



**New York State Energy Research and Development Authority**

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Report  
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July 2, 2007

The Honorable Jaclyn A. Brillling  
Secretary  
New York State Public Service Commission  
Three Empire State Plaza  
Albany, New York 11223-1350

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*Case 04-E-0572, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service*

Dear Secretary Brillling:

Pursuant to the March 24, 2005 *Order Adopting Three-Year Rate Plan* in the above-referenced proceeding, enclosed please find an original and five copies of the SWP Annual Report for the rate year ending March 31, 2007, prepared by Nexant, Inc. for the New York State Energy Research and Development Authority.

Sincerely,

Robert G. Callender  
Vice President for Programs

Enclosures

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**SYSTEM-WIDE DEMAND REDUCTION PROGRAM  
ANNUAL EVALUATION AND STATUS REPORT**

**FOR THE RATE CASE YEAR ENDING MARCH 31, 2007**

**REPORT TO THE PUBLIC SERVICE COMMISSION**

**JUNE 2007**

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



## Overview

This is the first annual evaluation of the New York State Energy Research and Development Authority's (NYSERDA) System-Wide Demand Reduction Program (SWP) serving the Consolidated Edison Company of New York, Inc. (Con Edison) service territory. The Public Service Commission (PSC) established the SWP on March 25, 2005 and tasked NYSERDA with administering the program.<sup>1</sup> The SWP is a demand management program designed to achieve<sup>2</sup> at least 150 MW of summer coincident load reductions by March 31, 2008, the end of the rate plan. This report presents the progress and savings of the SWP<sup>3</sup> through March 31, 2007. NYSERDA's evaluation contractor for the SWP, Nexant Inc., conducted this independent review of the savings impacts and performed a Benefit/Cost analysis.

The first year achieved results include:

- Expected annual reductions of 129<sup>4</sup> MW at a cost of \$325 per kW;
- Progress of 86% (129 MW) toward the targeted 150 MW load reduction;
- A 38% encumbrance<sup>5</sup> of the \$112 million programmatic funding;
- Expected annual savings of 232 GWh;
- Potential annual electricity bill savings of \$54.3 million;
- Expected annual CO<sub>2</sub> emission reduction of 126,670 tons, which is equivalent to removing 25,000 vehicles from New York City roads;
- Involvement by 266 participants in one or more SWP projects.

A summary<sup>6</sup> of quantifiable benefits for energy savings, electricity bill savings, and environmental impacts in the Con Edison service-territory is presented in Table 1.

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<sup>1</sup> PSC's "Order Adopting Three-Year Rate Plan" in Case 04-E-0572 - Proceeding on Motion of the Commission as to the Rates, Charges, Rules, and Regulations of Consolidated Edison Company of New York, Inc., for Electric Service; Issued and Effective March 24, 2005.

<sup>2</sup> The term "achieved" as used in the order has been defined to mean executed contracts under which NYSERDA will become obligated to make payment for the provision of goods and/or services which are projected to produce such load reduction measures in the reasonable near future.

<sup>3</sup> Note that some projects receive implementation assistance from SWP and the System Benefit Charge (SBC). The SWP share of the incentive is 60%, the SBC share is 40%. Savings and project costs are split in the same proportion.

<sup>4</sup> This is an increase of approximately 1 MW over the achieved 128.2 MW reported in the April 2007 Bi-monthly Report for the period ending March 15, 2007.

Encumbered funds are associated with all signed contracts and purchase orders, and include paid invoices.

<sup>6</sup> Table column titles in this report are defined as follows: (1) Program Reported Installed: installed impacts as reported in NYSERDA's project documents and databases; (2) Anticipated from Contracts: estimated impacts from project measures committed for but not yet installed; (3) Total Achieved: the sum of Program Reported Installed and Anticipated from Contracts; (4) M&V Adjusted Installed: installed gross impacts adjusted by evaluation to reflect the measurement and verification (M&V) of installed projects.

**Table 2: SWP Portfolio Demand Reduction for Projects Completed through March 31, 2007**

	<b>Target (kW)</b>	<b>Program Reported Installed</b>	<b>Anticipated from Contracts</b>	<b>Total Achieved (kW)</b>	<b>M&amp;V Adjusted Installed</b>
Energy Efficiency (permanent load reductions)	76,000	3,539	21,283	24,822	3,716
Load Management (interval meters, load curtailment, demand response generators)	61,000	12,620	37,389	50,009	12,620
Distributed Generation	28,000	535	31,742	32,277	535
Total	165,000	16,693	101,394	118,087	16,870
Program Overlap Removed <sup>1</sup>	15,000				124
Aggregated Demand Response Program (Contracted <sup>2</sup> )			10,980	10,980	
<b>Total SWP Program</b>	<b>150,000</b>	<b>16,693</b>	<b>112,374</b>	<b>129,067</b>	<b>16,745</b>
<sup>1</sup> An overlap adjustment for evaluated projects accounts for cross program implementation. For example, a total of 9 projects received implementation assistance from the Building Performance and Financing program (Load Fund projects); of these, 4 projects also received incentives for equipment costs. <sup>2</sup> This contracted amount does not yet have detailed measures. Expected measures will be a mix of energy efficiency and load management. Sums may not total due to rounding					

NYSERDA also provides demand reductions in the Con Edison service territory through the **New York Energy Smart<sup>SM</sup>** (NYE\$) System Benefits Charge (SBC) program which entered its third funding cycle effective July 1, 2006 (SBC III). As shown in Table 3, through March 31, 2007, the expected combined demand savings in the Con Edison service territory from NYSERDA's SWP and SBC III<sup>9</sup> programs are 185.7 MW.

**Table 3: Total kW Savings (SWP & SBC III) in Con Edison Service Territory Area through March 31, 2007**

<b>Summer Peak kW Savings</b>	<b>Program Reported Installed</b>	<b>Anticipated from Contracts</b>	<b>Total Achieved</b>
SWP	16,693	112,374	129,067
SBC III	17,835	38,800	56,635
Total Savings through NYSERDA Programs	34,528	151,174	185,702
The SBC III metrics presented in this table are specific to this SWP annual report only and should not be referenced nor used for comparison with NYE\$ reports or evaluation. Sums may not total due to rounding.			

<sup>9</sup> The NYE\$ evaluation documents report cumulative, installed metrics from NYE\$ inception in 1998; consequently, projects funded before SBC III began may be installed during the SBC III cycle. Also, as a measure life ends, appropriate saving reductions are reflected in the evaluation reports.

- **Building Performance and Financing (BPF)** program comprises the Building Performance Program and the Loan Fund. The Building Performance Program offers retro-commissioning studies and financial assistance to customers and their providers to implement recommendations that result in both kW and kWh reductions through improved building operations. The Loan Fund increases accessibility to financing through interest rate reductions. Interest rate reductions of up to 6.5% (650 basis points) are provided in the Con Edison service territory.
- **FlexTech/Technical Assistance (FlexTech/TA)** provides financial incentives to conduct feasibility studies which analyze efficiency improvements, peak load, and DG/CHP opportunities. Under the SWP, energy efficiency measures that reduce energy consumption during peak periods, such as lighting and chiller replacements, are emphasized.

**Table 5: SWP Budget Status through March 31, 2007**

Program	Budget	Encumbered Funds	Paid
Peak/Aggregated Load Reduction	\$53,000,000	\$29,286,371	\$1,290,228
Combined Heat & Power	\$15,000,000	\$2,941,113	\$154,942
Enhanced Commercial/Industrial Performance	\$13,000,000	\$3,145,333	\$376,486
Be Cool (residential-begins May 2007)	\$12,400,000	\$0	\$0
High Performance New Buildings	\$7,000,000	\$2,958,023	\$649,888
Building Performance & Financing	\$6,600,000	\$2,803,494	\$598,765
FlexTech/Technical Assistance	\$5,000,000	\$872,753	\$112,633
<b>Program subtotal</b>	<b>\$112,000,000.00</b>	<b>\$42,007,087</b>	<b>\$3,182,942</b>
Administration	\$7,840,000	\$2,734,423	\$2,734,423
Evaluation	\$2,240,000	\$635,117	\$137,859
<b>Total</b>	<b>\$122,080,000</b>	<b>\$45,376,627</b>	<b>\$6,055,224</b>
Sums may not total due to rounding.			

**Table 6: SWP Participants, Incentives, and Co-funding through March 31, 2007**

Program	Number of Participants <sup>1</sup>	Incentives		Cofunding	
		Installed	Anticipated	Installed	Anticipated
Peak/Aggregated Load Reduction	133	\$1,273,240	\$26,690,937	\$6,210,642	Not available
Combined Heat & Power	2	\$0	\$2,162,000	\$0	Not available
Enhanced Commercial/Industrial Performance	74	\$583,269	\$2,624,265	\$2,184,497	Not available
Be Cool (residential-begins May 2007)	0	\$0	\$0	\$0	Not available
High Performance New Buildings	11	\$33,005	\$1,667,032	\$124,135	Not available
Building Performance & Financing	16	\$547,803	\$1,931,376	\$18,870,558	Not available
FlexTech/Technical Assistance	30	\$0	\$556,183	\$0	Not available
<b>SWP Total</b>	<b>266</b>	<b>\$2,437,317</b>	<b>\$35,631,793</b>	<b>\$27,389,832</b>	<b>---</b>

<sup>1</sup> Participants include installed and committed projects, participants enrolled in more than one program are counted once.  
Sums may not total due to rounding.

### **Measurement and Verification Findings**

The measurement and verification of reported savings from NYSERDA's SWP programs begins with a pre-inspection evaluation contractor for the larger programs; NYSERDA's larger programs require project verification as part of their individual protocols. Under four of the NYES program offerings (Peak Load Management, Combined Heat and Power, Enhanced Commercial/Industrial Performance Program, formerly known as the Commercial/Industrial Performance Program, and High Performance New Buildings, also known as the New Construction Program), a program requirement is that an independent contractor must conduct pre-and post-installation visits at each project site. The post-installation site visit verifies that the measures funded under the program offering are installed and

**Table 7: SWP Demand Reduction (kW) from Program Inception through March 31, 2007**

<b>Program</b>	<b>Target (kW)</b>	<b>Program Reported Installed</b>	<b>Anticipated from Contracts</b>	<b>Total Achieved (kW)</b>	<b>M&amp;V Adjusted Installed<sup>2</sup></b>
Peak/Aggregated Load Reduction	82,000	14,966	78,791	93,757	15,057
Combined Heat & Power	14,000	0	19,347	19,347	0
Enhanced Commercial/ Industrial Performance	18,000	1,042	3,389	4,431	1,095
Be Cool (residential-begins May 2007)	13,000	-----	-----	-----	-----
High Performance New Buildings	9,000	100	2,871	2,971	105
<b>Building Performance &amp; Financing</b>	<b>7,000</b>	<b>584</b>	<b>5,195</b>	<b>5,779</b>	<b>613</b>
FlexTech/Technical Assistance	22,000	0	2,781	2,781	0
Program Overlap Removed <sup>1</sup>	15,000				124
<b>Total SWP Program</b>	<b>150,000</b>	<b>16,693</b>	<b>112,374</b>	<b>129,067</b>	<b>16,745</b>

<sup>1</sup> The overlap adjustment accounts for cross program implementation.  
 Program level impacts were adjusted using the portfolio kW realization rate of 1.05  
 Sums may not total due to rounding.

**Table 9: SWP Benefit/Cost Ratios<sup>13</sup>**

	<b>Installed - M&amp;V Adjusted</b>
Peak/Aggregate Load Reduction	1.50
Enhanced Commercial/Industrial Performance	3.16
High Performance New Buildings	3.96
<b>Overall</b>	<b>2.04</b>

The Benefit/Cost analysis was conducted at the measure level by dividing the installed measures into measure categories. The categories were based on the nature of the program, type of measure, measure life, measure costs, and load shapes. All SWP programs were divided in 4-5 independent measure categories. The combined savings for measures under each category were then adjusted by applying the gross blended realization rates (weighted average) of 1.05 for kW reductions and 1.09 for kWh savings. Measure costs were the sum of the customer's co-funding and the NYSERDA incentive. The NYSERDA administration, delivery and evaluation costs were applied at the program level. Benefit/Cost ratios were calculated for each measure category using a 3.9% discount rate and a 2.98% inflation rate; the results were combined to obtain ratios at the program level.

### **Conclusions and Recommendations**

The evaluation findings show that the verified savings for the SWP program are greater than the program reported impacts and the program is cost effective with an overall Benefit/Cost ratio of 2.04. The savings and Benefit/Cost ratios in the current review, however, do not account for freeridership and snapback as this work is in progress<sup>14</sup> (Net-to-Gross ratios are set to 1.0), and therefore the evaluation results may change. The M&V contractor recommends that the Benefit/Cost ratios be re-calculated by applying the Net-to-Gross ratios after completing the freeridership and snapback customer surveys.

The demand and energy savings for the SWP program are calculated using a blended realization rate over all programs. Individual SWP programs however have distinct implementation strategies and backgrounds, so as more projects are installed impacts should be reported by calculating and applying realization rates at the program level.

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<sup>13</sup> The Benefit/Cost ratios are based on gross level M&V verified savings for installed projects; NTG ratios are set to 1.0.

<sup>14</sup> Freeridership is that portion of the project which could have been completed regardless of any established incentive program. Snapback accounts for the variations in operating cycle parameters after project installation.