

**FLEXTECH  
PROGRAM LOGIC MODEL REPORT**

Final Report

Prepared for

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

Prepared by

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**NEW YORK STATE RESEARCH AND DEVELOPMENT AUTHORITY**  
**FLEXTECH PROGRAM**  
**PROGRAM LOGIC MODEL REPORT UPDATE**  
**(FINAL – MARCH 24, 2010)**

**INTRODUCTION**

This document provides:

- 1) A table showing a list of documents relating to NYSERDA’s FlexTech Program that were used to provide insight during development of this program logic model report;
- 2) A high-level summary of the context of the markets within which this program operates, the other NYSERDA programs it works with to accomplish the **New York Energy \$mart<sup>SM</sup>** goals, other potential complimentary and/or competing programs, and a brief program description. Available market characterization information is also presented in this section including a description of baseline conditions, technical energy and demand potential reductions, and the portion of that potential that the program is expected to achieve;
- 3) A high level summary of the enhanced funding that FlexTech receives as a “Fast Track” program through the Energy Efficiency Portfolio Standard (EEPS);
- 4) 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;
- 5) A program logic model diagram showing the linkages between inputs, program activities, outputs and outcomes, and identifying potential external influences;
- 6) A table listing the key outputs and outcomes, including identification of relevant measurement indicators and potential data collection approaches to guide later prioritization, and development of a monitoring and evaluation plan, and
- 7) A list of potential researchable issues for consideration within evaluation planning.

**1 RELATED NYSERDA DOCUMENTS**

The following table identifies NYSERDA and other potentially relevant documents that were reviewed for this report:

**Table 1 – Relevant Documents Reviewed**

NYSERDA Document Description
New York Energy \$mart <sup>SM</sup> Program Evaluation and Status Report, May 2005, Section 5 Business and Institutional Program Area (5.5) and Appendix A – Technical Assistance Program Summary pp 27-29.
New York Energy \$mart <sup>SM</sup> Program Evaluation and Status Report, May 2006, Section 4 Business and Institutional Program Area; Technical Assistance, FlexTech & Energy Audit Programs (4.9)
System Benefits Charge Proposed Plan for New York Energy \$mart <sup>SM</sup> Programs 2006-2011 (SBC III Proposed Plan), March 2, 2006 (Section 4.7 – FlexTech Technical Assistance, pages 4.22 and 4.23)
System Benefits Charge: Revised Operating Plan for New York Energy \$mart <sup>SM</sup> Programs. (2001-2006). June 12, 2002.
Technical Assistance Program Opportunity Notice No. 1045
FlexTech Website and Information: <a href="http://www.nysesda.ny.gov/flextech">http://www.nysesda.ny.gov/flextech</a>
Summit Blue Consulting. Technical Assistance Program: Market Characterization, Market Assessment and Causality Evaluation (MCAC). Final Report. February 2005.

<b>NYSERDA Document Description</b>
Research Into Action. Technical Assistance Process Evaluation. Final Report. June 2004.
Nexant. M&V Evaluation. Technical Assistance Program, Final Report. June 2005.
<b>Additionally, the following NYSERDA documents were consulted in making the 2009 updates:</b>
<b>New York Energy \$mart<sup>SM</sup></b> Program Evaluation and Status Report, March 2009, Section 3 Commercial/Industrial Programs; FlexTech Technical Assistance Program (3.9)
<b>New York Energy \$mart<sup>SM</sup></b> Program Evaluation and Status Report, May 2009, Section 3 Commercial/Industrial Programs; FlexTech Technical Assistance Program (3.8)
Systems Benefit Charge: Supplemental Revision for <b>New York Energy \$mart<sup>SM</sup></b> Programs. (2008-20011). As Amended August 22, 2008 and revised March 12, 2009
Summit Blue Consulting. Technical Assistance Program: Market Characterization, Market Assessment and Causality Evaluation (MCAC). Final Report. May 2007.
Flexible Technical Assistance Services Program Request for Proposal No. 1209
Technical Assistance Program Opportunity Notice No. 1197
DSIRE website, New York Incentives/Policies for Energy Efficiency <a href="http://www.dsireusa.org/incentives/index.cfm?re=0&amp;ee=1&amp;spv=0&amp;st=0&amp;srp=1&amp;state=NY">http://www.dsireusa.org/incentives/index.cfm?re=0&amp;ee=1&amp;spv=0&amp;st=0&amp;srp=1&amp;state=NY</a>
Technical Assistance Program website <a href="http://www.nyserra.org/programs/Technical_Assistance/default.asp">http://www.nyserra.org/programs/Technical_Assistance/default.asp</a>
Case 07-M-0548 -Energy Efficiency Portfolio Standard NYSERDA 60-Day Filings, Outreach & Education/Marketing Plans, Questions on Commercial and Industrial Programs, FlexTech Program
Optimal Energy, <u>Achievable Electric Energy Efficiency in New York State DRAFT November 2008.</u>

## 2 CONTEXT AND PROGRAM DESCRIPTION

### 2.1 Description of Current Program

The **New York Energy \$mart<sup>SM</sup>** FlexTech program seeks to increase the productivity and economic competitiveness of New York organizations by identifying and encouraging the implementation of cost-effective energy efficiency measures. FlexTech operates within the large and diverse nonresidential existing building sector, which includes commercial, industrial, institutional, municipal, not-for-profits and K-12 school buildings. The primary focus of the FlexTech program is to provide 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 sources while providing objective analysis of energy source trade-offs and switching options. Program participants receive a customized energy study targeted to the participants' particular needs and objectives.<sup>1</sup>

Over the years, the program has evolved to meet the needs of customers of different sizes and types who are approaching their decisions from a variety of different primary objectives (for example, equipment failure and replacement, process improvement, capital improvement, growth, or retrofit). The market in which FlexTech studies are sought is generally dominated by desires to meet these other objectives besides energy usage reduction.

FlexTech also operates within the market of service providers/consultants capable of providing energy efficiency assessments of customer facilities. These engineering and technical consultants have varied abilities and knowledge relative to energy efficiency and renewables. End-users can bring their own independent consultant or can use consultants that have been contracted by NYSERDA to provide services under the FlexTech program. The studies and engineering consulting services that result from

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<sup>1</sup> Systems Benefit Charge: Supplemental Revision for **New York Energy \$mart<sup>SM</sup>** Programs. (2008-20011). As Amended August 22, 2008 and revised March 12, 2009, pg. 11.

FlexTech cost-sharing are used to support decision making by the end-users. The cost-sharing required by the program is a critical component to demonstrate customer commitment and to screen out customers unlikely to act. Cost-shared services provided to eligible customers include<sup>2</sup>:

- Engineering feasibility and technical assistance studies
- Detailed analysis of specific energy efficiency projects
- Process improvement analyses
- Rate analysis, load shapes, and energy service aggregation
- Engineering in support of project-financing proposals
- Development of long-term capital budget strategies for the upgrade or replacement of energy-consuming equipment
- Retro-Commissioning of energy-efficiency measures in existing buildings

End-users are also informed of and referred to other **New York Energy \$mart<sup>SM</sup>** programs as appropriate for incentives or financing.

Components of the FlexTech program have existed in some form for over 20 years, and the current program is a consolidation of services previously offered under the FlexTech, Technical Assistance, and the Energy Audit Programs.<sup>3</sup> The FlexTech Program is currently offered Statewide with an increased focus on servicing ratepayers in the Consolidated Edison and Orange and Rockland service territories due to load constraints and higher energy costs. This geographically-focused application of the FlexTech Program targets consultants who are knowledgeable about and actively engaged with customers and facilities in these areas. Those customers interested in FlexTech can fill out a referral form, application, or call a NYSERDA Project Manager.

Smaller customers are currently eligible for walk-through energy audits, including a reimbursement of audit cost upon implementation of recommendations. Customers with annual electric utility bills of less than \$75,000 are encouraged to apply for the energy audit component of FlexTech or appropriate utility program when available.<sup>4</sup> NYSERDA anticipates that targeting of this market sector will be diminished as the utility-offered Fast Track Small Business Programs begin to be implemented.

Customers may be eligible for up to \$1,000,000 of NYSERDA FlexTech funding per eligible study. For Peak-Load Curtailment Plans, NYSERDA will provide up to \$2/kW of the facility's peak summer (May-October) electrical demand directly to the consultant creating the plan.

Between July 1, 2006 and March 31, 2009, FlexTech has approved proposals for 2,065 projects, 69% of the program's five year goal of 3,000 completed projects by June 30, 2011. Over this same time period, FlexTech raised Cumulative Annual Electricity savings 644.1 GWh to 865.2 GWh per year. This represents an increase in 221.1 GWh, or 55% of the program's original five year goal of an additional 400 GWh.<sup>5</sup>

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<sup>2</sup> As listed on the Flexible Technical Assistance web page <http://www.nyserdera.ny.gov/flextech>

<sup>3</sup> **New York Energy \$mart<sup>SM</sup>** Program Evaluation and Status Report, March 2009, Section 3 Commercial/Industrial Programs pg.3-38.

<sup>4</sup> PON 1197 also details a variety of limitations and requirements that may affect a given project, but those limitations and requirements are not discussed extensively here.

<sup>5</sup> **New York Energy \$mart<sup>SM</sup>** Program Evaluation and Status Report, May 2009, Section 3 Commercial/Industrial Programs; FlexTech Technical Assistance Program, pg. 3-2 & 3-16.

## **2.2 Market Assessment**

The most recent full Market Characterization, Market Assessment and Causality Evaluation (MCAC) report for the FlexTech (then called “Technical Assistance” or “TA”) Program was completed in 2005. The 2007 MCAC Technical Assistance report only focused on assessing attribution of Program savings and examining participant motivation and decision-making criteria for participating in the program, and did not address all researchable issues in the way the 2005 report did. All data in this section, unless otherwise noted, are from Section 4 of the 2005 MCAC report, and describe the state of energy efficiency in New York in 2005. A full MCA evaluation of the FlexTech Program began in fall 2009.

### **2.2.1 Description of Baseline Condition**

#### ***Market Share***

In 2005, nearly half of the participating consultants (48%) felt that the number of Technical Service Providers (TSPs) active in New York had grown during the last five years. The majority of non-participants, however, stated that the number of TSPs had either increased (33%) or stayed the same (32%). A substantial number of both participants and non-participants, however, were unable to answer the question.

Although both participating and non-participating consultants believed that TSP activity was increasing during the last five years, a substantially higher percentage of participants believed this increase was significant (34%) compared to non-participants (5%).

#### ***Market Barriers***

An explicit goal of the FlexTech Program is to reduce the market barriers to the installation of energy efficiency measures and services. There are a number of market barriers that are often cited as impediments to the selection of efficient equipment, including:

- Lack of experience
- High first, or incremental costs
- Uncertainty about savings
- Uncertainty about reliability
- Availability of equipment
- Availability of consultants
- Lack of information

Both end-use customers and consultants were asked if each of these factors was changing during the last five years (*i.e.*, was it increasing or decreasing as a barrier). Respondents reported that most barriers were decreasing. For example, the vast majority of end-use customers said lack of experience (65%) and lack of information (60%) were decreasing market barriers. Similarly, 63% of the participating consultants reported that lack of information was decreasing as a barrier.

The notable exception to this list of decreasing barriers was high first or incremental cost. A substantial proportion of end-use customers (29%) and consultants (28%), even those participating in NYSERDA’s programs, stated that cost is increasing as a barrier (citing tighter capital as one of the reasons). In addition, cost was cited as the most significant market barrier by both participating end-use customers (58% of respondents) and consultants (67% of respondents).

## ***Awareness***

In 2005, 90% of the FlexTech end-use customer participants described themselves as “extremely familiar” or “somewhat familiar” with energy-efficient measures and equipment. Only 68% of the end-use customer non-participants, however, described themselves in these two categories. In addition, 54% of the FlexTech end-use customers reported that their familiarity with energy-efficient measures and equipment had increased significantly during the past five years, compared to only 22% of the end-use customer non-participants. Participants also reported a substantial increase in their awareness of opportunities to use consultants/TSPs as the majority had said their familiarity had increased significantly (42%) or somewhat (40%).

Participating consultants also reported a significantly higher level of knowledge regarding energy efficiency measures compared to non-participants: 77% of the participating consultants stated that they were extremely familiar with energy efficiency measures, equipment, and services, compared to only 11% of the non-participants. Similarly, 48% of the participating consultants believed their familiarity with energy efficiency equipment had increased significantly in the past five years, compared to only 21% of the non-participating consultants.

In addition to being more aware of energy-efficient measures, participating consultants are more actively marketing energy-efficient measures, energy-equipment, and services. Seventy-four percent (74%) of the participating consultants are significantly or somewhat increasing their marketing of energy-efficient measures, compared to only 38% of the non-participants. The participating respondents cited the primary reasons for these changes as:

- Increasing utility/energy costs (35% of respondents)
- NYSERDA (20%)
- Educated/experienced customers (14%)

## ***Availability of Energy Efficient Products***

Approximately half of the FlexTech end-use customers (50%) and consultants (57%) stated that the availability of energy efficiency measures was becoming less of a market barrier over the past five years. The availability of energy efficiency measures is also increasing as the consultants improve and expand their marketing of energy efficiency measures and their recommendations of these measures.

Once again, participating consultants exhibited a substantial difference from the non-participant sample, as 42% of the participant respondents reported that they are significantly increasing their recommendations, compared to only 15% of the non-participants.

## ***Cost and Pricing***

Both end users and participants reported that pricing/incremental cost remains the most significant market barrier to the installation of energy efficiency measures. Many of the end users (28%) and consultants (29%) even stated that cost was increasing as a barrier, citing tighter financial situations in their companies.

The pricing barrier is somewhat mitigated, however, when end-use customers factor energy cost savings into their analysis (*i.e.*, the incremental costs are offset somewhat by annual cost savings). Both end user participants (88%) and non-participants (79%) reported that they factor energy cost savings when considering energy-efficient equipment.

Operations and maintenance (O&M) savings from energy efficiency measures could also potentially offset higher incremental costs. Seventy-one percent (71%) of the participating consultants that installed measures believed these projects also provided O&M benefits in addition to the energy efficiency and financial benefits.

### ***Buildings Already Served***

Through March 2009, 2,065 buildings had been served, 69% of the original target of 3,000 from July 1, 2006 through June 30, 2011.<sup>6</sup>

### **2.2.2 Expected Savings and Statewide Technical Potential**

As shown in the tables below, by the year 2015, the FlexTech program is estimated to save approximately three percent (3%) of the achievable potential energy savings estimated within New York's commercial and industrial existing buildings. These numbers come from Optimal Energy's assessment of technical potential savings in New York for 2009-2015 and the SBC/EEPS plan detailing expected program savings.<sup>7</sup>

**Table 2 - Achievable Potential Savings and FlexTech Program Expected Savings Totals**

<b>Achievable Potential Savings, 2009-2015</b>		
Sector	Annual Cumulative Energy Savings	Annual Cumulative Summer Peak Demand Savings
Commercial Existing Buildings	14,937 GWh	3,297 MW
Industrial	3,381 GWh	491 MW
Total	18,318 GWh	3,788 MW
<b>Total FlexTech Program Expected Savings, 2009-2015</b>		
Program	Annual Cumulative Energy Savings	Percentage of Achievable Potential
FlexTech	555GWh	3%

**Table 3 - Cumulative Year by Year Energy Savings (GWH)**

	2009	2010	2011	2012	2013	2014	2015
<b>Achievable Potential Total (In Relevant Sectors)</b>	<b>1,254</b>	<b>3,445</b>	<b>6,459</b>	<b>9,337</b>	<b>12,307</b>	<b>15,263</b>	<b>18,318</b>
Commercial Existing Buildings (GWh)	818	2,360	4,598	6,834	9,390	12,043	14,937
Industrial (GWh)	436	1,085	1,861	2,503	2,917	3,220	3,381
<b>FlexTech Program Total</b>	<b>18</b>	<b>76</b>	<b>186</b>	<b>323</b>	<b>445</b>	<b>518</b>	<b>555</b>
EEPS (GWh)	6	29	79	146	209	247	267
SBC III (GWh)	12	47	107	177	237	270	288

### **2.3 Other Relevant NYSERDA, NY Utility and ISO-Sponsored Programs**

In addition to NYSERDA's FlexTech Program there are a number of other potentially relevant and complementary programs being implemented or planning to be implemented in New York, both within

<sup>6</sup> New York Energy \$mart<sup>SM</sup> Program Evaluation and Status Report, May 2009, Section 3 Commercial/Industrial Programs; FlexTech Technical Assistance Program (3.8), pg 3-16.

<sup>7</sup> Optimal Energy, Achievable Electric Energy Efficiency in New York State DRAFT November 2008.

NYSERDA (including NYSErDA's Industrial and Process Efficiency, Business Partners, New Construction and Existing Facilities Programs) and by other New York State program administrators. 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 energy efficiency goals of New York State, NYSErDA believes there must be a joint effort between NYSErDA and all other program administrators. This is being accomplished within NYSErDA, through the sharing of information and project leads between FlexTech and the other NYSErDA commercial and industrial programs noted above. Such coordination includes provision of technical assistance and guidance by NYSErDA staff through the FlexTech program, and informing FlexTech participants of existing incentive programs that may provide assistance for project installation.

Relevant other programs, not being administered by NYSErDA, also exist and have been included as External Influences in Section 4.5 of this report. They are identified in the program logic diagram as factors with the potential to impact achievement of NYSErDA's FlexTech program goals and include:

- Central Hudson Gas and Electric - *Small Business Energy Efficiency Program*<sup>8</sup>
- National Grid - *Small/Mid-Sized Business Energy Efficiency Program (Upstate New York)*<sup>9</sup>
- NYISO - *Emergency Demand Response Program (EDRP)* and *ICAP Special Case Resources (SCR) program*.<sup>10</sup> The NYISO's *Day-Ahead Demand Response Program (DADRP)* also allows energy users to bid their load reductions, or "negawatts", into the Day-Ahead energy market as generators do.

### **3 PROGRAM ENHANCEMENTS FOR EEPS FAST TRACK**

The FlexTech program is one of five "Fast Track" programs receiving enhanced funding through the Energy Efficiency Portfolio Standard (EEPS). As described in more detail below, FlexTech program enhancements include substantially increasing the number of consultants and expanding outreach, education, and marketing of this program.

NYSErDA intends to enhance the FlexTech Program by increasing the number of consultants, introducing new initiatives, and expanding ongoing activities. To increase the number of consultants, NYSErDA will issue a Request for Proposals (RFP) to select qualified firms in specific geographic areas, (such as New York City), or technological fields (such as industrial process or data center process efficiency). New and expanded initiatives will include: retro-commissioning, energy master planning, long-term energy management, combined heat and power (CHP), sector-based emphasis, carbon footprint analysis, carbon reduction analysis, and sustainability planning and practices.

Given that some of the New York utilities will now be implementing energy efficiency programs for small commercial customers, NYSErDA will continue its efforts to improve its coordination with the utilities to share customer leads and referrals on a more systematic basis and to coordinate outreach,

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<sup>8</sup> DSIRE website, New York Incentives/Policies for Energy Efficiency, Central Hudson Gas & Electric – Small Business Energy Efficiency Program, [http://www.dsireusa.org/incentives/incentive.cfm?Incentive\\_Code=NY60F&re=0&ee=1](http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=NY60F&re=0&ee=1)

<sup>9</sup> DSIRE website, New York Incentives/Policies for Energy Efficiency, National Grid – Small/Mid-Sized Business Energy Efficiency Program (Upstate NY), [http://www.dsireusa.org/incentives/incentive.cfm?Incentive\\_Code=NY51F&re=0&ee=1](http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=NY51F&re=0&ee=1)

and National Grid's "Cut Your Energy Costs, Strategies for Business Customers"  
[http://thinksmarthinkgreen.com/files/uny\\_small\\_biz.pdf](http://thinksmarthinkgreen.com/files/uny_small_biz.pdf)

<sup>10</sup> NYISO website, [http://www.nyiso.com/public/products/demand\\_response/index.jsp](http://www.nyiso.com/public/products/demand_response/index.jsp)

education, and marketing and referrals in a manner that ensures all commercial customers are directed to the appropriate programs.<sup>11</sup>

#### 4 KEY ELEMENTS SUMMARY

Based on a review of relevant NYSERDA documents, below is a summary of some key elements of the FlexTech Program.

##### 4.1 Ultimate Goals:

FlexTech is part of NYSERDA’s Commercial/Industrial (C/I) sector program portfolio. The C/I sector portfolio is designed to address all SBC III goals by promoting competitive markets for energy efficiency services and engendering widespread adoption of high-efficiency technologies. The market infrastructure and demand side goals for the broader C/I portfolio are listed in Table 4.<sup>12</sup>

**Table 4 – Goals for NYSERDA’s C/I Programs**

Market Infrastructure/Policy	Demand-Side
Expanded delivery channels for energy efficiency and demand response services	Projects demonstrate persistent energy savings and provide other benefits to end-users
Larger, robust and sustainable market for energy efficiency services and products	Customers have reliable information on which to base energy-related decisions
Increased capacity of energy services companies to deliver quality projects that produce reliable benefits	Customers have confidence in energy savings estimates and value the energy efficiency and green building features of their projects
Increased number of firms with experience and confidence in delivering energy efficiency and peak load reduction measures	Access to energy efficiency services is improved for all types of customers including underserved customers

FlexTech contributes directly to the achievement of these goals through activities that increase the experience and capacity of the consultant/TSP market and provide valuable, objective, cost-shared information for end-users considering energy efficiency and process improvement projects. Continued implementation of the FlexTech program is expected to:

- Achieve energy and peak load reductions, saving over 555,000 MWh between 2009 and 2015 (includes SBC III and EEPS fast track goals).
- Increase productivity and economic competitiveness of participating facilities by recommending the implementation of cost-effective energy efficiency measures, peak load curtailment plans, and CHP and renewable generation projects.
- Provide technical assistance to approximately 3,000 end-users between 2006 and 2011.
- Reduce environmental impacts
- Increase the pool of consultants participating in the program
- Increase the technology, service, and sector specific initiatives
- Increase outreach and training of customers and consultants
- Employ more specialized consultants with unique skills in various types of energy efficiency to increase effectiveness in targeted initiatives

<sup>11</sup> System Benefits Charge Supplemental Revision for **New York Energy \$mart<sup>SM</sup>** Programs 2008-2011 (As amended August 22, 2008 and revised March 12, 2009) Section 3.2.2 – FlexTech- Program Enhancements for EEPS Fast Track

<sup>12</sup> GDS Associates. **New York Energy \$mart<sup>SM</sup>** Business and Institutional Programs Sector-Level Logic Model Report. May 11, 2006.

- Encourage stronger participation in Con Edison Service territory to address the needs of this strained network
- Develop stronger integration of NYISO and utility programs with NYSERDA programs through identifying and analyzing opportunities for customers to participate in activities of both organizations

For more information on these and other program outputs and outcomes see tables in section 4.5

#### **4.2 Market Barriers/Issues the Program Attempts to Address (“the Problem”):**

The FlexTech program assists customers in improving their energy efficiency by providing objective information and expertise needed to aid in or improve their decisions to upgrade equipment, improve processes, or otherwise invest in energy efficiency. The program operates within the larger NYSERDA Commercial and Industrial portfolio designed to create market opportunities and maximize benefit for participants and society. To facilitate participation, FlexTech works to overcome a variety of market barriers and issues including:

- Lack of time and competing priorities
- Volatility and risk related to energy prices and business environment
- Lack of information to support energy efficiency investment in the commercial and industrial sector
- A diverse set of targeted customers that include different sizes and types of customer facilities and systems, with a wide range of needs for technical information
- Lack of funding to support analysis; competing needs for capital
- Lack of awareness, knowledge and understanding of energy efficiency features
- Uncertainty about savings
- High incremental or first costs

These and other potentially relevant market barriers can be broken down into three general categories: barriers affecting the supply side, the mid-market/infrastructure, and the demand side. Supply-side and mid-market/infrastructure barriers include business practices and policies that deter the development and/or delivery of energy efficient products and services, or indicate an insufficient availability of or commitment to such energy-efficient products/services. Demand-side barriers in the commercial and industrial sector primarily revolve around competing needs for capital, performance uncertainties, and information or search costs. Table 5 lists specific barriers and the related market actors (not ordered by priority) for the commercial, industrial and institutional sector.

**Table 5 – Commercial, Industrial and Institutional Sector Market Barriers and Actors**

Market Area	Barriers	Market Actors
Supply side	S1* – Limited availability of energy efficiency equipment S2* – Lack of demand for energy efficiency equipment	Manufacturers and suppliers of energy using equipment
Market Infrastructure / policy	M1* – Information or search costs. Specifically, the lack of expertise among equipment salesmen and installers who are unable to provide the analysis required by commercial and industrial customers in choosing a higher efficiency option M2* – Performance uncertainty. Limited experience with energy-efficient equipment, load management equipment, and energy monitoring equipment M3* - Uncertainty about product performance and profit potential for providing energy efficiency services M4 – Service unavailability. Limited availability of sub-consultants with training and experience necessary for efficient equipment/building techniques and optimum energy performance of efficient equipment/building techniques M5* - Undervaluing energy efficiency and sustainability M6 - Consultants unwilling to learn and conduct services outside of their specific trade M7* - Lack of knowledge of real-time pricing and other load management options M8* – Increased need for coordination with utilities and other program administrators	Engineers and others capable of providing accurate information in an energy audit Builders, Consultants, retailers, salesmen, and installation consultants Sub-consultants and building trades
Demand side	D1* - Lack of awareness, knowledge and understanding of energy efficiency, renewable energy and load management features, products and services D2* - Competing priorities, especially those of primary business focus D3* - Information costs associated with understanding the energy related features and associated benefits D4* - Competing needs for capital (higher first or incremental cost) D5* - Lack of reliable information on energy-efficient choices and how they may apply to a given building or business D6 - Resistance to new and/or innovative technologies D7* - Performance uncertainties (uncertainty of savings) D8* - Lack of knowledge of real-time pricing and other load management options D9* – Confusion caused by overlapping NYISO, NYSERDA, and utility programs	Commercial and industrial business owners and managers Purchasers General consultants hired to oversee renovations or remodels that include energy efficient equipment

\*indicates barriers that the FlexTech program seeks to directly address

As discussed earlier in Section 2.2.1, the MCAC report completed in 2005 found that progress had been made in awareness among end-use customers as they continue to gain more experience, education and trust in energy efficiency measures, equipment and services. Additionally, the 2005 MCAC report found

that rising energy prices affect end-use customer decisions regarding investments in energy efficiency; that NYSEERDA programs (including FlexTech) are often cited as an important factor in choosing to install energy efficiency measures and equipment; and that program participants are exhibiting increased awareness and understanding of energy efficiency measures and equipment.<sup>13</sup> The 2007 MCAC FlexTech report only focused on assessing attribution of Program savings and examining participant motivation and decision-making criteria for participating in the program, and did not address all researchable issues in the way the 2005 report did. However, the 2007 report did find evidence that the FlexTech (then called “Technical Assistance”) program is clearly shifting the market well beyond what is recorded in the program database. It noted in particular that consultants across the state are increasing their capabilities in identifying energy efficiency and demand response project opportunities, increasing the comprehensiveness of studies being completed outside of the Program, and leading to a greater adoption of new technologies.<sup>14</sup>

#### **4.3 Targeted Market Actors:**

The FlexTech program specifically targets engineering firms and technical consultants that support institutional, commercial and industrial decision-making regarding capital investments and equipment upgrades. FlexTech also targets the business owners and managers, property owners and managers, institutional decision makers and industrial firms who make decisions about the energy efficiency of projects and need the technical support services to inform those decisions. Indirectly, the program also leverages the expertise of equipment vendors, installation consultants and energy service companies. It should be noted that there are other actors in the market that are not directly targeted by the FlexTech program, notably the electric utilities.

#### **4.4 FlexTech Program Implementation Approach (“Activities”):**

The FlexTech program activities work mainly with market actors within the demand-side and mid-market/infrastructure areas to help address key market barriers. These activities can be grouped into five main areas: (1) Outreach and Education targeting End-Use Customers, (2) Outreach and Consultant Recruitment targeting technical consultants, (3) Financial Assistance, (4) Technical Assistance and Review, and (5) Consultant Selection and Approval.<sup>15</sup> Coordination with other incentive programs is also a critical program activity and is performed as a component within most of the above major activities.

These activities range across the spectrum from demand oriented (e.g., technical assistance and incentives coordination with other programs) through market infrastructure and supply (e.g., identifying and developing qualified/skilled consultants, engineers and technical service providers). Table 6 lists the FlexTech activities, identifying relevant market spectrum area.

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<sup>13</sup> Technical Assistance, MCAC Report. Summit Blue Consulting. February, 2005. pg 10.

<sup>14</sup> Summit Blue Consulting. Technical Assistance Program: Market Characterization, Market Assessment and Causality Evaluation (MCAC). Final Report. May 2007, pg. 3-42.

<sup>15</sup> The SBC III plan also notes that the program intends to investigate additional program services: including self-audit materials, building operator certification, brochures written in Spanish targeting small businesses, and web-based technical tools for facility managers.

**Table 6 –FlexTech Program Activities**

<b>Outreach/Education Activities-End Use Customers (Demand-Side &amp; Mid-Market/Infrastructure)</b>
<p>FlexTech outreach to end-users includes:</p> <ul style="list-style-type: none"> <li>• Targeted meetings with key stakeholders (end users, property managers, etc.)</li> <li>• Focus groups</li> <li>• Website and other collateral marketing and PR efforts</li> <li>• Cooperation with utilities and other NYSERDA programs</li> </ul> <p>Education activities include trainings for corporate and facility managers in targeted C&amp;I sectors on the benefits of and successful strategies for implementing energy efficiency upgrades.</p> <p>Program marketing is a primary focus if the EEPS funding enhancements for FlexTech.</p>
<b>Technical Assistance and Review Activities (Demand-Side)</b>
<p>Proposed studies are screened and developed; staff review and approve Scope of Work documents and applications</p> <p>FlexTech Consultants perform technical assistance in the form of energy studies.</p> <p>NYSERDA staff and NYSERDA contracted technical review consultants are available to review final report details and review for program compliance and accuracy of savings</p>
<b>Financial Assistance (Demand-Side/Mid-Market/Infrastructure)</b>
<p>Provide cost-share incentives, where end-user and NYSERDA each typically pay half of the fee to complete the study.</p> <ul style="list-style-type: none"> <li>• NYSERDA will pay up to \$1,000,000 for eligible studies</li> <li>• NYSERDA will also pay up to \$2/kW for peak-load curtailment plans.</li> <li>• Cooperation with utilities and other NYSERDA programs</li> </ul>
<b>Consultant Selection and Approval Activities (Mid-Market/Infrastructure and Demand-Sid</b>
<p>Competitive solicitations identify and retain FlexTech NYSERDA Consultants and their areas of expertise</p> <p>FlexTech NYSERDA Consultants work with NYSERDA staff to develop and improve their performance in the program</p> <p>FlexTech NYSERDA Consultants list is provided to end-users when requested</p> <p>Customers may also work with their own Independent Consultant</p>
<b>Outreach/Recruitment Activities- Technical Consultants (Mid-Market/Infrastructure)e)</b>
<p>FlexTech outreach to technical consultants includes:</p> <ul style="list-style-type: none"> <li>• Targeted meetings with key stakeholders (customer groups, trade allies, existing/potential technical service providers, etc.)</li> <li>• Focus groups</li> <li>• Website and other collateral marketing and PR efforts</li> <li>• Cooperation with utilities and other NYSERDA programs</li> </ul> <p>Consultant recruitment is a primary focus of the EEPS funding enhancements for FlexTech.</p>

#### **4.5 Program Inputs, Anticipated Outputs and Outcomes, and Potential External Influences**

Specific outputs and outcomes anticipated for the FlexTech program activities are shown in the logic diagram in Section 4 below. More information on these outputs, outcomes and associated measurement indicators can be found in Tables 9 and 10 immediately following the diagram (see Section 5).

The ability of the FlexTech program to accomplish the outputs and outcomes likely to result in the program reaching its ultimate goals is dependent on the level and quality/effectiveness of inputs that go into these efforts. There are also external influences that can help or hinder the development of anticipated outcomes. Key FlexTech inputs and potential external influences are presented in Tables 7 and 8.

**Table 7 –FlexTech Program Inputs**

<b>Program Inputs</b>							
SBCIII and EEPS budgets for FlexTech (Thousands of Dollars):							
	<b>2008 (1/4 yr)</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Total</b>
EEPS	\$0	\$492	\$2,618	\$4,552	\$4,359	\$2,359	\$14,860
SBC	\$415	\$2,500	\$6,029	\$8,991	\$7,587	\$3,868	\$29,390
<ul style="list-style-type: none"><li>• Approximately \$800,000 will be spent on outreach, education, and marketing efforts.</li><li>• Staff resources and experience implementing SBC programs</li><li>• NYSERDA’s credibility and relationships with key stakeholders and policy makers</li></ul>							
Coordination with other NYSERDA programs							
<ul style="list-style-type: none"><li>• Especially Existing Facilities Program, CHP Performance Program and Industrial and Process Efficiency Program</li></ul>							
Existing awareness of NYSERDA among market actors							
<ul style="list-style-type: none"><li>• See Section 2.2.1 for specific awareness levels</li></ul>							
Expertise of Technical Consultants and trade allies							
<ul style="list-style-type: none"><li>• Currently 42 FlexTech Consultants</li><li>• Approximately 275 Independent Consultants</li></ul>							

**Table 8 –FlexTech Program Potential External Influences**

<b>External Influences and Other Factors</b>
Changes in political priorities <ul style="list-style-type: none"><li>• Federal energy policies including energy related tax credits and the Federal Energy Policy Act of 2005</li><li>• Perceptions of energy and global climate change issues</li><li>• Codes and standards</li></ul>
Weather and associated impacts on customer actions and energy bills
Broad economic conditions that affect capital investment and energy costs (rapidly changing economic conditions) <ul style="list-style-type: none"><li>• Energy prices and regulation (changes in fuel and energy prices)</li><li>• Perceptions of the value of “green” buildings and LEED</li><li>• Activities of public and institutional purchasers and projects</li></ul>
Competition – internal and external <ul style="list-style-type: none"><li>• Internal- End-use customer competing priorities</li><li>• External- Broader market and demand for provision and supply of EE services</li><li>• Costs and performance of more efficient technologies</li></ul>
Activities of non-NYSERDA energy efficiency and renewable energy programs such as: <ul style="list-style-type: none"><li>• National Grid Programs- Small/Mid-Sized Business Energy Efficiency Program</li><li>• Central Hudson Gas &amp; Electric- Small Business Energy Efficiency Program</li><li>• NYISO demand response programs</li></ul>

## **5 PROGRAM LOGIC MODEL DIAGRAM**

The following page contains NYSERDA’s FlexTech program logic model diagram showing the linkages between activities, outputs and outcomes, and identifying inputs and potential external influences. The logic model depicts the program as it is described in the SBC III revised plan and includes EEPS fast track elements. The diagram presents the key features of the program. The logic diagram presented here is at a slightly higher level than the tables in this report, aggregating some of the outcomes, in order to provide an easier to read logic model. (Evaluation research should use the more detailed tables, in addition to the diagram, when desiring to examine the anticipated linkages and performance through the various outcomes.)

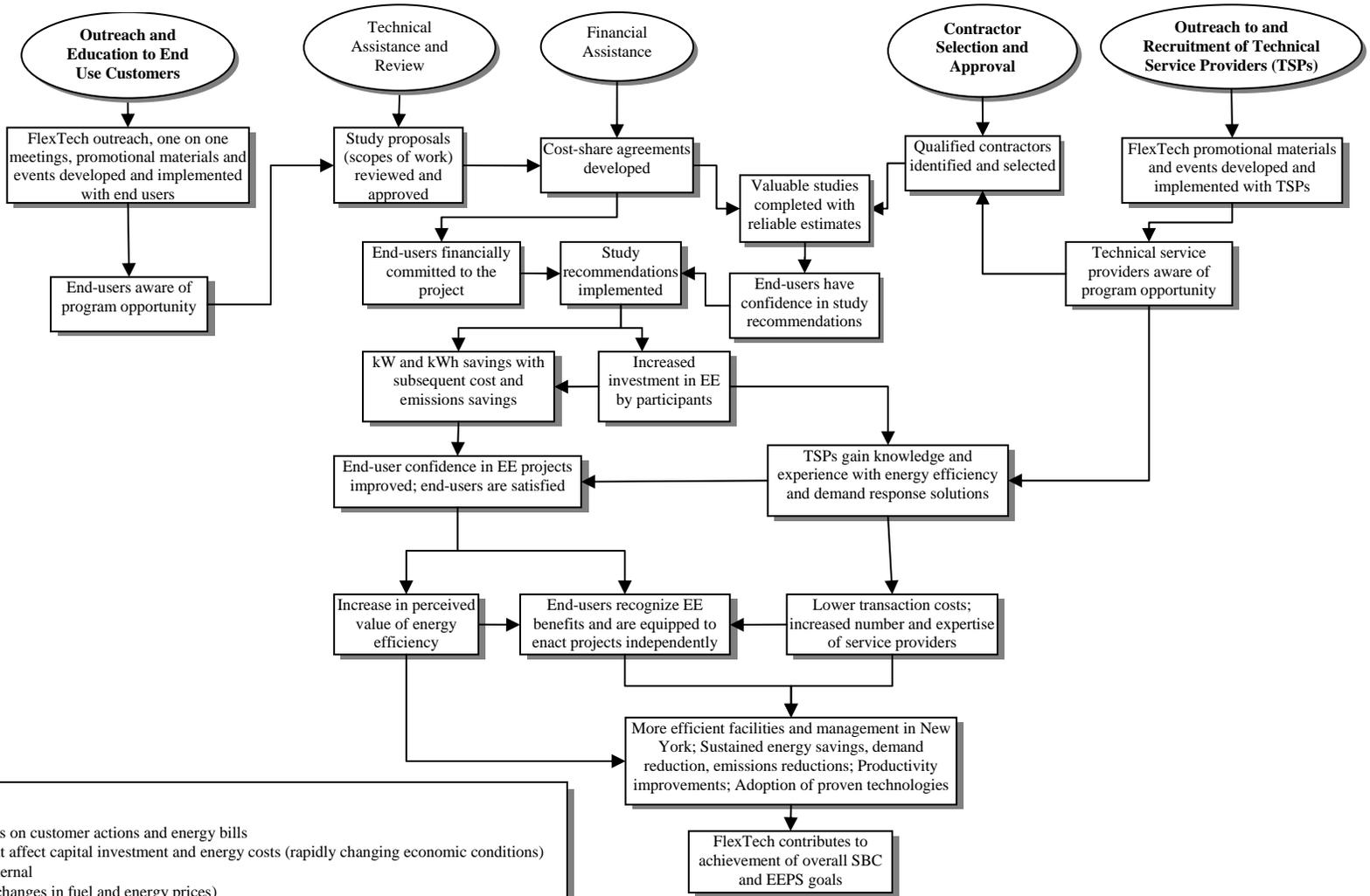
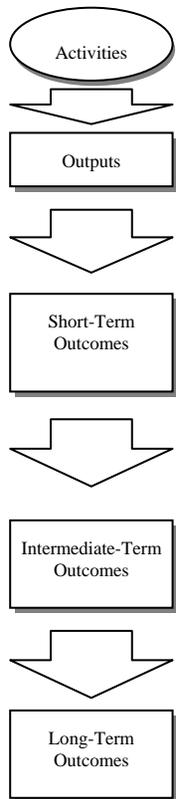
# FlexTech Program Logic Model

## January 2010

**Activities in bold indicate focus of EEPS funding enhancements**

**Inputs:**

- EEPS funding
- SBC funding
- Staff resources and experience implementing SBC programs
- NYSERDA's credibility and relationships with key stakeholders and policy makers
- Existing awareness of NYSERDA among market actors
- Expertise of Technical consultants and trade allies



**External Influences:**

- Changes in political priorities
- Weather and associated impacts on customer actions and energy bills
- Broad economic conditions that affect capital investment and energy costs (rapidly changing economic conditions)
- Competition – Internal and External
- Energy prices and regulation (changes in fuel and energy prices)
- Activities of non-NYSERDA energy efficiency and renewable energy programs

## 6 OUTPUTS, OUTCOMES AND ASSOCIATED MEASUREMENT INDICATORS

It is important to distinguish between outputs and outcomes. For the purposes of this logic document, outputs are defined as the immediate results from specific program activities. These results are typically easily identified and can be counted; often by reviewing program records.

Outcomes are distinguished from outputs by their less direct (and often harder to quantify) results from specific program activities. Outcomes represent anticipated behavior change associated with NYSERDA's program activities and will vary depending on the time period being assessed. On a continuum, program activities will lead to immediate outputs that, if successful, will collectively work toward achievement of anticipated short, intermediate and long-term program outcomes.

The following tables list outputs (Table 9) and outcomes (Table 10), taken directly from the logic model and associated measurement indicators. For each indicator, a proposed data source or collection approach is presented. When required, the need for baseline data is also noted. Items in this table should be prioritized and subsequently considered as potential areas for investigation as part of a formal program evaluation plan.

**Table 9 – FlexTech Outputs, Associated Indicators and Potential Data Sources**

<b>Outputs (&lt;1 year)</b>	<b>Indicators</b>	<b>Data Sources and Potential Collection Approaches</b>
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<b>Outputs (&lt;1 year)</b>	<b>Indicators</b>	<b>Data Sources and Potential Collection Approaches</b>
<b>Outputs from Outreach and Education Activities- End Use Customers</b>		
<p>FlexTech outreach, one on one meetings, promotional materials and events developed and implemented with end users</p> <p>Note: Program outreach, education and marketing is a specific focus of EEPS funding enhancements for FlexTech</p>	<p>Number and types of promotional materials developed</p> <p>Number of FlexTech presentations to end users</p> <p>Number and types of end users receiving materials/attending presentations (demographic and geographic distribution)</p> <p>Number of successful projects featured in marketing activities and case studies</p> <p>Portion of end-users aware of <b>New York Energy Smart<sup>SM</sup></b> programs, including FlexTech</p>	<p>Program records, website</p> <p>Program records</p> <p>End-user/market surveys</p>
<b>Outputs from Technical Assistance and Review Activities</b>		
<p>Study proposals (scopes of work) reviewed and approved</p>	<p>Number of SOW documents developed (demographic and geographic distribution)</p>	<p>Program records</p>
<b>Outputs from Financial Assistance Activities</b>		
<p>Cost-share agreements developed</p>	<p>Number and value of cost-share agreements (demographic and geographic distribution)</p>	<p>Program records</p>
<b>Outputs from Consultant Selection and Approval Activities</b>		
<p>Qualified consultants identified and selected</p>	<p>Number of qualified submissions</p> <p>Number of FlexTech NYSERDA Consultants</p>	<p>Program records</p>
<b>Outputs from Outreach and Recruitment Activities- Technical Consultants</b>		
<p>FlexTech outreach, one on one meetings, promotional materials and events developed and implemented with consultants</p> <p>Note: Consultant recruitment is a specific focus of EEPS funding enhancements for FlexTech</p>	<p>Number and types of promotional materials developed</p> <p>Number of FlexTech events developed and implemented with Consultants</p> <p>Number and types of consultants receiving materials/attending events (demographic and geographic distribution)</p> <p>Number of unique consultants who have participated in a FlexTech project</p> <p>Number of technical consultants aware of FlexTech</p>	<p>Program records</p> <p>Surveys of TSP</p>

## OUTCOMES

**Table 10 – Program Logic Model Outcomes**

Outcomes	Indicators	Data Sources and Potential Collection Approaches
<b>Short-Term Outcomes (1-3 years)</b>		
Valuable studies completed with reliable estimates	Number of studies completed End-users ratings of completed studies Number of completed projects Accuracy of estimates Number and types of technologies and magnitude of energy efficiency savings per measure being recommended (demographic and geographic distribution)	Program records Survey of end-users who received study  Evaluation, M&V activities
End-users aware of program opportunity	Portion of end-users that are aware of and participating in program, by location	Survey of end-users and participants
End-users have confidence in FlexTech study recommendations	Portion of end-users reporting confidence in completed FlexTech studies Number of projects identified in studies that are implemented by end-users	Surveys of end-users  Evaluation, M&V activities
<b>Short-Term Outcomes (1-3 years) - continued</b>		

Outcomes	Indicators	Data Sources and Potential Collection Approaches
End-users are financially committed to the project	<p>End-users are satisfied with their decision to invest in FlexTech-sponsored studies.</p> <p>Increase in number of end users stating that cost share agreement helped to solidify their financial commitment to the project</p> <p>Portion of end-users indicating that they plan to follow through with project recommendations</p> <p>Number of projects identified in studies that are implemented by end-users</p>	<p>Surveys of end-users</p> <p>Evaluation, M&amp;V activities</p>
Study recommendations implemented	<p>Number of projects and measures identified in studies that are implemented</p> <p>Increased comprehensiveness and number of high efficiency projects being implemented</p> <p>Unique aspects of each project are addressed appropriately</p> <p>Number and diversity of consultants available and providing study and implementation services</p>	<p>Evaluation, M&amp;V activities</p> <p>Surveys of TSP and end-users</p>
kW and kWh savings with subsequent cost and emission savings	<p>Projects result in energy and demand savings (quantity of kW and kWh saved), resulting in reduced emissions associated with generation (lbs CO<sub>2</sub> and other emissions reductions)</p>	<p>Evaluation, M&amp;V activities</p>
Increased investment in energy efficiency by participants	<p>Dollars invested in energy efficiency among C/I end-users in New York State</p> <p>Dollars invested in energy efficiency in ConEdison territory</p> <p>Number of projects identified in studies that are implemented (demographic, geographic and technology-specific distribution)</p>	<p>End-user/market surveys</p> <p>Evaluation, M&amp;V activities</p>
Technical service providers aware of program opportunity	<p>Portion of technical service providers that are aware of and participating in program, by type, size, and location</p>	<p>Survey of technical service providers and participants</p>

Outcomes	Indicators	Data Sources and Potential Collection Approaches
<b>Intermediate-Term Outcomes (3-5 years)</b>		
End-users are satisfied	Portion of end-users reporting satisfaction with resulting savings and non-energy benefits	Survey of end-users
End-user confidence in energy efficiency projects improves	Portion of end-users expressing increased confidence in energy efficiency Portion of end-users demonstrating confidence by investing in additional energy efficiency projects	Surveys of end-users Market surveys
Consultants gain knowledge and experience with energy efficiency and demand response solutions	Portion of Consultants reporting increased knowledge of energy efficiency and demand response programs Number of energy efficiency and demand response projects completed Increase in the number and type of technology advancements and EE/DR design awareness incorporated into new projects	Surveys and reviews of outreach and marketing materials of consultants Program records Level of incorporation/ adoption of technology advancements observed by FlexTech staff

<b>Long-Term Outcomes (5+ years)</b>		
Lower transaction costs	<p>Portion of end-users reporting increased accessibility to Technical information</p> <p>Number of end-users seeking technical assistance for their projects</p> <p>Number of consultants providing these services</p>	Market surveys of end-users and TSPs
Increasing numbers of and expertise in technical consultants	<p>Number of technical consultants providing efficiency services (both within and outside the program)</p> <p>Number of energy efficiency and demand response projects completed</p> <p>Sufficient number of TSP and other qualified firms to confirm existence of a competitive marketplace for consultants and customers</p>	Market surveys of end-users and TSPs
Increase in perceived value of energy efficiency	Portion of end-users reporting increased awareness of the value of reducing energy demand and consumption	End-user surveys designed to reveal changes in perspective towards energy efficiency investment at 2 or 3 year intervals
End-users recognize EE benefits and are equipped to enact projects independently	<p>Portion of end-users reporting increased recognition of EE benefits and modifying internal capital investment analysis procedures to encourage integration of EE technologies as part of normal business practice</p> <p>Number of EE projects completed outside the program</p>	Market survey of end-users
More efficient facilities and facility management in NY	<p>Portion of building stock that is energy efficient</p> <p>Portion of industrial processes that are energy efficient</p>	Assessment of existing building stock and industrial processes
Sustained energy savings, emissions reductions, and demand reduction	<p>Increased awareness of the methods of integrating energy management into business practices</p> <p>Buildings stock more efficient</p> <p>Industrial processes more efficient</p> <p>NYISO finds demand response available when needed</p> <p>Total kWh savings from energy efficiency projects</p> <p>Annual quantities of emissions</p>	<p>End-user surveys designed to reveal changes in perspective towards energy efficiency investment at 2 or 3 year intervals</p> <p>Assessment of existing building stock and industrial processes</p> <p>NYISO evaluations</p>
Productivity improvements	<p>Portion of commercial and industrial end-users with more efficient production costs</p> <p>Number/types of process improvement projects implemented</p>	End-user surveys focused on process improvement projects
Adoption of proven technologies	<p>Number and types of new technologies available</p> <p>Number of buildings implementing new technologies</p>	<p>Market survey of technologies available</p> <p>Assessment of existing building stock and industrial processes</p>
SBC III and EEPS C/I Portfolio goals achieved		

## **7 TESTABLE HYPOTHESES (RESERACHABLE ISSUES) FOR EVALUATION EFFORT**

Based on this program logic model assessment for NYSERDA's FlexTech program, a number of researchable issues have been identified and are noted below. Some of these have been investigated and continue to be investigated through NYSERDA evaluation activities.

Research addressing these questions will help to validate the reasonableness of the associated theories and will help inform NYSERDA program staff of progress and potential areas for program enhancement and refinement.

Based on recognition of key underlying program hypotheses, the following issues are proposed for potential testing. These issues are grouped into short-, intermediate-, and long-term periods to represent when they are expected to become important or verifiable.

### Short Term:

- How aware are targeted market actors of the program opportunity? How effective are the marketing materials?
- Does project comprehensiveness increase for projects that have FlexTech services? Does this spillover to other projects?
- Do end-users feel that they have a commitment to implement the projects because they paid a cost-share on the FlexTech services?
- What portion of measures recommended in FlexTech studies are implemented?
- Do end-users perceive the FlexTech services as enhancing their understanding of the benefits and their capability to be willing to pay the full share of technical services for future projects?
- Do end-users perceive the FlexTech services as enhancing their understanding of the energy and non-energy benefits and their capability to enact energy efficiency and demand response on their own?
- What specific measures are being implemented that are suggested through the program?
- Does the FlexTech Program adopt and learn from Research and Development activities at NYSERDA that would lead to studies recommending adoption of new technologies?

### Intermediate Term:

- Do technical consultants across the state increase their capability for energy efficiency and demand response project identification and development as a result of the FlexTech services?
- Has the program seen an increase in the number of consultants? Are an equal number of consultants available to all regions in New York? What is the distribution of consultants with relation to number of project completed?
- Are there any noticeable changes in end-user confidence in energy efficiency projects? What factors have led to these changes?

### Long Term:

- Is FlexTech contributing to a more competitive energy efficiency and technology market?

- Are end-users enacting energy efficiency projects independently? What are the factors contributing to this (i.e. low transactions costs, high availability of contractors, high perceived value of energy efficiency, etc.)?
- Are the new and expanded initiatives (retro-commissioning, energy master planning, long-term energy management, CHP, carbon footprint analysis, carbon reduction analysis, sustainability planning/practices) successful?
- Are commercial facilities and management in New York becoming more efficient as a result of program activities? Are they realizing productivity improvements?