COLLABORATIVE APPROACH.

Recently, NYSERDA has significantly increased its contacts in industrial settings (such as waste energy recovery stakeholders, product manufacturers, equipment installers, engineering firms, advocates and industry trade associations) and with CHP candidates. It is as a result of the exchange of ideas with stakeholders and the knowledge and experience gained by NYSERDA that this Program is proposed.

8.13. FUEL INTEGRATION.

A project will either provide electric savings or natural gas savings. NYSERDA does not anticipate both electricity and natural gas savings from a project at a single customer site.

8.14. TRANSPARENCY.

Program design, benefit/cost analysis, and supporting data for this program will be available for public review. Program results will be publicly promoted with case studies, periodical articles, conference presentations and final reports. Program results will be made available by NYSERDA on its Web site. NYSERDA is also working with DPS Staff toward development of a uniform tracking system to increase transparency of program results.

8.15. PROCUREMENT.

With the exception of select activities performed directly by NYSERDA, each aspect of the Program will be subject to NYSERDA's competitive process.

8.16. APPENDIX 3 EFFICIENCY PROGRAM SELECTION CRITERIA

This section provides screening metrics for the Waste Energy Recovery Program required per Appendix 3 of the Commission's June 23, 2008 EEPS Order. As discussed earlier, NYSERDA intends to provide screening metrics related to electric and gas rate impacts (Screening Metrics 2, 3, 4, 8, 10, 11, and for the suite of programs Screening Metrics 1 and 2) in a separate supplemental filing. Also, for reasons described earlier, estimated MWh and coincident peak MW reductions in 2015 if the program continues to expand and extends through 2015 (Screening Metrics 5a and 6a) are not included.

Total Resource Cost Test Benefit/Cost Ratio (Screening Metric 1)

Table 1 shows the resource savings and average measure life used as inputs for the benefit/cost analysis. Table 2 shows the present value of the costs and benefits used in the analysis. Table 3 shows the Program Administrator Cost (PAC) and Total Resource Cost (TRC) results. Appendix A provides additional information on benefit/cost definitions and inputs.

Table III-67 Waste Energy Recovery Program Cumulative Annual Savings

	Program Years	Average Life of Electric/Gas Measures (Years)	Cumulative Annual GWh/Year	Cumulative MW	Cumulative Annual Fuel Savings (MMBtu)	% Downstate (Con Edison)
With Electric and Gas Funding	2009-2011	20	7.9	1.2	120,000	0%
Electric Funding Only	2009-2011	20	7.9	1.2	--	0%

Table III-68. Waste Energy Recovery Program: Program and Participant Costs ($2008)

	Present Value of Program Administrator Cost ($millions)	Present Value of Program and Participant Costs ($millions)	Present Value of Resouree Benefits ($millions)
With Electric and Gas Funding	$6.2	$11.6	$24.6
Electric Funding Only	$3.1	$5.8	$9.6

Table III-69. Waste Energy Recovery Program Benefit-Cost Ratios

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
With Electric and Gas Funding	4.0	2.1
Electric Funding Only	3.1	1.7

Total Resource Cost Test Benefit-Cost Ratio with Carbon Externality (Screening Metric 8)

Table 4 shows the PAC and TRC test results when the estimated benefits of carbon reduction are included. Carbon was valued at $15 per ton, as directed by DPS in the Order, resulting in a total present value of carbon benefits of $1.3 – 2.0 million, depending upon whether electric funding only or the combined funding is considered.

Table III-70. Waste Energy Recovery Program Benefit-Cost Ratios with Carbon

	Program Administrator Cost (PAC) Test	Total Resource Cost (TRC) Test
With Electric and Gas Funding	4.3	2.3
Electric Funding Only	3.3	1.8

MWh Saved in 2015 (Screening Metric 5b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 7,884 MWh (cumulative annual) in 2015.

MW of Coincident NYISO Peak Saved in 2015 (Screening Metric 6b)

Assuming the program functions only for as long as proposed, the Program is expected to achieve 1.2 MW (cumulative) of coincident peak reduction in 2015.[28]

Peak Coincidence Factor of MWh Saved in 2015 (Screening Metric 7)

The peak coincidence factor is a measure of the extent to which the MWh savings is concentrated at the time of system peak. The peak coincidence factor for the program is 0.75.[29]

Number of Participants as a Percentage of Customers in the Class (Screening Metric 9)

As a demonstration program, the Waste Energy Recovery Program is not intended to reach large numbers of participants.

[28] NYSERDA defines coincident on-peak period as being between 12:00 noon to 6:00 PM on summer non-holiday weekdays.

[29] Peak coincidence factor = annual MWh saved/(MW saved on peak)(8,760 hours). For this equation, annual MWh saved is the cumulative annual savings expected in 2015 if the program is offered only as long as proposed, i.e., Screening Metric 5b.

9. FLEXTECH PROGRAM (NATURAL GAS)

9.1. DESCRIPTION OF PROGRAM

In this proposal, NYSERDA is seeking gas ratepayer funding to complement the electric funding previously provided by the Commission under the **New York Energy $mart**[SM] program and the Fast Track order for the Flexible Technical (FlexTech) Program. FlexTech provides customers with objective and customized information to facilitate informed energy efficiency, procurement, productivity, and financing decisions. Cost-shared technical assistance is provided for detailed studies from energy engineers and other experts. The program is designed to evaluate all energy resources while providing objective analysis of energy resource trade-offs and switching options. Program participants receive customized energy studies targeting their particular needs and objectives. This program requests gas funding to secure gas energy efficiency savings.

Eligible participants for the FlexTech Program include commercial, industrial, institutional, municipal, not-for-profits organizations, and K-12 schools. Participants may use NYSERDA's contractors or select their own. The Program is currently offered statewide with special emphasis on customers in the Con Edison service territory.

NYSERDA will enhance the FlexTech Program by increasing the number of service providers, introducing new initiatives, and expanding ongoing activities. To increase the number of service providers, NYSERDA will issue a Request for Proposals (RFP) to select qualified firms in specific geographic areas, such as New York City, and technical fields, such as industrial and data center processes. New and expanded initiatives with significant potential for gas savings include: industrial process efficiency, retro-commissioning, carbon reduction analysis, and sustainability planning and practices.

The addition of gas efficiency funds will allow the program to move from a model primarily focused on electric opportunities to a more holistic analysis focused on the needs of rate payers. This approach will result in a more cost-effective program with deeper market penetration for gas and electric efficiency.

9.2. DEMAND REDUCTION AND SYSTEM BENEFITS

Natural gas efficiency measures that deliver savings during peak periods help utilities defer investments in natural gas transmission and distribution and storage capacity infrastructure.[30]

Table III-71. FlexTech Program – Natural Gas Program Expenditures (Projected and net of administration and evaluation) 2009-2015

	2009	2010	2011	2012	2013	2014	2015	Total
Annual EEPS Spending	$0.26M	$0.54M	$0.81M	$0.68M	$0.35M	$0	$0	$2.63M
Outreach / Marketing	$0.03M	$0.04M	$0.04M	$0.02M	$0	$0	$0	$0.13M

[30] Optimal Energy, Inc., American Council for an Energy-Efficient Economy, Vermont Energy Investment Corporation, Resource Insight, Inc., Energy and Environmental Analysis, Inc., *Natural Gas Energy Efficiency Resource Development Potential in New York*, October 2006.