

PROCESS EVALUATION

Industrial and Process Efficiency (IPE) Program

Final Interim Report (Wave 1 of 3)

Prepared for
The New York State Energy Research and Development Authority

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EXECUTIVE SUMMARY

The **New York Energy \$martSM** programs are funded by an electric distribution System Benefits Charge (SBC) paid by customers of Central Hudson Gas and Electric Corporation (Central Hudson), Consolidated Edison Company of New York, Inc. (Con Edison), New York State Electric and Gas Corporation (NYSEG), National Grid, Orange and Rockland Utilities (Orange and Rockland), and Rochester Gas and Electric Corporation (Rochester Gas and Electric). The programs are available to all electric distribution customers that pay into the SBC. The New York State Energy Research and Development Authority (NYSERDA), a public benefit corporation established in 1975, began administering the SBC funds in 1998 through NYSEDA's **New York Energy \$martSM** Program.

During 2008, several changes arising from the New York State Public Service Commission's (PSC's) Energy Efficiency Portfolio Standard (EEPS) proceeding have affected NYSEDA's **New York Energy \$martSM** Program portfolio and evaluation efforts. The PSC's June 23, 2008, EEPS Order called for an increase in SBC collections and a ramp-up of program efforts by NYSEDA and the state's six investor-owned electricity transmission and distribution utilities to meet New York's "15-by-15" electricity reduction goal. NYSEDA complied with the PSC's Order by submitting a Supplemental Revision to the SBC Operating Plan, incorporating approximately \$80 million per year in additional funds for five new or expanded Fast Track programs, as well as for general awareness, administration, and evaluation associated with those programs.

The Industrial and Process Efficiency (IPE) program, one of the Fast Track programs, provides performance-based incentives for energy-efficient improvements to processes, support systems, and facilities.¹ The IPE program offers integrated gas and electric incentive funding through its Existing Facilities and New Construction solicitations for simpler one-stop access by ratepayers and service providers.

The IPE program subsumes all projects initiated by industrial and data center customers applying through the Existing Facilities Program (EFP) and New Construction Program (NCP) Program Opportunity Notices (PONs). Although NYSEDA had previously offered incentives for both non-process equipment upgrades (that reduce firms' net energy use)² and performance-based incentives for process efficiency improvements (that reduce energy use per unit of production)³ through its EFP and NCP programs, most of the projects approved by the programs were non-process equipment upgrades. In response to market feedback and increased funding through the New York Energy Efficiency Portfolio Standard (EEPS), NYSEDA developed an enhanced *process-efficiency* component to the EFP and NCP solicitations to increase the proportion of industrial performance-based projects entering the programs. NYSEDA offers customers access to the IPE program under the EFP and NCP solicitations to provide a simpler process for ratepayers and service providers. Only firms that pay into the SBC are eligible to participate in the program.

¹ This IPE program plan represents electric energy efficiency funding approved pursuant to 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*, June 23, 2008, and subsequently approved by DPS Staff on March 13, 2009; and natural gas efficiency funding approved pursuant to *Order Approving Certain Large Industrial Customer Energy Efficiency Programs with Modifications and Rejecting Others*, August 24, 2009.

² *Non-process equipment upgrades*: Facilities upgrades that result in a reduction of a firm's net energy use.

³ *Process efficiency improvements*: Custom applications of commercially available technologies that increase productivity, improve processes, and/or support system efficiency. Process efficiency improvements reduce a firm's energy intensity (or the ratio of energy consumption to physical output). Such improvements may result in either an increase or a decrease in a firm's net energy use.

The purpose of the IPE process evaluation (the evaluation) is to assess the program's effectiveness and processes and make recommendations for improvement.⁴ Research Into Action, Inc. completed the first of three waves of the process evaluation in June 2010. At the time of this report, the evaluation team anticipates completing the second wave in fall 2010 and the third wave in spring 2011, with a final report that summarizes findings from the three waves in May 2011. The findings and recommendations in this interim report, the first of three written deliverables, addresses aspects of four out of five evaluation research objectives:

- Assess the effectiveness of the program outreach, education, and marketing efforts.
- Identify reasons for customer participation and measure implementation.
- Examine program processes and operations.
- Document program progress and make recommendations for improvement.

In ongoing work, we are meeting the fifth evaluation objective, which is to coordinate with other researchers supporting the IPE program.

The evaluation is based upon seven in-depth interviews with NYSERDA program staff (program staff), six consultants for NYSERDA (technical reviewers), 13 contractors that customers hire to design and implement upgrades to their facilities and equipment (contractors), and 17 program customers who are implementing upgrades to their facilities and equipment (customers). Additional insight was gained from three site visits conducted with customers implementing process efficiency projects.

CONCLUSIONS AND RECOMMENDATIONS

The process evaluation team (the process team) concluded the following:

1. *Conclusion:* The program is meeting its goals in terms of the number of projects IPE is funding, due in large part to an existing customer base that has worked with NYSERDA programs on other EFP projects. However, it is falling short of projected kWh savings goals, largely due to the lack of process efficiency projects that generate higher per-unit-of-production savings.
Recommendation: The process team recommends improving outreach and training by pursuing targeted marketing campaigns, leveraging the existing customer base in order to identify others within their companies who could pursue process efficiency projects, providing more guidance for technical reviewers on program specifics, and training contractors regarding ways to help customers develop process efficiency projects.
2. *Conclusion:* While account management practices have improved, delays in application and measurement and verification approvals, as well as payment distribution, must be reigned in to ease the cost burden for customers. Better management of customer and project data is needed to track current project status and project opportunities.
Recommendation: Regarding project management, the process team recommends streamlining processes to adhere to 90-day response times and improving customer management practices to track existing and potential customers, project status, and payments.
3. *Conclusion:* In terms of program eligibility, the lack of easy access to potential customers' SBC payment status causes delays in application approvals. There are also concerns about customers

⁴ See memorandum, *Final Work Plan for Process Evaluation of Industrial and Process Efficiency Program*, December 18, 2009.

double-dipping into utility programs or losing potential customers to utility programs similar to IPE.

Recommendation: To make SBC status easier to verify and identification of customers' enrollment in utility programs possible, the process team recommends NYSERDA continue to work with the Department of Public Service to ensure the utilities establish and maintain information-sharing arrangements with NYSERDA.

SECTION 1:

INTRODUCTION

The **New York Energy \$martSM** programs are funded by an electric distribution System Benefits Charge (SBC) paid by customers of Central Hudson Gas and Electric Corporation (Central Hudson), Consolidated Edison Company of New York, Inc. (Con Edison), New York State Electric and Gas Corporation (NYSEG), National Grid, Orange and Rockland Utilities (Orange and Rockland), and Rochester Gas and Electric Corporation (Rochester Gas and Electric). The programs are available to all electric distribution customers that pay into the SBC. The New York State Energy Research and Development Authority (NYSERDA), a public benefit corporation established in 1975, began administering the SBC funds in 1998 through NYSEDA's **New York Energy \$martSM** Program.

During 2008, several changes arising from the New York State Public Service Commission's (PSC's) Energy Efficiency Portfolio Standard (EEPS) proceeding have affected NYSEDA's **New York Energy \$martSM** Program portfolio and evaluation efforts. The PSC's June 23, 2008, EEPS Order called for an increase in SBC collections and a ramp-up of program efforts by NYSEDA and the state's six investor-owned electricity transmission and distribution utilities to meet New York's "15-by-15" electricity reduction goal. NYSEDA complied with the PSC's Order by submitting a Supplemental Revision to the SBC Operating Plan, incorporating approximately \$80 million per year in additional funds for five new or expanded Fast Track programs, as well as for general awareness, administration, and evaluation associated with those programs.

The Industrial and Process Efficiency (IPE) program, one of the Fast Track programs, subsumes projects initiated by industrial customers via the Existing Facilities Program (EFP) and New Construction Program (NCP). Although NYSEDA had previously offered incentives for both non-process equipment upgrades (that reduce firms' net energy use)⁵ and performance-based incentives for process efficiency improvements (that reduce energy use per unit of production)⁶ through its EFP and NCP, most of the projects approved by the programs were non-process equipment upgrades. In response to market feedback and increased funding through EEPS, NYSEDA developed an enhanced process-efficiency component to the EFP and NCP solicitations to increase the proportion of industrial process-efficiency projects entering the programs. The IPE program is offered to customers under the EFP and NCP solicitations to provide a simpler, one-stop-access by ratepayers and service providers. Only firms that pay into the SBC are eligible to participate in the program.

The purpose of the IPE process evaluation (the evaluation) is to assess the program's effectiveness and processes, and make recommendations for improvement.⁷ Research Into Action, Inc. completed the first of three waves of the process evaluation in June 2010 and, at the time of this report, anticipates completing the second wave in fall 2010 and the third wave in spring 2011, with a final report that summarizes findings from the three waves in May 2011. The findings and recommendations in this interim report, the first of three written deliverables, addresses aspects of four out of five evaluation research objectives:

⁵ *Non-process equipment upgrades*: Facilities upgrades that result in a reduction of a firm's net energy use.

⁶ *Process efficiency improvements*: Custom applications of commercially available technologies that increase productivity, improve processes, and/or support system efficiency. Process efficiency improvements reduce a firm's energy intensity (or the ratio of energy consumption to physical output). Such improvements may result in either an increase or a decrease in a firm's net energy use.

⁷ See memorandum, *Final Work Plan for Process Evaluation of Industrial and Process Efficiency Program*, December 18, 2009.

1. **Assess the effectiveness of the program outreach, education, and marketing efforts** – for example, the Key Account approach to customer management and customers’ awareness and understanding of program opportunities.
2. **Identify reasons for customer participation and measure implementation** – for example, the ability to get the appropriate level of expertise necessary to do the project, barriers to pursuing energy efficiency projects, perception of the program’s ability to aid in reducing barriers, effect of other factors such as certification and standards, and identification of ways to reduce free-ridership and maximize spillover of program benefits.
3. **Examine program processes and operations** – for example, ways to engage more industrial firms by streamlining program operations, ways to coordinate with other NYSERDA and utility programs, customer satisfaction, customer perception of program processes, and perceived value.
4. **Document program progress and make recommendations for improvement** – for example, effectiveness of the program in increasing technical reviewers’ capability and capacity to address industrial process efficiency improvements, and customers’ perceptions of the credibility and quality of technical reviewer services.

In ongoing work, the fifth evaluation objective is being met, which is to coordinate with other evaluation parties, including providing process questions to the Market Characterization & Assessment evaluation team for their surveys of eligible nonparticipants and obtaining participant self-reports on decision-making processes for use by the Impact Evaluation team for possible use in assessing free-ridership.

The evaluation is based on in-depth interviews with NYSERDA program staff (program staff), consultants for NYSERDA (technical reviewers), contractors and energy service companies that customers hire to design and implement upgrades to their facilities and equipment (contractors), and program customers who are implementing upgrades to their facilities and equipment (customers). For this interim report, the process team interviewed 7 program staff members, representatives of the 6 technical review firms that were active in the program at the time of the process team’s evaluation,⁸ 13 contractors,⁹ and 18 customers.¹⁰

This interim report intends to provide program management with a concise, easily read document to aid decisions in the near-term. The following sections briefly describe the history of the program, outline the evaluation methodology, present key findings, and offer conclusions and recommendations based on feedback from program staff members, technical reviewers, contractors, and customers. There are four appendices that describe in greater detail, feedback from each of the interviewed groups:

- Appendix A: Key Findings from Interviews with Program Staff Members
- Appendix B: Key Findings from Interviews with Technical Reviewers
- Appendix C: Key Findings from Interviews with Contractors
- Appendix D: Key Findings from Interviews with Customers

[Please note this interim report uses the following terminology when describing the number of responses: “a few” = 3-4; “half” = 40% - 60%; “most” = 70% - 90%; and “all” = 100%.].

⁸ The process team interviewed a second representative at one of the six firms in order to obtain information regarding technical review of IPE projects implemented by data centers.

⁹ Three of the 13 contractors were “high volume contractors,” meaning that the firms were associated with six or more projects in the IPE database as of February 3, 2010.

¹⁰ One of the 18 discontinued the interview prior to addressing half of the questions.

SECTION 2:

PROGRAM DESCRIPTION

The IPE program is one of five Fast Track programs receiving enhanced funding through the New York EEPS. In its Order of June 23, 2008, the New York State PSC established the state's EEPS and approved a subset of Fast Track programs to commence immediately. The Order also directed NYSERDA to submit a supplemental revision to its SBC Operating Plan incorporating the Fast Track programs and enhancements to them. For IPE, the program enhancements include: increasing the number of service providers, particularly service providers with expertise in industrial processes; making incentives available for industrial process efficiency improvements; and substantially expanding the outreach, education, and marketing efforts.

The IPE program subsumes all projects initiated by industrial customers applying through the Existing Facilities Program (EFP) and New Construction Program (NCP) Program Opportunity Notices (PONs). Although NYSERDA had previously offered incentives for both non-process equipment upgrades (that reduce firms' net energy use)¹¹ and performance-based incentives for process efficiency improvements (that reduce energy use per unit of production)¹² through its EFP and NCP, most of the projects approved by the programs were non-process equipment upgrades. In response to market feedback and increased funding through the EEPS, NYSERDA developed an enhanced *process-efficiency* component to the EFP and NCP solicitations to increase the proportion of industrial process-efficiency projects entering the programs. The IPE program is offered to customers under the EFP and NCP solicitations to provide a simpler, one-stop-access by ratepayers and service providers. Only firms that pay into the SBC are eligible to participate in the program, and they submit an application through one of the PONs listed in Table 2-1.

Customers may enroll in the program in one of the following ways:

- A contractor or equipment vendor working with a customer may apply on the customer's behalf.
- A customer may apply directly through NYSERDA's website.
- A customer may apply directly through a mailed application.
- A Focus Contractor – a NYSERDA contractor tasked with conducting outreach, education, and developing long-term relationships with key accounts – may help customers complete and submit an application by mail or the NYSERDA website.

Applicants are eligible for incentives of up to \$5,000,000 per facility, not to exceed 50% of project cost. Projects must qualify for an incentive of at least \$10,000 to participate in the program. Projects that save more than 500,000 kWh per year (1,000,000 kWh per year for lighting projects) or 10,000 MMBtu per year must undergo measurement and verification (M&V) for a period of up to two years.¹³ NYSERDA's technical reviewers create a project-specific M&V plan in collaboration with the applicant. NYSERDA pays 60% of the incentive upon installation and the balance following M&V approval.

¹¹ *Non-process equipment upgrades*: Facilities upgrades that result in a reduction of a firm's net energy use.

¹² *Process efficiency improvements*: Custom applications of commercially available technologies that increase productivity, improve processes, and/or support system efficiency. Process efficiency upgrades reduce a firm's energy intensity (or the ratio of energy consumption to physical output). Such upgrades may result in either an increase or a decrease in a firm's net energy use.

¹³ Projects that save less than 500,000 kWh per year are not required to complete M&V processes.

Table 2-1. PONs through Which IPE Projects May Enter

Number	PON Name	Notes
1222	New Construction Program Financial Incentives	NCP allowed for new construction and major renovations projects. IPE incentives added were added October 2009. The PON ended December 31, 2009.
1219	Existing Facilities Program	IPE has been part of EFP since August 2008 through SBC funding. It was revised December 2008. Department of Public Service approved the use of EEPS funding in March 2009. The PON ends November 30, 2011 or until funds are committed, whichever comes first.
1501	New Construction Program Financial Incentives	A re-release of the previous NCP. EEPS and SBC funding apply. Applications are accepted from January 4, 2010 through December 31, 2010.
1746	FlexTech	Applications accepted on a first-come, first-serve basis through December 15, 2011.
1772	Next Generation Technologies for End-Use Efficiency	Proposals Due By: Round 1, April 29, 2010 Round 2, July 29, 2010 Round 3, October 28, 2010

The project installation and approval process for both process efficiency improvements and non-process equipment upgrades require the following:

- A facility representative, or contractor acting on their behalf, submits an application.¹⁴
- NYSERDA reviews the application for eligibility. If it determines that a project is eligible, it issues a Purchase Order (PO) to the applicant.
- The applicant submits an Engineering Analysis to NYSERDA for approval. The Engineering Analysis includes, but is not limited to, project description, economic evaluation, energy savings calculations, and equipment specification sheets.
- Certain projects require an M&V plan as part of the engineering analysis.
- NYSERDA, or its consultant, reviews the Engineering Analysis and conducts a pre-site inspection. NYSERDA may request revisions to the Engineering Analysis, as necessary. Upon approval of the Engineering Analysis and pre-site inspection, NYSERDA notifies the applicant that they can implement the project. Applicants that proceed with installation before NYSERDA approves the Engineering Analysis and conducts a pre-site inspection do so at their own risk.
- The applicant implements the project and notifies NYSERDA or its consultant that the project is complete and ready for a post-site inspection.
- NYSERDA or its consultant conducts a post-site inspection and collects invoices and any other remaining items.
- Upon approval of all final deliverables, including any required M&V, NYSERDA provides payment. When the M&V is completed, NYSERDA, or its consultant, reviews the results and releases any remaining funds (adjusted per the M&V results).

¹⁴ Applications must be submitted either before or within 90 days after approval of the contract for the project. Applicants must allow NYSERDA to conduct a site visit before the project begins.

Program staff members assist customers and contractors with applications and oversee the incentive process. Some program staff members are designated as Key Account Managers for large customers. The Key Account management approach emphasizes the development of one-on-one, long-term relationships with customers, helping customers identify ways to use the IPE incentive to gain energy efficiency in the projects they pursue. Key Account Managers are particularly interested in pursuing process efficiency projects that produce higher average kWh savings. In January, Focus on Industrial and Process Contractors were just beginning to work with program staff members to expand the Key Account management approach to mid- and small-sized firms. The Focus Contractors were also expected to develop lists of potential key account customers.

In addition to the Focus Contractors' efforts to reach new customers, a Department of Energy (DOE) grant will support DOE-funded contractors who will conduct additional outreach for the program, drawing on expertise from trade associations, universities, and other stakeholders. The DOE-funded contractors, who currently act as advisors to industrial firms on energy-related issues, will leverage these relationships to conduct outreach for the program. In addition, staff reported that the DOE-funded contractors will review firms' SIC codes to compile a report identifying high energy users in the state, organized by sector.

SECTION 3:

EVALUATION METHODOLOGY

The objectives of this evaluation were to: help IPE staff assess the effectiveness of the program outreach; identify customers' reasons for undertaking efficiency improvements and participating in the IPE program; examine program processes and operations; document program progress; and make recommendations for program improvement.

To collect information, the process evaluation team developed semi-structured interview guides for the four key groups involved in the program: program staff members; technical reviewers; customers; and contractors, including a few contractors with multiple IPE contracts. These interview guides were reviewed and approved by the NYSERDA evaluation manager prior to implementation. The process team conducted in-depth interviews with representatives of each of these four groups between January 5, 2010, and May 10, 2010.

3.1 PROGRAM STAFF SAMPLE

At the time of the evaluation, there were nine project staff members directly involved in the day-to-day operations of the program. The process evaluation team spoke with seven of the nine about their experiences with the program, the lessons they have learned, and their suggestions for program improvement. The process team did not contact two of the nine staff members in the first wave of interviewing because the staff members were new to the program as of December 2009. Each of the nine will be included in the team's second wave of interviewing.

3.2 TECHNICAL REVIEWERS SAMPLE

At the time of the evaluation, there were six firms providing technical review for the program. The process evaluation team interviewed representatives from each of the six firms. As noted, the technical review firms are independent contractors to the program that review project details and engineering estimates, as well as monitor M&V plans and results.

3.3 IPE CUSTOMERS SAMPLE

The process evaluation team obtained the entire list of 170 IPE projects in the Buildings Portal database as of February 3, 2010 (the Wave 1 sample). To select the customer-sampling frame, the team first identified those projects designated as either *encumbered* (indicating that NYSERDA funding had been secured for the project) or *installed* (indicating that project installation was complete or near to completion). Seventy-five of the 170 projects in the database met these criteria – 52 were encumbered, 23 were installed.

As noted, IPE customers enter the program through two PONs – EFP and NCP. Initially, the team sought to include customers that had entered the IPE program through both portals. However, at the time the process evaluation team drew the customer sample, all of the projects that had entered the program via the

NCP (30 of 170 projects, or 18%) were designated as *not encumbered*.¹⁵ As a result, the process team's sample did not include NCP projects.¹⁶

From the 75 eligible projects in the sampling frame, the team sought to obtain a sample distribution on the basis of:

1. *Project size*: small and large projects (projects with energy savings >500,000 kWh and projects with energy savings < 500,000 kWh)
2. *Facility type*: manufacturing facilities and data centers
3. *Project status*: installed and encumbered projects
4. *Project type*: process efficiency improvements with energy savings calculated either on a per-unit-of-production basis or equipment upgrades with energy savings calculated on the basis of net energy use reductions

The Buildings Portal included information on items one through three (above), yet the database did not include information denoting the method used to calculate project energy savings. However, project managers were able to identify the energy-savings calculation methodology of 49 of the 75 projects. As a result, the final sampling frame included 3 projects with incentives calculated on a per-unit-of-production basis and 46 with incentives calculated on net energy savings. A random sample of 20 projects was selected and adjusted upward to a total of 23 with the inclusion of three data centers.¹⁷

The evaluation team's calls to the participating firms (placing up to five calls each) resulted in 12 completed interviews. At that time, the team added 15 customers to the sample frame that had characteristics under-represented among the interviews completed to date, resulting in a total revised sample of 38 firms.

Altogether, the team completed a total of 17 customer interviews (and one partially complete interview) that varied in project size, facility type, project status, and project type.

Due to the small number of projects calculated on a per-unit-of-production basis, the process team excluded them from the phone interviews and conducted three on-site customer interviews. These interviews were selected based on the following criteria:

- Process improvement projects with energy savings calculated on a per-unit-of-production basis
- Energy savings over 500,000 kWh
- Installed status
- Located near enough to each other to reduce travel requirements (See Appendix E for a map of the locations of on-site interviews)

Table 3-1 displays customer sample dispositions.

¹⁵ The term *not encumbered* indicates that NYSERDA decided an application is a worthwhile investment, but funding is not yet set aside.

¹⁶ New construction projects will be included in the next interview sample and reported in the next interim report of findings.

¹⁷ As noted above, program staff identified the energy-savings calculation methodology for a total of 82 of the 170 IPE projects in the Buildings Portal database. However, 33 of the 82 were designated as *not encumbered*, indicating that NYSERDA funding had not been secured for the project. Therefore, the team's sampling frame included only 49 of the aforementioned 82 projects.

Table 3-1. Final Disposition for Customer Interviews

Disposition		Number	Percent
On-Site	Completed	3	100%
Phone	Completed	17	45%
	Partial	1	3%
	Refused	7	18%
	Not completed	11	29%
	Not eligible	2	5%
Total		38	100%

3.4 CONTRACTORS SAMPLE

The process evaluation team also used the list of 170 IPE projects from the Buildings Portal database extracted on February 3, 2010 (the Wave 1 sample) as the basis from which to draw a contractor sample. Because the database did not include specific information on project contractors, a sampling frame of contractors could not be drawn based on characteristics similar to the IPE customer sample (small and large projects; manufacturing facilities and data centers; installed and encumbered projects; and process efficiency improvements and non-process equipment upgrades).

The lack of distinct contractor contact information in the database prevented the team from drawing a random sample of contractors from the list of 170 projects. Instead, the team identified contractors who had completed at least one IPE project, and constructed a convenience sample frame of 16 contractors by filling in missing contact information from the Buildings Portal. Fourteen contractors were randomly selected to contact for in-depth interviews. A maximum of five call attempts to each contracting firm resulted in ten completed interviews. Table 3-2 displays contractor dispositions.

Table 3-2. Final Disposition for Contractor Interviews

Disposition		Number	Percent
Complete	Complete	10	71%
Not complete	Refused	1	7%
	Not completed	2	14%
	Not eligible	1	7%
Total		14	99%

3.5 HIGH VOLUME CONTRACTOR SAMPLE

In addition to the team’s goal of completing interviews with a sample of IPE contractors, the team also sought to interview representatives from the three contractor firms most active in the program (high-volume contractors). To identify the high-volume contractor sub-sample, the team reused the Wave 1 sample and identified contacts at the three contractor firms associated with the greatest number of IPE projects – three contracting firms that each completed six or more IPE projects. The process team sought to learn from the high-volume contractors:

- How high-volume contractors use the program as a marketing strategy for their business

- Barriers to customer participation
- Perception of knowledge and awareness of plans for production process improvement projects
- Perceptions of NYSERDA’s role

Table 3-3. Final Disposition for High-Volume Contractor Interviews

Disposition		Number	Percent
Complete	Complete	3	100%
Total		3	100%

3.6 GENERAL COMMENT ON PROGRAM EVALUABILITY

Missing contact information hampered program evaluability. Customer contact information was frequently missing from the database. The process evaluation team gathered missing information from IPE project managers, accessed customer information directly through the NYSERDA’s Buildings Portal database, or located individuals by contacting their company and requesting a contact number.

The team discovered that there was no specific field in the database designating contractors. Instead, the field that frequently contained contractor information was labeled *Applicant*. As noted, customers enrolled into the IPE program either via a contractor, an equipment vendor, or on their own behalf. Related to the program’s enrollment approach, it became apparent to the team that it was often difficult to distinguish whether the applicant was a contractor or a customer and, in some cases, whether or not a customer used a contractor for project installation, or if the customer used in-house staff to conduct project installation. Additionally, contractors’ contact information was frequently missing from the database. As with the customer contact information, the team accessed NYSERDA’s Buildings Portal database to retrieve the missing information. Accessing the information in this manner was effective, but time consuming.

SECTION 4:

SYNTHESIS OF FINDINGS

4.1 MORE TARGETED PROGRAM OUTREACH, EDUCATION, AND MARKETING EFFORTS ARE NEEDED

4.1.1 Awareness of NYSERDA programs is strong among customers and contractors with several years' experience working with NYSERDA, but program specifics are not well understood by technical reviewers, customers, and contractors.

- **Program staff members said they spend more of their time on outreach than project management**, noting that their outreach efforts have two distinct goals: to make firms aware of the existence of the program, primarily through marketing materials and presentations about the IPE program at events such as conferences and trade shows; and to elicit the firms' participation.
- **Overall, technical reviewers, contractors, and customers were satisfied with their experiences working with NYSERDA programs, program staff members, and the incentives.** Most who worked with NYSERDA in the past spoke favorably of the progress NYSERDA has made in streamlining the incentive application, M&V, and payment processes.
- **Most contractors were familiar with NYSERDA programs;** eight interviewed contractors mentioned working with NYSERDA programs for several years. Typically, contractors call the program *Existing Facilities Program* and are not familiar with the term *Industrial Process Efficiency* program.
- **Half of interviewed customers learned of the program through their contractor; one-third was either returning customers or knew how to get updates about NYSERDA programs.** Customers reported satisfaction with NYSERDA energy efficiency incentive programs, but their understanding of program specifics was limited.
- **Most customers and contractors are unaware that the IPE provides incentives for process efficiency improvements.**
- **In contrast, technical reviewers are aware that the program provides such incentives, but their responses suggest that they need additional clarification about program eligibility requirements.** Specifically, responses from technical reviewers suggest that they are unclear that the IPE program includes projects initiated by industrial customers via the EFP and NCP portals. They were also unclear about the eligibility of non-process efficiency upgrades and process efficiency improvements.

4.1.2 A higher percentage of process and/or larger non-process projects are needed to meet program goals.

- **Staff noted that in order to meet the kWh saving goals associated with the program, it will be necessary to enroll a higher proportion of process efficiency improvements into the program.** According to program documentation, implementation of the program is expected to save approximately 840 million kWh from projects completed between 2009 and 2013.¹⁸

¹⁸ Excerpted from NYSERDA document *Energy Efficiency Portfolio Standard (EEPS) Industrial & Process Efficiency Program Outreach, Education, and Marketing Plan*, dated October 9, 2009. A final version of this document was approved by the Department of Public Service on March 1, 2010.

- **The number of projects in the program is on target, but the savings values are below target.** Interviewed program staff members agreed that the savings goals associated with the program and the timeline designated to achieve these goals were ambitious. On January 5, 2010, program staff members said the program was on target in terms of the number of projects expected to be in the program pipeline by that time. However, staff members also reported that the average size of these projects fall short of expected savings needed to meet program savings goals.
- **Staff members expect the largest per-project savings to come from process efficiency improvements** (projects with energy savings calculated on a per-unit-of-production basis). Staff members also expect that process projects will represent a small percentage of all projects. The evaluation team's independent analyses of 67 projects¹⁹ extracted from the IPE database verify the accuracy of these program expectations. The six process projects identified from the 67 (9%) averaged savings of 2,275.6 MWh (with projects ranging between 135,189 kWh to 8,404,000 kWh saved). These projects, on average, generated over three-and-a-half times the kWh savings garnered from the 61 non-process projects in the sample of 67. The 61 non-process projects saved an average 673.1 MWh, with a range of savings between 85,480 kWh and 7,884,000 kWh.
- **Challenges associated with enrolling customers in process efficiency improvements, include:**
 - Customers and contractors are not accustomed to receiving incentives for process efficiency improvements.
 - Process efficiency improvements are more complex than facility upgrades.
 - Process efficiency improvements typically require a larger customer investment.
 - Process efficiency improvements take more time to develop, necessitate a longer decision cycle than typical facility upgrades, and compete with other firm projects for limited capital budgets.
 - Firms frequently are unable to increase their production due to issues such as a limited supply of raw materials or other chokepoints, so savings calculated on a per-unit-of-production basis have limited attraction.
 - NYSERDA contact list information frequently contains information for facilities staff (who typically oversee non-process equipment upgrades), but not for Process Engineers or CFOs, who are more likely to oversee production process decisions.
 - A few program staff members cautioned that per-unit-of-production calculations may not be feasible for manufacturers with multiple product lines.

4.1.3 The Key Account management approach and use of existing networks of contractors, technical reviewers, and professional associations helps recruit new projects.

- **The Key Account management approach, in which NYSERDA provides a single point of contact for firms with the largest potential energy savings, enables staff to initiate new projects with large customers.** In general, program staff members, contractors, and customers indicated that the Key Account approach is successful in enabling NYSERDA to develop additional projects with existing NYSERDA customers. However, staff cautioned that this approach does not help attract new customers to the program.

¹⁹ Source: a subset of cases from a February 3, 2010, extract of 170 projects from the Buildings Portal database. Analysis was limited to case records containing kWh saving information (67). This subset of projects does not match the subset of cases in the customer-sampling frame (see Section 3: Methodology).

- **Program staff members emphasized the importance of the Key Account management approach in meeting energy-savings targets.** Program staff members expect to generate between 80% to 90% of program savings via the Key Account management approach.
 - Program staff members suggested marketing NYSERDA incentives for process efficiency improvements to firms' process engineers, continuous improvement teams, and/or CFOs, while continuing to market NYSERDA incentives for non-process equipment upgrades to firms' facilities staff and/or CFOs. One customer agreed that information regarding NYSERDA's incentives for process efficiency improvements is not reaching the correct staff at firms.
 - **Outreach through networks of contractors and professional associations are NYSERDA's favored approaches to initiate projects with new customers.** Staff members initiate contact with new clients via interactions at conferences and trade shows, etc., such as those held by Multiple Intervenors,²⁰ the Manufacturers Association of Central New York, and others.
 - The Focus Contractors will primarily seek to engage large, Tier 1 industrial and data center firms. Focus Contractors will conduct outreach to small- and mid-sized firms through business councils and business organizations, but those activities will be a lower priority. In addition, the business councils and business organizations themselves periodically work in conjunction with NYSERDA to recruit new customers into the program.
 - **Staff members contacted requested a targeted marketing campaign and more prominence on the website.**
 - Contacts reported that NYSERDA will be employing a mass media campaign, which is part of a broader NYSERDA marketing effort. To augment NYSERDA's mass media marketing campaign, program contacts suggested that NYSERDA develop targeted marketing materials tailored to specific industrial subsectors.
 - One program staff member suggested that IPE web content on NYSERDA's website should be brought "more to the front" of the website and suggested organizing the program information more logically and intuitively.
 - **Contractors are an important component of program outreach.**
 - Most of the contractors who reported long-term experience with NYSERDA programs considered themselves to be a marketing arm for NYSERDA programs. Frequently, the contractors include NYSERDA programs in their business plan.
 - Contractor marketing is effective; a high percentage of customer contacts reported that they became enrolled in the program as a result of interactions with their contractor.
- 4.1.4 Program materials that lack a clear distinction between the IPE and EFP programs hamper outreach and marketing.**
- **Program staff members found they spent a considerable amount of time explaining the program to customers due to insufficient details outlining the relationship between IPE, EFP, and NCP.** To address these issues, staff members reported that the program has hired a team of marketing professionals to improve the program marketing materials.

²⁰ Multiple Intervenors is an unincorporated association of large energy consumers with facilities located throughout New York that advances the interests of its members in ensuring access to reliable energy supplies at the lowest possible cost ([Multiple Intervenors](#)).

- **Technical reviewers' marketing was also hampered by the lack of distinct, program-specific marketing materials.** For instance, technical reviewers reported being unable to explain to customers the relationship between EFP and IPE.
- 4.1.5 Technical reviewers and contractors requested additional information and training on IPE program details.**
- **Education methods are effective for technical reviewers.** However, technical reviewers need additional clarity on program specifics and contractors would benefit from additional training on identifying and working with process efficiency projects that qualify for the program.
 - **In addition to clarifying IPE program eligibility requirements, a few technical reviewers requested training in specific manufacturing and data processes.** One suggested that NYSERDA produce publicly available materials that are more user-friendly than the PON.
- 4.1.6 Although contractors are familiar with NYSERDA, most are not aware that the incentive can be used for process efficiency improvements.**
- **Some of the contractors we interviewed clearly anticipate marketing IPE once they learn more about it, while others are not inclined,** as process improvements are not consistent with their core business, such as lighting. The ability for customers to obtain sufficient funding is also essential to making capital investments in energy efficient technology.
 - **Customers primarily pursue the program to secure the funding needed to implement energy-efficient measures.** In addition, most also need assistance with feasibility studies and M&V procedures. The program increases the likelihood customers' projects can compete internally for funding. With the exception of some smaller firms, most customers and contractors are satisfied with the incentive amount, reporting that the incentive amount enables them to meet internal return on investment (ROI) requirements. However, one contractor reported that, given the uncertainty of the market, some of his customers are wary of making capital investments, even when the payback period is as little as four to six months.
 - **Customers and contractors suggest additional funding options and outreach to other parts of their companies.** One of the key internal barriers to customers being able to implement equipment upgrades is the need to meet ROI criteria quickly. To reduce financial obstacles to increasing energy efficiency at firms, one contractor suggested that NYSERDA reinstate its loan fund program to make energy efficiency investments more attractive to industrial clients. When discussing the potential for process efficiency projects, customers and contractors indicated that their projects did not lend themselves to per-unit-of-production incentives, but that their colleagues on the production side of the company might be interested.
- 4.1.7 Customers face significant barriers to program participation.**
- **The barriers range across a variety of issues,** including: complexity surrounding the planning and budgeting of process efficiency improvements; lack of targeted marketing with clear program descriptions; confusion around the SBC charge and if the customer qualifies for the program; lengthy processing time for the IPE application and receipt of payment; and a general business strategy of only completing projects when they are absolutely necessary.
 - While noting the necessity of pursuing process efficiency improvements to meet IPE kWh savings goals, program staff members understand the barriers to customers' initiation of process efficiency improvements. Program staff members noted that customers and contractors are not yet accustomed to the availability of incentives for process efficiency improvements.

- Process efficiency improvements are complex, capital-and time-intensive investments that require planning processes that typically span more than one capital budgeting cycle. Additionally, all company project proposals compete internally for finite funds and company approval. In tight economic times, energy efficiency projects qualifying for incentives that reduce payback time are likely to win company approval when compared to projects with longer ROI periods.
- Certainty that the program will be operating for a long time is likely to be required to keep process improvement projects coming to the program.
- A few contractors indicated that their competitors found the program requirements too daunting and, therefore, do not offer the incentives to their customers. These contractors enjoy a price advantage over their competition.

4.1.8 SBC Status Verification issues complicate program outreach.

- **SBC status is difficult to determine.** Staff members report difficulty determining SBC status for firms not on the current list of industrial customers developed by NYSERDA for targeted outreach. Furthermore, one program staff member reported that employees at firms often do not know their SBC status. At the time of our interviews, the process for checking SBC status was multi-staged and occasionally resulted in wrong information, which forced staff members to reject formally approved applications. Since that time, the proration requirement was lifted in March 2009, alleviating the risk of disappointing customers. However, the ability to access SBC payment information has not changed.
- **Lack of clear information on SBC status complicates outreach.** Many large industrial firms have opted out of paying into the SBC. This makes it difficult for staff members to identify which firms are eligible for the program, and thus complicates their targeted outreach.

4.1.9 The program incentive helped planned projects avoid the risk of pre-emption from competing projects, helped accelerate projects, and helped increase project efficiency.

- **Non-process or process projects planned in a previous budgeting cycle, but competing for internal approval and external incentive funding in a current cycle raise program concerns over free-ridership.**
- **Most customers had project plans in place before applying for the incentive,** yet the incentive money helped them move the projects along faster, purchase more efficient equipment, move forward at a faster pace, or set the stage for additional efficient purchases.

4.2 PROGRAM PROCESSES ARE IMPROVING, BUT NEED A FASTER TURN-AROUND

4.2.1 Communication and collaboration is collegial; processing time and project tracking are improving.

- **All but one program staff member reported satisfaction with internal NYSERDA communications about the program.** This staff member reported some internal coordination and communication difficulties, which the contact attributed to the wide dispersal of program staff and their varying work schedules.
- **Most contractors, customers, and technical reviewers with prior experience working with NYSERDA noted improvements in processing time and project tracking.** Those customers and contractors who commented on specific timelines suggested a 30-day commitment to

approving applications and that a 90-day turnaround time for payments was desirable; having to shoulder the full cost beyond 90 days is problematic.

- **Part of the delay is caused by, as program staff members described, having “too many hand-offs,” with paperwork that sits in queues waiting for staff’s approval.** To expedite and streamline paperwork processing, program staff members suggested improving internal project management by: switching from paper to electronic sign-offs; reducing redundant data entry; developing a system to monitor each project more closely and flag delays for follow-up by the appropriate party or parties; providing customers with project status updates more frequently; and developing a single database that would enable NYSERDA staff members to access relevant information for all NYSERDA programs.
- **Delays are also caused by a backlog of work for technical reviewers, who are sometimes slow in responding to customers, contractors, and NYSERDA.** The response time for technical reviewers should be one-to-five days instead of weeks. This will likely resolve with additional technical reviewer staff. A few technical reviewers suggested that NYSERDA provide an M&V template and allow technical reviewers access to NYSERDA’s project database for their reference. Additionally, one technical reviewer suggested that instead of technical reviewers, clients’ engineering analyses should be completed by approved NYSERDA contractors.

4.2.2 NYSERDA’s Buildings Portal Database frequently lacks current and/or complete project-related information.

- **In developing interview samples for this interim report, the process evaluation team found multiple project records with incorrect or incomplete project information.** For example, in some cases, the database lacked information regarding project status, the name of the NYSERDA staff member that approved a project, and/or the name of the NYSERDA staff member managing a project.
- **Program staff members explained that database records often reflect that applications are not filled out correctly,** and thus leave multiple blanks when entered into the database.

4.2.3 Most contractors and customers are satisfied, but would appreciate more frequent project-status updates and faster turnaround.

- **Most contractors and customers who had experience working with NYSERDA noted that the program processes have been streamlined.** However, all interviewed groups agree that the time interval from application processing to incentive payment is still longer than it should be.
- **Over half of the contractors said time delays negatively affected their business.** Long processing, and especially the time between installation and incentive payment, is difficult for the customer or contractor to shoulder. Newer customers expressed more frustration with time delays and lack of communication about project status, but said they would participate again.
- **More frequent communication on project status and a faster turnaround on application approval and incentive payments would be appreciated by contractors and customers.**

4.2.4 Coordination with other Utility Programs Coordination will be challenging.

- **According to program staff members, all six investor-owned utilities (that intersect with NYSERDA’s service territory) were approved to offer large industrial and/or data center programs that overlapped with the NYSERDA IPE program.** Interviewed IPE staff members and contractors unanimously agreed that, although most of the other utility programs

have not yet been launched, coordination with all of these programs will likely present substantial challenges for NYSERDA.²¹

²¹ New York Public Service document: [07-M-0548: Energy Efficiency Portfolio Standard](#)

SECTION 5:

INTERIM CONCLUSIONS AND RECOMMENDATIONS

5.1 MARKETING AND OUTREACH

5.1.1 Conclusion

The program is meeting its goals in terms of the number of projects funded, due in large part to an existing customer base that has worked with NYSERDA programs on other EFP projects. These projects mostly installed energy-efficient upgrades, such as variable speed drives or upgrades of HVAC, lighting, and compressors in existing facilities. Most often, the incentive allows customers to make more energy-efficient purchases than they otherwise would have and, in a few cases, pursue projects that otherwise would not have been possible.

However, the program is falling short of projected kWh savings goals, largely due to the lack of process efficiency projects that generate higher per-unit-of-production savings. Most interviewed contractors and customers were not considering process efficiency projects and had not discussed such projects with program staff members. The current customer base consists primarily of facilities managers and engineers, not process engineers or those in upper-management positions able to make decisions about production-line improvements. Interviewed contractors also expressed skepticism about pursuing process upgrades.

As of February 3, 2010, 9% of the projects in the Buildings Portal database were process efficiency projects. Program staff members expect this number to grow as Focus Contractors begin to work one-on-one with customers, helping them identify potential process efficiency projects. Program staff members believe this Key Account management approach is essential to the success of the IPE program. Program staff members are skeptical that mass marketing would attract the attention of industrial customers, but feel a targeted campaign could attract new potential customers. Program staff members also recognize the importance of educating the market about per-unit-of production projects.

5.1.2 Recommendation

NYSERDA should consider making a three-pronged approach to increasing the proportion of process efficiency projects in the IPE project mix more widely known and understood.

1. **Targeted marketing campaigns:** Conduct targeted outreach to people in charge of production lines and revenue-generating projects, such as process engineers, as well as members of continuous improvement teams and those in division- and C-level positions who can weigh the costs and benefits of making energy efficiency improvements that impact production capability. Use knowledgeable industrial process engineers for this outreach effort.
2. **Leveraging existing customer contacts:** Enlist the help of existing customer contacts to identify other people throughout their organizations that would have the interest and ability to pursue per-unit-of production projects. The IPE program could potentially be positioned to help firms think beyond cost- and revenue-center divisions to find common energy efficiency needs. Existing customers may personally benefit from the attention they receive in bringing NYSERDA incentives further into the company.
3. **Additional training for technical reviewers and contractors:** Process efficiency projects are more complicated, take longer to plan and execute, and require higher levels of approval. The role of the IPE incentive is to be at the right place at the right time in order to attract the attention of customers in need of process upgrades. In order to complete such projects within the IPE

program period, IPE technical reviewers need additional training to help better explain program specifics to customers. Contractors need help reframing their thinking about process projects, including: understanding the range of possible process projects; how to market, design, and assess process projects; and how the IPE funding timeline will mesh with project timelines.

5.2 PROGRAM MANAGEMENT

5.2.1 Conclusion

Overall, all contacts with past program experience report that program management has significantly improved over the past several years. Customers and contractors who worked with the EFP program on previous projects made a special point to note the improvements and their increasing satisfaction in working with program staff members. That said, many are still negatively affected by the processing delays associated mostly with receiving late application acceptance and payments, and occasionally, late M&V approvals. As noted, NYSERDA pays 60% of the incentive upon installation and the balance following M&V approval. Customers and contractors noted that it is difficult for them to shoulder the post-M&V portion of the incentive payment beyond 90 days. Technical reviewers noted delays in receiving approvals from NYSERDA. Contractors noted delays in responses from technical reviewers. Program staff members face many customer management and project tracking bottlenecks, including: lack of complete information on applications; problems communicating with NYSERDA financial staff about payments owed to customers; difficulties associated with using multiple spreadsheets and databases to track project status and customer contact information; delays associated with written paperwork that could be addressed online; and needing to seek a series of approvals that could instead be made in tandem.

The process team also had difficulty determining who the primary facility contacts are associated with some projects, noted missing or incorrect contact information for the project contacts, and found insufficient detail to understand the scope, nature, and status of the projects. Information regarding the contractors was easier to locate than that of the customers. This, combined with a high non-response rate to requests for customer interviews, is indicative of the IPE program still resembling a facility upgrade program, as opposed to a program oriented to serve key accounts. The process team understands that, at the time of this report, efforts to streamline processes and to improve customer tracking and management databases are taking shape.

5.2.2 Recommendation

NYSERDA should adhere to response-time guidelines. These guidelines specify 90 days or less for reviews that affect payments to customers and require technical reviewers respond to customers within one to five days on questions. NYSERDA's approval process should be streamlined to permit concurrent reviews and electronic approvals. Finally, NYSERDA should also pursue plans to consolidate customer management into a single database that allows for improved project tracking and existing customer management, as well as the ability to track communication with potential customers regarding project opportunities. To further speed up the application process, NYSERDA should consider having staff members with technical and engineering expertise provide support to first and second time customers and contractors to ensure contractors and customers fill out forms properly.

5.3 COORDINATING KNOWLEDGE OF SBC-PAYING CUSTOMERS

5.3.1 Conclusion

Program staff members have difficulty determining if a customer pays into the SBC. This delays application approvals and inhibits the ability of the program staff members, technical reviewers, and contractors to market the IPE program to potential customers adequately. Customers also are not always aware of their SBC status because their payment into the SBC is not always labeled on the firm's utility bill.

A few technical reviewers have expressed concerns about double-dipping and lack of consistency in calculating potential incentives. The questions are worth noting. It may be possible for customers to double-dip between NYSERDA and utility programs because the program rules are not explicit, potentially allowing customers to be eligible for funding from both agencies. Although there should, in theory, be no competition among programs, the language may be such that customers pursue a utility program in favor of a NYSERDA program.

5.3.2 Recommendation

NYSERDA should request assistance from the Department of Public Service to require the utilities establish information-sharing arrangements with NYSERDA regarding customers' SBC payments and the programs in which customers are participating. This would help prevent double-dipping and encourage clearer interpretation of potential savings calculations.

APPENDIX A:

KEY FINDINGS FROM PROGRAM STAFF INTERVIEWS

The following four appendices offer supporting findings, including Staff Detail, Technical Reviewer Detail, Customer Detail, Contractor Detail, and Research Methods.

We conducted interviews with seven of the nine program staff members engaged in delivery program services. These interviews were conducted between January and May 2010, with follow-up questions during the writing of this document.

PROGRAM STAFF ROLE

The IPE program staff role provided outreach and project management for the program.

- **The Senior Project Manager is primarily responsible for supervising IPE Project Managers and coordinating activities.** Additional responsibilities include: interpreting program rules and clarifying eligibility issues as needed; overseeing internal processes (including maintaining program records that track expenditures and project metrics); monitoring quality assurance (QA) processes at the project level; and overseeing the IPE outreach efforts, including attainment of interim goals.
- **Project Managers review customer applications for eligibility, verify project savings, monitor equipment installation, participate in M&V plan development, and distribute incentive payments.** The majority of their time is spent doing outreach, followed by project management.

PROGRAM IMPLEMENTATION

Program Management Staff members are satisfied with communication and coordination, but need better data management tools.

- **Collaboration is collegial.** All interviewed program staff members described a collegial attitude with other NYSERDA programs and program staff members. One project manager noted “increased collaboration within the past year.” To facilitate enhanced collaboration between programs, one staff member suggested that NYSERDA expand its training about all of its programs. However, this staff member also recognized that, “There are a lot of programs, always new ones. It would be beneficial, but time-consuming.”
- **Internal communications are satisfactory.** Program staff members expressed satisfaction with internal NYSERDA communications about the program. One program staff member noted some coordination and communication difficulties attributed to the wide dispersal of program staff and varying work schedules. According to this contact, “There is only one meeting per month where everyone is present.”
- **Staff access to program and customer data needs improvement.** Program staff members suggest that a unified NYSERDA programs data warehouse could facilitate increases in staff responsiveness to customers. Such a warehouse would enable staff to access relevant information across all NYSERDA programs. Staff currently access three separate sources for program data:
 - **For current project-level detail,** NYSERDA’s Buildings Portal provides the current status of all NYSERDA projects and provides certain types of historical data.

- **For project approval status**, *PeopleSoft*, an Enterprise Application Software (EAS), is used to complete project approvals and to provide “certain types of historical data.”
- **For project communications**, a spreadsheet located in NYSERDA’s network drive communicates project status between Project Managers and Project Coordinators.

Paperwork processing needs to be expedited.

Between the time that a customer applies to the program and receives the final incentive payment, myriad program processes are completed by program staff members. In addition to periodic and timely communications between staff and customers, staff members are responsible for reviewing and approving applications, coordinating technical review processes, initiating M&V activities, and providing incentives. Contacts summarize program implementation this way: “There are a lot of touch-points between NYSERDA project managers, technical reviewers, owners’ staff, etc.” According to staff, program processes currently appear to involve “...too many hand-offs and back-and-forths. Paperwork often sits in a queue, waiting for someone’s attention.” To expedite paperwork processing, staff members suggested:

- **Use innovative processing** – there may be aspects of paperwork processing that staff members can conduct in parallel rather than serially; that is, both staff A and staff B may be able to complete certain aspects of their reviews simultaneously, rather than staff B waiting to initiate their review until staff A’s review is complete.
- **Develop a tracking system** – developing a system to closely monitor each project and flag delays for follow-up by the appropriate party or parties.
- **Streamline data input** – reducing redundant data entry.
- **Revise filing systems** – improving the electronic and paper filing systems.
- **Go paperless** – increasing the number of steps that can be completed electronically. For instance, staff members reported that incentive sign-offs currently require paper copies and that completing incentive sign-offs electronically using *PeopleSoft* would accelerate this process.

Coordination with other Utility Programs Will Be Challenging.

According to program staff members, all six investor-owned utilities that intersect with NYSERDA’s program offerings were approved to offer large industrial and/or data center programs that overlapped with the NYSERDA IPE program. Interviewed IPE staff members and contractors unanimously agreed that coordination with all of these programs would present substantial challenges for NYSERDA.²²

- **At the time of the process team’s interviews, program staff members said that while approved, most of the utilities were not currently operating an IPE-similar program.** According to one contact, “We’re trying to keep in touch, keeping relationships open so that when the programs are out, we can coordinate and best serve customers.”
- **Concerns over cross-territory IPE-type programs include:**
 - **NYSERDA’s ability to achieve savings targets** if other utility programs offer higher incentives for industrial customers than NYSERDA currently provides.
 - **Applicant tracking** – cross-utility tracking may be needed to avoid customers receiving two incentive payments for a single project, one from their local distribution utility and one from NYSERDA. The technical reviewer suggested that NYSERDA and the utilities create a database to track all incentive payments provided by NYSERDA and the other utility

²² New York Public Service document: [07-M-0548: Energy Efficiency Portfolio Standard](#)

programs. This contact further reported, “I think they are starting to work on this tracking system, but I'm not sure how far along they are.”

Program goals and expected savings are challenging.

- **Staff members noted that in order to meet the kWh saving goals associated with the program, it will be necessary to enroll a higher proportion of process efficiency improvements into the program than was the case with EFP or NCP.** According to program documentation, implementation of the program is expected to save approximately 840 million kWh from projects completed between 2009 and 2013.
- **Numbers of projects are on target; savings levels are below target.** Interviewed program staff members agreed that the savings goals associated with the program and the timeline designated to achieve these goals were ambitious. On January 5, 2010, program staff members said the program was on target in terms of the number of projects expected to be in the program pipeline by that time. However, staff members also reported that the average size of these projects falls short of expected savings needed to meet program savings goals.
- **A higher percentage of process and/or larger non-process projects is needed to meet program goals.** Staff members expect the largest per-project savings to come from process efficiency improvements (projects with energy savings calculated on a per-unit-of-production basis). Staff members also expect that process projects will represent a small percentage of all projects. Our independent analyses of 67 projects extracted from the IPE database verify the accuracy of these program theories.²³ The six process projects out of the 67 (9%) averaged savings of 2,275.6 MWh (project savings ranged between 135,189 kWh and 8,404,000 kWh). These six projects generated over three-and-a-half times the average kWh saving from the remaining 61 non-process projects. The non-process projects saved on average 673.1 MWh, with a range of savings between 85,480 kWh and 7,884,000 kWh.
- **Program staff members recognize significant challenges to enrolling customers in process efficiency improvements.**
 - **Process efficiency projects are more complicated than facility upgrades.** Customers and contractors are not accustomed to receiving incentives for process efficiency improvements that typically represent a larger customer investment. Process projects necessitate a longer decision cycle than typical facility upgrades and compete with other firm projects for limited capital budgets. In addition, firms may not be able to increase their production due to issues such as a limited supply of raw materials or other chokepoints.
 - **NYSERDA contact list information frequently contains information for facilities staff (who typically oversees non-process equipment upgrades), but not for Process Engineers or CFOs who are more likely to oversee production processes.**
 - **A few staff members cautioned that per-unit-of-production calculations might not be feasible for manufacturers with multiple product lines.**

Program staff members see differences between industrial process and data center needs as affecting their ability to participate

- **Industrial customer needs:**

²³ Source: a subset of cases from a February 3, 2010, extract of 170 projects from the Buildings Portal database. Analysis was limited to case records containing kWh saving information (67). This sub-set of projects does not match the sub-set of cases in the customer sampling frame (see Section 3: Evaluation Methodology).

- **Industrial firms focus on maintaining and improving production and output.** Although program staff members unanimously reported that payback considerations continue to be important in industrial decision-making, several program staff members also reported that the *primary* considerations for industrial decision-making are maintaining and improving production and output. Such concerns could facilitate program participation if industrial firms are confident in an improvement to production from an efficiency project.
- **Staffs' perspective regarding industrial firms' growing emphasis on maintaining and improving production and output is consistent with a 2008 report by ACEEE, *Trends in Industrial Investment Decision Making*,** in which the authors report that “economic and market indicators suggest that many types of U.S. manufacturing are poised for a new period of major capacity investments as existing capacity approaches full utilization. At the same time, global trends are encouraging a shift to domestic production for domestic consumption.” Further, the report suggests that these pending investments in domestic production represent an opportunity to realize significant energy efficiency investments.²⁴
- **Factors motivating data centers' focus on energy and technology upgrades:**
 - **Opportunities for data centers focus on reducing energy intensity.** Such reductions are a cost-effective approach to data centers' continued expansion; staff explained that most data centers are expanding, but that many already are using the maximum amount of power available from their utilities without adding another utility line, which is both “expensive and time consuming.” To address these issues, program contacts report that data centers increasingly are interested in reducing the amount of energy consumed per unit of data processed to allow for additional servers without having to add utility lines.
 - **As a result, energy efficiency is an emerging priority among data centers.** According to program staff members, until recently, data centers' energy concerns primarily focused on energy redundancy and reliability. Now, however, data centers increasingly are adding meters to track energy use, are holding operators accountable for energy expenses, and are increasing their interest in improving energy performance.
 - **Program incentives are targeted to facilitate cost-effective equipment upgrades.** Program staff members reported that data centers have enrolled in the program to offset the costs of equipment replacement, as many data centers have equipment that is at the end of its useful life.

Program outreach goals: make firms aware of the IPE program, and promote participation.

- Staff members outlined two methods used to increase firms' awareness of the new program's offerings:
 - **Provision and distribution of program marketing materials**
 - **Direct outreach**
 - NYSERDA project managers present the IPE program at conferences, trade shows, and association events (such as the Multiple Intervenors (MI) and Manufacturers Association of Central New York (MACNY)).
 - Key Account Approach – program staff members are facilitating some firms' transition from awareness to participation through a Key Account management approach, which

²⁴ Elliot, Neal R., Shipley, Anna Monis, and McKinney, Vanessa. Trends in Industrial Investment Decision Making, American Council for and Energy Efficient Economy (ACEEE), September 2008. Internet source: [U.S. Manufacturing Poised for Major Investments: Time to Consider Energy Efficiency](#)

entails providing a single point of contact with program staff members for those firms with the largest potential energy savings. During regularly meetings (once per month or once per quarter) with large firm facility directors and senior managers, staff discussed potential projects, encouraged development of efficiency action plans, and solicited IPE qualified projects. Staff members expect that 80% to 90% of program savings will be generated using the Key Account management approach. At the time of the interviews, a few program staff members were starting to work with Focus Contractors to develop relationships with their key customers.

Focus contractors and Department of Energy (DOE)-funded contractors will also work to increase program awareness.

- **Awareness of NYSERDA programs is low among small- to mid-sized firms.** According to program staff members, “Smaller to mid-sized industrial firms have never heard of NYSERDA.” To address this, the program will work with the Focus on Industrial and Process Contractors.
 - **At the time of the process team’s interviews with program staff, the Focus Contractors had not yet begun their work for the program.** Program staff members reported hiring two Focus Contractors to work with industrial clients and one Focus Contractor to work with data centers.²⁵
 - **Focus Contractors will recruit new customers.** In addition to outreach to primarily large firms, and secondarily smaller and mid-sized firms, Focus Contractors will also provide outreach to industry-related groups, such as business councils and business organizations.
- **Department of Energy (DOE) Grant will facilitate additional outreach.**
 - **Staff members explained that the program received a \$900,000 grant from the U.S. DOE to support additional outreach efforts for the program.** Outreach contractors will be recruited from trade associations, universities, and other stakeholders who currently advise industrial clients on energy-related issues.
 - **DOE-funded outreach contractors will review firms’ SIC codes to compile a report identifying high energy users in the state, organized by sector.**²⁶

Program marketing materials should be revised for clarity and targeted to specific industrial subsectors.

- **Marketing materials will be improved.** Program staff members reported spending a significant portion of their time explaining the program to customers, because, “These details were not included in IPE marketing documents.” Staff members reported that the program has hired a team of marketing professionals to improve program marketing materials, with the expectation that their work would be completed by the end of 2010.
- **Industry subsectors should be targeted.** Contacts said upcoming marketing strategies would include employing a mass-media campaign, which is part of broader marketing effort conducted by NYSERDA. To augment NYSERDA’s mass-media marketing campaign, program contacts suggested that NYSERDA develop targeted marketing materials tailored to specific industrial subsectors.
- **The IPE Website should be upgraded.** Additionally, one program contact suggested that NYSERDA improve the IPE website. A particular concern is that IPE program information is

²⁵ NYSERDA finalized the contracts with Focus Contractors in October 2009.

²⁶ NYSERDA finalized the contracts with DOE Outreach Contractors in early 2010.

“buried within the website.” Access to information could be facilitated by bringing IPE website information “more to the front” and organizing the program information in a more logical and intuitive fashion.

NYSERDA contact lists need updated contact information, including contact information for firms’ process engineers and CFOs.

- **The industrial customer contact list is developed, but needs updates.** In 2009-2010, program staff members are developing a list of manufacturing establishments for targeted outreach; the list is divided into three tiers based on energy use.²⁷ The list includes information about whether or not the firm pays into the SBC, as well as firm employees. Staff members reported that the contact list is difficult to keep up to date. Additionally, staff members report that, even in cases when an individual is still employed by the firm, the contact may not be the ideal person to approach about the program, particularly for the purpose of recruiting firms to implement process efficiency improvements, as the information is usually for facilities staff (who typically oversee non-process equipment upgrades), but not for Process Engineers or CFOs, who are more likely to oversee production processes.
- **The data centers list is partially complete.** Identifying data centers is difficult. At the time of the process team’s interviews, program staff members reported they had identified about 25 data center firms for targeting program outreach. One program contact estimated that their contact list for data centers was about “20% complete.” Staff members expect that Focus Contractors assigned to data centers will further develop the list of data centers for targeting outreach.

Lack of clear information on SBC status complicates outreach.

- **Only firms that pay into the SBC are eligible for the program, yet the program staff members do not know the SBC status of all firms interested in the program.** As part of the application process, customers are required to submit a statement indicating the level of their SBC payment and submit a copy of their utility bill – most, but not all, utility bills indicate SBC status. When this information is missing, program staff members have tried to obtain SBC status information directly from the firm’s utility, yet on occasion, utility staff do not readily disclose this information. Since SBC status must be verified prior to participation, staff were frustrated with the current process.
- **SBC status is difficult to determine.** Staff members report difficulty determining SBC status for firms not on the current list of industrial customers developed by NYSERDA for targeted outreach. Furthermore, one program staff member reported that employees at firms often do not know their SBC status. At the time of our interviews, the process for checking SBC status was multi-staged and occasionally resulted in wrong information, which forced staff to reject already approved applications. Since that time, the proration requirement was lifted in March 2010, alleviating the risk of disappointing customers. However, the ability to access SBC payment information has not changed. The following steps are taken to determine SBC status:
 - The technical reviewer checks to see if the firm is paying SBC and how much.
 - The firm must sign the application statement saying they pay into SBC and they submit a utility bill with their application.
 - If the status is still not clear from the utility bill, staff members request information from the utility account representative. Prior to March 2010, interview contacts said that every now and then this process failed to reveal a firm’s ineligibility (non-SBC-payer) or that a quoted incentive had to subsequently be lowered upon learning the firm pays on only a portion of its

²⁷ Tier one – above 2 MW; tier two – 500 kW to 2 MW; and tier three – below 500 kW.

consumption. A temporary lifting of the proportional incentive requirement briefly resolved this issue. Now that the proportional incentive requirement is in place again, having the ability to determine a firm's eligibility is once again an important issue for NYSERDA.

- **Many large firms opt out of SBC.** Many large industrial firms have opted out of paying into the SBC. This makes it difficult for staff members to identify which firms are eligible for the program, and thus complicates their targeted outreach.

Customer service is integral to industry relationship building.

- **Program staff members said a strong customer service approach supports development of business relationships.** The following approaches are used by program staff members:
 - “Being responsive to customers’ needs.”
 - “Making it easier for customers to take advantage of the different programs.”
 - “Not making customers wait for NYSERDA services.”
 - “Making sure they understand the programs and how to take advantage of the available program opportunities.”
- **Program staff members suggested that customer service would be enhanced by increasing the frequency with which they provide project status updates to customers.**

APPENDIX B:

KEY FINDINGS FROM TECHNICAL REVIEWER INTERVIEWS

Technical reviewers are independent contractors that provide both pre- and post-installation support to program staff members, starting with the application process and concluding with post-installation measurement and verification (M&V). They provide the preliminary, interim, and final incentive recommendations to NYSERDA, and they verify energy savings and project cost, including collection of invoices. One program contact summed up their contribution to IPE as providing both “flexibility and technical capacity.”

At the time of the evaluation, there were six firms providing technical review for the program. The process evaluation team interviewed representatives from each of the six firms between January and May 2010.

TECHNICAL REVIEWER ROLE

Technical Reviewer activities support all phases of program implementation.

- **Applications’ technical review** – technical reviewers review the project engineering analysis supplied by the applicant (contractor and/or customer). If an engineering analysis is not provided by the applicant, or the one provided lacks sufficient detail, the technical reviewer supplements the engineering analysis for the applicant.
 - **Most applicants need assistance.** Technical reviewers reported most firms required their assistance with feasibility studies and M&V work.
 - **Technical reviewer project work varies.** Technical reviewers reported spending from 5% to 35% of their work time on the IPE program.
- **Pre-installation M&V** – if required for completion of the initial engineering analyses, technical reviewers conduct site pre-installation inspections to understand baseline conditions and to collect baseline measurements and verification data.
- **Post-installation M&V** – technical reviewers conduct post-installation inspections and, if required, conduct post-installation M&V data collection and analysis.
- **Recommendations for incentive payments** – technical reviewers make final incentive recommendations to NYSERDA and they verify project cost, including collection and review of invoices.

Customers are satisfied with the technical reviewers.

- **Program staff members reported that “customers are very happy with the technical reviewers.”** Additionally, staff members reported that the technical review process had delivered or verified the projected savings.

TRAINING

- **Training levels are adequate.** Program staff members reported that the program offers training and education for technical reviewers twice a year, or more frequently if substantial program changes are made. In general, technical reviewers reported that these periodic training sessions were adequate.

- **Additional training materials and delivery are needed.** Technical reviewers requested additional training in specific manufacturing and data processes, including case studies and other NYSERDA programs, such as New Construction and R&D. One technical reviewer recommended that NYSERDA provide trainings via webinar to reduce travel time.
- **Clarification on program requirements is needed.** One technical reviewer reported that both technical reviewers and contractors would benefit from additional clarification regarding IPE-specific program participation requirements; specifically, about the inclusion of both process and non-process projects in the program.
 - **The IPE project is often indistinct.** Staff members reported that it was helpful that customers did not need to differentiate IPE from other NYSERDA programs in order to participate. However, technical reviewers suggested that they, too, were not always able to differentiate IPE from other NYSERDA programs. One technical reviewer reported, “For my projects, the incentives haven’t been on a per-unit-of-production basis, so I don’t see the difference between EFP and IPE projects.”
 - **Produce user-friendly guidelines.** One technical reviewer suggested a remedy for this confusion: “A manual or guideline that is more user-friendly than the PON.” He also suggested “recurring, quarterly meetings” regarding the program.

STAFFING ISSUES

Program response creates staffing and workload issues for technical reviewers.

- **As workloads increase, insufficient staffing creates lags.** Technical reviewers reported that increased demand for the program required them to monitor their workloads more closely and to add staff.
- **Technical reviewers experienced project delays due to sub-optimal staffing at their firms.** One technical reviewer suggested that NYSERDA hire additional engineering firms to perform technical review.

PAPERWORK PROCESSING

- **Missing information on applications creates lags.** Technical reviewers reported that many delays occur due to insufficient or missing information on project applications.
- **There is a lag between application and purchase order.** Following receipt of a customer application, NYSERDA reviews the application for eligibility. If a project is eligible for the program, NYSERDA issues a PO to the applicant. One technical reviewer observed that the amount of time between customers’ submitting applications and being issued a PO for a project is lengthy.
- **The streamlined application is appreciated.** Technical reviewers reported that the program application process has become more streamlined than it had been previously.
- **Add equipment forms to applications process.** One technical reviewer suggested that NYSERDA provide “ESM forms” (equipment forms) and require applicants to fill out ESM forms for equipment upgrades so that technical reviewers do not have to verify which pieces of equipment are part of the project.

M&V ISSUES AND SUGGESTIONS

Technical reviewers offered various suggestions to streamline engineering analysis and M&V processes.

- **Engineering analyses and M&V takes time and effort.** There is no consensus on ways to streamline these processes, but several of the technical reviewers had suggestions.
 - **Consider an M&V plan template.** One technical reviewer suggested that NYSERDA provide an M&V plan template.
 - **Shift responsibility for engineering analyses.** One technical reviewer suggested that, instead of technical reviewers, clients' engineering analyses should be completed by approved NYSERDA contractors through FlexTech, which some contractors reported using. The technical reviewer also recommended that the engineering analyses should be completed "in the same format" to ensure consistency.
 - **Review program costs and benefits.** One program staff member suggested that NYSERDA needs to "balance QA procedures [extensive M&V requirements] against customer service and cost."
 - **Authorize project database access.** A technical reviewer suggested it would be helpful if NYSERDA provided technical reviewers with access to a database of all IPE projects for their reference.

CONCERNS OVER POTENTIAL CONFLICTS OF INTEREST

- **When marketing and reviewing overlap** – multiple technical reviewers reported being uncertain about whether they are permitted to *both* bring customers into the program and serve as the customer's technical reviewer. The inherent conflict of interest should be noted.
- **When generating M&V plans** – most program customers required assistance with feasibility studies and M&V work. One technical reviewer suggested clarifying the extent to which technical reviewers are authorized to assist customers in generating their M&V plans.

APPENDIX C:

KEY FINDINGS FROM CONTRACTOR INTERVIEWS

In this section, we characterize the contractors interviewed and summarize major findings derived from ten in-depth interviews with IPE contractors and three in-depth interviews with high-volume contractors conducted between March 25 and May 5, 2010.

CONTRACTOR AWARENESS

Contractors' are Aware of NYSERDA programs, but not familiar with the ipe name.

- **Awareness levels are high.** All ten interviewed contractors reported a high level of familiarity with NYSERDA programs.
- **Most have a previous history with NYSERDA.** Eight of the ten contractors and each of the three interviewed high-volume contractors indicated substantial previous history working with NYSERDA.
- **Contractors refer to the program as EFP.** Contractors may not be aware that industrial clients' Existing Facilities projects are, in fact, IPE projects. Instead of referring to the program as the "Industrial Process Efficiency program" or "IPE program," interviewed contractors typically referred to the program as the "Existing Facilities program." This is to be expected, however, because, as noted, the IPE program is offered to customers under the EFP and NCP solicitations to provide a simpler, one-stop-access by ratepayers and service providers.

On average, contractors' are satisfied with the program.

- **Five of the ten contractors reported being "very satisfied" with the program, and four reported being "somewhat satisfied."**²⁸
- **All ten interviewed contractors said they were very satisfied with the program staff's knowledge of the program and ability to respond to their questions.** Two of the contractors noted that, although it was difficult to reach program staff members by phone, staff members always returned their calls.
- **Most contractors were unsure of additional ways that NYSERDA could support energy-efficiency in industry.** However, one high volume contractor suggested that NYSERDA attend their all-day seminars, which are designed to educate customers about compressed air efficiency. One contractor commented, "The reason that NYSERDA needs to take care of the contractors is that we are in the field all the time with the customers."

Most customers have project plans in place, but not energy-efficient measures.

- **The ten interviewed contractors referenced 14 IPE projects when discussing their clients' willingness to pursue IPE projects.** Contractors reported that 5 of the 14 projects included no prior plans to pursue a project of similar scope and that 6 had general plans to pursue a project of similar scope. Of the 9 projects with some level of prior plan in place, contractors reported that four would likely have not have pursued the project without the NYSERDA incentive and that the

²⁸ Nine of the ten interviewed contractors provided valid responses concerning their level of satisfaction with the program.

remaining five would have pursued their project, but that they would have been likely to use less energy efficient equipment.

CONTRACTOR PARTICIPATION

Several factors positively influence contractor participation.

- **All ten interviewed contractors agreed that NYSERDA incentives help their businesses.**
- **Seven of the ten contractors reported that NYSERDA programs are an important component of their business strategies and significantly increase sales.** According to one contractor, “If not for the program, we wouldn’t be in the business.”
- **All ten interviewed contractors reported being either “somewhat” or “very” satisfied with the program application processes.** In addition, one high-volume contractor reported satisfaction with NYSERDA’s recent efforts to reduce paperwork and streamlined participation processes.
- **As noted, the contractors reported being very familiar with NYSERDA processes.** The contractors reported that this familiarity helped them to complete program applications and other paperwork.
- **One contractor appreciated that participation processes were not “too easy” because having a certain degree of difficulty reduced competition from other contractors who find the NYSERDA processes “too daunting.”**
- **Each of the three firms with the most projects in the IPE database (the high-volume contractors) deal specifically in compressed air,** suggesting good market potential for compressed air projects in the program.

There are barriers to contractor participation.

- **Application Processing Delays:**
 - **Both contractor and high volume contractors noted delays in NYSERDA paperwork processing,** particularly concerning the amount of time between submitting applications and being issued a purchase order for a project.
 - Noting that **delays in approval processing are sometimes due to errors or missing information on customer applications,** one high-volume contractor suggested: “It would be helpful if we had someone who had a little more technical background within the program, to provide engineering help, etc., someone who could help us make sure that the forms are filled out correctly.”
- **Delays in Incentive Payments:**
 - **Both low and high volume contractors noted time delays associated with receipt of incentive payments.**
 - **However, two contractors noted recent improvements in the rate at which they receive incentive payments.**
 - **Six out of ten contractors indicated the amount of time that it took to receive incentive payments negatively affected either them or their clients.** Four of the six reported that delays in incentive payments frequently presents a financial burden for contractors, because, in order to present a more attractive proposal to their clients, contractors frequently “float” the portion of project cost that NYSERDA will later dispense as an incentive payment (typically 50% of project cost).

- **A few contractors explained that processing time for incentive payments took 90 to 120 days for projects that require M&V, and 30 to 60 days for prescriptive measures.**
- **Multiple contractors reported that 90 days is a reasonable amount of time to wait to receive incentive payment, but that 120 days is too long.**
- **One high-volume contractor reported that periodically checking in with NYSERDA program administrators regarding incentive payment status helps to expedite this process.**

TECHNICAL REVIEWERS' ACTIVITIES

Contractors have mixed experiences with technical reviewers' activities.

- **Overall, contractors are satisfied with technical reviewers' pre-installation activities.**
 - **All but one of the contractors reported being either "somewhat" or "very" satisfied with the quality and timeliness of the technical review services.** Two specifically stated they learn from the technical reviewers' visits. However, the contractors' comments indicate some communication difficulties with certain technical reviewers or technical review firms. Only one contractor indicated that their technical reviewer was "fast," which the contractor defined as "performing the site visit within 30 days of NYSERDA approval." Four of the ten contractors mentioned mixed experiences; certain technical reviewers performed higher quality work and were more efficient than others.
 - **One contractor reported that the timeframe between technical reviewers' completion of pre-installation activities and obtaining NYSERDA project approval is too long.**

Contractors have mixed experiences with technical reviewers' post-installation activities, including m&v processes.

- **Two contractors mentioned the need to repeatedly follow-up with technical reviewers to expedite M&V processes.** One contractor suggested that there is a communications "bottleneck" between program staff members and technical reviewers that slows the completion of the M&V, thereby slowing incentive payment.
- **Two of the contractors mentioned, as a program benefit, that the typical timeframes required for M&V have been reduced recently.**
- **To reduce delays related to dispatching technical reviewers, one contractor suggested increasing the number of technical reviewers or contracted technical review firms.** Additionally, the contractor suggested that paperwork processing could be hastened by increasing the number of NYSERDA staff conducting this task.
- **One high-volume contractor suggested continuous monitoring of equipment to ensure ongoing energy savings.**

CUSTOMER PARTICIPATION

Factors leading to customer participation, per interviewed contractors:

- **Interviewed contractors reported that "improving energy efficiency" was a key reason for all customer projects.** Eight of the ten contractors reported that customers pursue energy efficiency as part of a "business as usual" practice.

- **In addition, eight of the ten contractors reported that their customers were motivated by other types of savings**, including reducing operations and maintenance expenditures.
- **Multiple contractors noted that their clients have adopted goals related to environmental sustainability, of which saving energy is a key component.**
- **Contractors reported that program incentives make projects feasible within larger customers' capital budget and ROI constraints.** However, contractors reported that the existing program incentives may not increase project feasibility for customers who only run their equipment part of the time and for customers with smaller energy demand.
- **Eight of the ten contractors expressed certainty that their designs and recommendations influenced clients' decisions to pursue IPE projects.** The eight contractors reported NYSERDA technical studies did not play a role in influencing customer participation. In contrast, one contractor reported that NYSERDA technical studies are important in soliciting customer participation. The contractor further elaborated, "Without that documentation, I can't convince executive VPs of the value of the project."
- **One high-volume contractor reported that the program policy which allows contractors to apply on behalf of customers makes customer participation more attractive**, because it reduces the burden on customers.
- **According to one interviewed high-volume contractor, economic downturns increase customer participation.**
- **Consistent with the process team's analysis of the IPE database, contractors reported only a few projects involving process efficiency improvements.** As such, increasing production, reducing scrap rates, improving safety, and improving product quality were rarely cited by contractors as being reasons for customer participation.
- **Nine out of the ten contractors reported that "meeting code or regulations" was either "not at all important" or "not very important" in regards to influencing customer participation.**

Barriers to customer participation, per contractors:

- **High-volume contractors reported that the two most common barriers to increasing energy efficiency at clients' firms were:**
 - A lack of funds for energy efficiency
 - Clients not having sufficient certainty about the resulting energy savings
- **There is a lack of funds for energy efficiency.**
 - **Six of the ten contractors reported that "competition for funding from other projects" is a significant obstacle to obtaining project funding.** One contractor elaborated that energy efficiency investments are most frequently in financial competition with projects designed to maintain and improve production and output. The contractor further explained, "That's what creates revenue."
 - **One contractor reported that the recent economic downturn has made it more difficult for firms to secure capital.** The contractor added that, due to the uncertainty of current market conditions, clients are also reluctant to access their existing lines of credit, even if a project is likely to pay for itself within four to six months.
 - **To reduce financial obstacles to increasing energy efficiency at firms, one contractor suggested that NYSERDA reinstate its loan fund program to make energy efficiency investments more attractive to industrial clients.** Another contractor suggested that a lease

program would be an appealing option for clients, because “it would not affect cash flow or credit.”

- **Clients’ do not have sufficient certainty about energy savings.**
 - **Four of the ten contractors reported that clients’ uncertainty about energy savings was an obstacle.**
 - **One high volume contractor suggested that clients’ uncertainty about energy savings may be reduced if NYSERDA were to certify its’ technical studies, thus guaranteeing project results and the amount of incentive payments.**

Additional barriers to customer participation, per contractors:

- **Six out of 10 contractors felt that many clients do not want to initiate projects unless they must do so.**
- **A few contractors cited firms not employing staff with the necessary technical expertise as a barrier.**
- **One contractor reported that customers’ concern about the length of time necessary to receive NYSERDA approval for their projects represents a significant barrier.**
- One contractor noted, “It’s hard to move customers from lighting upgrades to the more expensive measures with longer payback periods. We need to stay with low-hanging fruit for now.”

Barriers to enrolling customers in process efficiency improvements, per contractors:

- **As noted, contractors reported only a few IPE projects that involved process efficiency improvements.**
- **One contractor reported that process efficiency incentives would be of tremendous value for their work as a way to leverage increased sales, but that most contractors are not aware that NYSERDA awards incentives for process efficiency improvements.**
- **A second contractor reported that, although his firm is involved in implementing process efficiency improvements, the contractor’s firm had not taken advantage of NYSERDA process efficiency incentives, due to a lack of awareness about the existence of the incentives.**
 - The contractor further noted, “We never thought about improvements to the production line in that way. We think about them in terms of saving time for the customer.”
 - Consistent with the assertion that contractors are not aware of the presence of process efficiency incentives, one contractor reported, “You are only going to talk about what you know. I don’t know enough about the process incentives to go and educate my sales representatives enough to feel comfortable with it.”
- **Another contractor doing efficiency upgrades considered the prospect of marketing process efficiency improvements to industrial customers as somewhat undesirable, because the contractor did not believe that such upgrades would result in selling equipment.**
- **One contractor noted that it is a disadvantage that process efficiency improvements typically require a longer M&V period, which extends the time it takes to receive program incentives.**
- **One contractor suggested that financially constrained facilities that need to enhance production efficiency in order to stay in business make good prospects for process efficiency incentives.**

APPENDIX D:

KEY FINDINGS FROM CUSTOMER INTERVIEWS

In this section, we characterize the customers interviewed and summarize major findings derived from 18 in-depth interviews with IPE customers conducted between March 15 and May 5, 2010.

CHARACTERISTICS OF CUSTOMERS AND FIRMS CONTACTED

The evaluation team spoke with contacts having a variety of job titles with the firm.

- **Most frequently titles indicated a role in facilities management** (seven), four titles indicated an engineering focus (four ranging from Engineering Manager to simply Engineer), and various others included general, project, property, operations, or manufacturing management roles with the firm.

Interviewed customers worked in various industrial sectors.

- **Five manufacturers** – each producing multiple product lines of electrical/mechanical products (producing electrical supply equipment, pumps, machines, turbines, generators, and the like)
- **Three manufacturers** – each producing a single type of product: aluminum cans, gears, semiconductors
- **Three data centers**
- **Two paper products manufacturers**
- **One industry laundry operation** (linen supply)
- **One developer of industrial space** (industrial park)

Interviewed customers undertook various projects in lighting, compressor, motor, and/or HVAC efficiency upgrades through the Existing Facilities solicitation.

- **Five projects were completed when the sample was drawn (February 2010).**
- **Funds for all others were encumbered.**²⁹
- **A description of measures was provided for 13 of these projects:**
 - Seven projects appeared to address only compressors (one added air zone commissioning).
 - Four projects appeared to address lighting only.
 - There was one HVAC upgrade and one multiple-measure project (lighting, HVAC, VFD motor upgrade).

Firms' energy use profile and project incentive levels varied.

- **Per NYSERDA definitions, two-thirds of facilities contacted were “small”** (ten facilities used under 500 kWh annually), and six were “large” (over 500 kWh annually)
- **Annual kWh for two facilities was missing.**
- **Ten smaller facilities used an annual average 218,375 kWh.**

²⁹ Based on 13 cases; portal data did not specify measures detail for five participations interviewed.

- Annual kWh ranged between a low of 129,833 kWh, to a high of 409,507 kWh.
- NYSERDA incentives were estimated to be between \$11,148 and 95,422, with an average of about \$35,000 per site.³⁰
- **Six facilities used an annual average of 1,582,787 kWh.**
 - Annual kWh ranged from a low of 509,831 kWh, to a high of 4,595,000 kWh.
 - NYSERDA incentives were estimated to range between \$56,740 and \$843,400, an average of about \$250,700 per site.

GENERAL IPE CUSTOMER FINDINGS

Customers are aware of NYSERDA programs in general, but less clear on program titles and distinctions among programs.

- **Over half of contacts mentioned previously working with NYSERDA programs.**
- **Half of the customer contacts learned of the program through their contractors;** five learned about it from NYSERDA directly. Other mentions included National Grid or a company employee as the source for information about the program.
- **Customers did not use the term “IPE” or “Industrial Process Efficiency” to refer to the program.** Typically, they knew the program as “Existing Facilities.” Customers were less concerned with the program name and more interested in the incentive structure.

The IPE program supports equipment and process efficiency improvements in new and existing facilities, yet process efficiency improvements were not a component of the IPE projects completed by surveyed customers.

Overall satisfaction was very high for all but one contact.

- **All said they would participate again.**
- **In terms of specific program processes:**
 - **Application** – for most, the application process was straightforward and the form not difficult to fill out.
 - **Satisfied with support from NYSERDA staff** – support by staff was provided throughout the program starting with application assistance, support during M&V processes, and ending with provision of incentive payments. A few customers had difficulty contacting program staff members, and a few (two) mentioned delayed incentive payments.
 - **Customers satisfied with support from contractors** – contractors often complete the application form for customers, identify measures that qualify for incentives, and provide engineering support, such as calculation of estimated energy savings.
 - **Technical review** – several contacts mentioned benefiting from the Technical Reviewers’ expertise and suggestions, or that technical review as part of this year’s project made M&V easier than in previous years. Only two customers mentioned a problem when technical reviewers did not follow-up after initial contact.

³⁰ Based on information on 11 small facilities. Incentives are estimates until adjusted based on M&V.

- **M&V:** Installation verification went smoothly for most; a few mentioned that the technical review process could be improved (follow-up and communications could be more timely and informative).
- **Coordination with other programs is a non-issue:** Few customers were directly coordinating multiple incentive or tax credit programs. No one mentioned difficulty in coordinating the incentives.
- **Key complaints:** Time delays in receiving approval and, to a greater extent, receipt of payments (specifically, M&V requirements taking too long (one to two years). A few mentioned not receiving checks as expected).
- **In terms of opportunities for improvement, contact comments focused on tweaks to existing program,** primarily in terms of better communication of project status and faster turnaround of payments. Some suggested other kinds of funding mechanisms to increase and expand the types of projects they could do, yet here, customers were still thinking in term of facility energy efficiency projects rather than production-line projects.

FACTORS MOTIVATING PARTICIPATION (NON-PROCESS PROJECTS)

Incentives and technical support matter.

- **Incentives and help with measuring and verifying project impacts motivate participation in the program** (responses given by 16 of 17 reporting participants and 10 of 17, respectively). Less important factors for customers are NYSERDA's support in convincing upper management to fund the project (seven) or engineering assistance with project planning (six).
- **Incentives enable the company to meet defined ROI criterion to justify higher-cost investments (for example upgrading to variable versus fixed speed chiller) and to meet company energy-efficiency goals.** Direct program staff members contact with customers can also help to move potential project toward company approval.
 - **Incentives help to ameliorate customer concerns over cost savings generated by equipment upgrades.** Most customers appreciate program help in verifying achievable cost savings. Half of contacts reported non-energy benefits, such as improving safety and productivity benefits of improved lighting (illumination levels) and reducing maintenance costs.
 - **For large customers, a 50% incentive provides the ROI needed to justify internal project approval.**
- **Production-related reasons were not mentioned as factors motivating participation because all contacts completed non-production line projects.**

Incentives push innovation.

- **For firms able to fund a project without incentives, incentives help to more quickly push projects through internal approval processes,** resulting in more energy-efficient projects being done sooner than would be in the absence of program support.
- **For half (nine) firms, the incentive was extremely important and generally enabled the purchase of energy efficient rather than less expensive, less efficient purchases.** Without incentives, nine of 14 interviewed customers would have changed their project; they would have either not pursued a project at all, reduced the energy efficiency level of equipment installed, or reduced the scope of the project.

Continuous improvement teams may or may not mandate energy efficiency goals or motivate program participation.

- **Just over 70% (13) of contacts' firms had continuous improvement teams;** of five who did not have a continuous process improvement team, one had set energy savings goals.
- **Among 13 teams, goals were said to vary,** among 11 responses:
 - **Eight teams had explicit energy-efficiency goals** (varying from annual across-the-board energy reduction goals, to a general mission statement supporting sustainable or green practices).
 - **Three other teams had not set energy-efficiency goals** (one having a separate sustainability group with energy efficiency goals).

BARRIERS TO PROGRAM PARTICIPATION

- **For half of the customer contacts, key internal barriers to participation relate to lack of funds to pursue energy-efficiency projects³¹ and competition for funding,** especially for revenue-generating projects. One contact summarized internal issues this way, “Capital costs – it’s difficult for some people to replace something that’s working unless payback is significant (for me 2-3 years, for management < 1 year.” Processing schedules can be a barrier: “We have to run all of equipment simultaneously [and sequentially]...our plants run 10 hours a day, we don’t have the ability to run half the plant .”
- **Program implementation can generate barriers.** Timely program staff member interactions with applicants are needed for smooth and predictable program delivery. Slower than expected responses on the part of NYSERDA staff, and, in some cases, technical reviewers, resulted in delays in project implementation for firms and contractor applicants; a few contacts mentioned lengthy M&V processes, and a few reported delays in NYSERDA’s provision of incentives. Contractors were particularly concerned about timely project approvals and receipt of incentive payments.
- **Industrial firm staff time requirements is not a concern:** Few contacts indicated problems with project time required of staff, having staff with sufficient technical experience, or uncertainty about project related energy savings.

THE DECISION PROCESS FOR NON-PROCESS PROJECTS**Industrial decision-making processes, including the specific staff involved in the processes, vary among firms.**

- **Who was involved in the firm’s decision to undertake a process improvement project through IPE?** The majority of contacts (15) describe a *multi-layered decision process* generally initiated by staff at the facility undertaking the improvement (typically, a plant manager, engineering manager, or facilities engineer).
- **Internal approval is multi-layered.** To ensure that the project meets or furthers plant, division, and/or corporate policies and goals, projects are typically reviewed and approved by a finance officer (CFO, VP Finance, Plant Manager) and senior management (COO, CEO, President,

³¹ Barriers related to lack of funds can be external (as in borrowing constraints in a risky market), as well as internal (limited internal budgets for upgrades).

General Manger). Where the decision to participate was made by one individual in the firm, the decision-maker was either a corporate executive or a plant manager with responsibility for the capital plan. In one case, the project funding was set aside prior to program participation.

- **Capital improvements projects may be internally mandated or approved for various reasons:** to meet sustainability goals, energy efficiency goals, or productivity or ROI goals. Identified projects (generally smaller ones with short payback periods) may be proposed and approved within the same year. Others are budgeted for in one year, with funds expended in the next.
- **Program incentives may, or may not, be allowed for inclusion when estimating project cost due to uncertainty of approval;** when not deducted from total project cost, projects appear to be more costly to decision-makers.

The decision process is generally long, but varies across firms.

- **Projects are not necessarily proposed and considered on a set schedule within the firm:** half of our contacts mentioned project decisions occurring within a capital budgeting timeline (generally a fiscal year); the other half said there was no internal timeline for these decisions.
- **Internal planning and approval processes may take a few months to several years.**
 - **Where budgets designate funds for certain upgrades, expenditures may be made at the division level** (without corporate approval). Participant contacts report that projects greater than a certain size (for example, over \$100,000) required more approval signatures than smaller projects.
 - **Delays occur when financial and senior management offices are not located at the project site.**
 - **When financing (and spending) is constrained, purchasing decisions are approved at higher organizational levels.**

Project cost matters.

- **Within a firm, various types of projects may vie for limited funds and internal management approval;** when included, incentives reduce company cost estimates and improve likelihood of project approval.
- **Company self-installation of projects, such as lighting, may cost the firm less in the long run, but total cost accounting (that excludes rebates) may cause projects to be rejected by management.** Projects rejected based on total cost accounting, may be approved if company costs can be lowered. Some contractors have the flexibility to bid projects based on project cost minus (all or some portion of) rebates if they are able to shoulder the burden of waiting for the NYSERDA rebate.
 - Note, in the Buildings Portal Database, the applicant field might contain the name of either the industrial firm or the firm's contractor. For this reason, the use of contractors for project installations could not be summarized.

HOW TO MOTIVATE PROCESS EFFICIENCY – PER UNIT PRODUCTION

Energy efficiency gains appear to motivate upgrades to lighting, motors, and HVAC systems, but it is not clear whether energy efficiency can be considered a prime motivator to spur production changes. More research is needed, but preliminary on-site interviews suggest issues for further follow-up:

- **Most contacts were not considering process projects.** This was primarily because process projects fall under the responsibility of production line engineers and managers and typically do not involve facility engineers or managers.
- **Target production staff.** Different internal staffs may be responsible for proposing projects for internal consideration – non-process projects by facilities-related staff versus process projects by plant operations or process and tooling engineers.
- **Per-unit-of-production incentives may not be applicable for all.** A few contacts doing non-process projects said they would consider a per-unit-of-production project, while others said that this method would not be applicable to their firm. Contacts describing their firms as data centers, high-volume manufacturing firms, firms with multiple product lines, contract manufacturing/fabrication, and developers of industrial spaces suggested that calculating energy savings on a per-unit-of-production basis may not be possible for their firms. Whether NYSERDA’s technical reviewers have the capability to calculate savings on a per-unit-of-production basis is yet to be determined (current on-site sample is too small to generalize from).
- **Some decision cycles are lengthy.** Preliminary information suggests that process changes may have a longer decision cycle than projects related to facility upgrades (one on-site project internally discussed for over three years).
- **Process changes are not easy to do.** Production changes are likely to be less attractive than other cost-cutting measures (for example, air compressor upgrades) unless business conditions demand production-related improvements. In one on-site case, the project was driven by improvements to product quality and the ability to produce different types of products in a more flexible manner – energy efficiency was a secondary benefit in this case.

APPENDIX E:

LOCATION OF ON-SITE INTERVIEWS

- A. IBM Corporation
2070 Route 52 B/316
Hopewell Junction, New York 12533
- B. Ultrepet LLC
136 Fuller Road
Albany, New York 12205
- C. The Syracuse Stamping Company
1054 S. Clinton Street
Syracuse, New York 13202

Figure E-1: Displays Locations of the Process Team’s three On-Site Interviews conducted between January and May 2010

