B O N N E V I L L E P O W E R A D M I N I S T R A T I O N

Energy Smart Industrial Program: Process Evaluation

2010-2011

A Report to the Bonneville Power Administration

October 31, 2012

Research Into Action, Inc.

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research/into/action inc

Final Report

Energy Smart Industrial Program: Process Evaluation

Funded By:

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David Jump of Quantum Energy Services & Technologies, Inc. (QuEST) led his firm's work conducting a review of ESI project M&V documents, and Laurie Lago, of Business Services Bureau, provided document production support.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

Bonneville Power Administration (BPA) launched the Energy Smart Industrial (ESI) program in 2009 to assist BPA utility customers and their industrial facility customers in increasing cost-effective energy savings to support the efficiency goals as found in the Northwest Power and Conservation Council's Sixth Power Plan. The program is a primary mechanism for BPA utility customers to achieve industrial load energy savings targets of 12 aMW in fiscal year 2010 and 15 aMW in fiscal year 2011 – nearly double the energy savings that were achieved in the previous two years. Research Into Action, Inc. conducted this process evaluation of the program's first two years (2010-2011) to assess its effectiveness and processes, and make recommendations for improvement.

The evaluation documents the strengths and challenges faced by program administrators and implementers in managing the delivered program, and the effectiveness of the delivered program to meet its targeted goals. The following discussion organizes our conclusions and recommendations by topic area –design effectiveness, implementation effectiveness, and administrative effectiveness.

DESIGN EFFECTIVENESS

➡ ***Conclusions:*** **This evaluation documented several key strengths with the program's resource and energy management pilots responsible for driving high levels of utility program participation and end user satisfaction**. Utilities and end users had high levels of satisfaction for the program's custom project and small industrial components, driven by expanded project support from their ESIPs. Some utilities expressed concern that project incentive levels were set too high for the program to sustain consistent incentive levels over time.

Recommendation: **The program should involve utility input on project incentive levels.**

➡ ***Conclusion:*** **The energy management pilot was very successful at both delivering savings and increasing end user organizations' energy focus**. Most program participants intend to continue energy management practices after program support ends; and most participants reported the following changes at their companies as a result of their participation in the Energy Management Pilot component: organization-wide increase in employee awareness of and focus on energy management; and plans to add energy management activities at their organization, even after program resources and incentives are discontinued for their projects. However, High Performance Energy Management's design limited participation in this component to utility service territories with enough large end-users to form training cohorts.

Recommendation: **To increase participation in High Performance Energy Management, BPA should investigate ways to scale the program to smaller savings opportunities.** Program staff might consider delivering HPEM through web-based cohorts, reducing participant travel and labor costs.

IMPLEMENTATION EFFECTIVENESS

This evaluation documented key activities performed by program staff to deliver ESI. Implementation contractors are responsible for: developing the market for increased program participation; supporting projects by delivering technical staffing services to utilities and end users; and documenting program activities in BPA's project approval and reporting systems.

Developing the Market

➡ ***Conclusion:*** **The program was effective at developing the market for increased program participation**, achieved through: well-defined relationships with large utilities through the use of utility account plans; and the deepening of relationships with end users, driven by ESIPs' work with end users' operations and business management, as well as facilities management. However, the program may have challenges developing markets in smaller utilities and service territories in eastern region. The program does not develop account plans with smaller utilities and some BPA field engineers are worried this may lead to miscommunication between ESIPs and utilities. Additionally the eastern region's low industrial concentration likely contributes to relatively reduced access to local technical resources and may have led to lower (neutral/slightly positive) end user survey scores concerning their perception of program representatives' industry reputation.

Recommendation: **The program should improve its ability to develop the eastern region market by monitoring the project pipeline to predict when ESIP and TSP resources will be needed for this region, and develop account plans with smaller utilities**. The program might conduct an assessment of the eastern region's technical and market potential for industrial efficiency to guide the allocation of ESIP time.

Program Delivery

➡ ***Conclusion:*** **Expanded program staffing through the ESIP role was a key success factor for the program's delivery**. Utilities and end users valued the additional project management and technical services provided by their ESIPs. Although the design of the small industrial component envisioned that such projects would be more cost-effectively met through the use of calculator tools, in practice, most projects received custom M&V; thus, this program component was not appreciably distinct from the custom component.

Recommendation: **The small industrial component should develop or work with regional partners to acquire additional calculators**, the use of which is likely to reduce the cost to serve this sector.

Document Activities

➡ ***Conclusion:*** **The program developed special procedures to help support the speed and accuracy by which program documents move through BPA's project approval and reporting systems**. The implementation contractor's Quality Control Team supports the COTRs[1] with project recommendations and documents project rejection reasons to help the program improve its quality of project proposals and reports. Also, the program consistently follows rigorous M&V procedures. End users targeted for High Performance Energy Management appear to need additional information about MT&R (monitoring, tracking, and reporting) processes. A few end users questioned the reliability of MT&R plans and CUSUM reporting.

Recommendation: **BPA may improve its MT&R reporting communication by requiring Energy Performance Tracking Team staff to contact HPEM end users and discuss their expectations about MT&R, and CUSUM reporting.**

➡ ***Conclusion:*** **ESI M&V activities conform to industry standards; project documentation appears it will support an impact evaluation.**

Recommendation: **BPA should proceed with an impact evaluation of ESI.**

ADMINISTRATIVE EFFECTIVENESS

This evaluation documented several key processes supporting BPA staff in their roles to effectively organize and oversee the program. BPA's ESI Core Team is responsible for organizing the way program resources are to be delivered and overseeing the implementation's quality.

Program Organization

➡ ***Conclusion:*** **The program is organized around sound strategic planning** evidenced by: the program components and contracts are tied to well-defined program goals; program activities are carried out by distinct program roles and coordinated through regularly scheduled meetings; and BPA staff monitor program progress and planned outcomes through detailed program activity reports. However, the program's reporting systems – PTR (Planning, Tracking and Reporting), *TrakSmart*® , and other project

[1] Contracting Officer Technical Representatives

tracking files, are not integrated around consistent data handling conventions which may lead to issues with production of summary reports. Data issues include: project cancelations are not consistently tracked, nor reason for cancelation recorded; and nonstandard utility and end user names are used between project data sources. Additionally *TrakSmart* was weakly supported and lack full functionality during the evaluation period, leading to a loss of key reports for a couple of months.

***Recommendation:* BPA should require implementers to use standardized utility and end users' naming conventions when they enter project data in other project tracking systems, and improve tracking of project cancelations.**

***Recommendation:* BPA should ensure sustained support of program reporting databases**.

➡ ***Conclusion:* The program manager has collaborated with regional stakeholders and contributed program knowledge and experiences to the national industrial energy efficiency community,** activities valued by the regional stakeholders and national community.

Program Oversight

➡ ***Conclusion:* The ESI Core Team is actively monitoring the quality of program implementation and taking corrective actions when necessary**. The Core Team's program oversight effectively held implementation contractors' program activities to acceptable standards by reviewing contractors' program communications and emails, and issuing corrective actions through clearly defined chains-of-command. Oversight practices have also ensured BPA's ability to select a new program contractor without significant loss of program delivery quality. Key oversight practices include: adequate enforcement of program branding; documentation of program relationships with large utilities; use of clearly defined standards for prioritizing the project pipeline.

***Recommendation:* BPA should consider the following activities to improve its ability to select a new program contractor, should it desire to do so at some future date.** The program manager should hold quarterly meetings with all subcontractors managing program components to document market intelligence and institutional knowledge concerning these components.

➡ ***Conclusion:* Some TSPs are concerned with perceived conflicts of interested caused by the implementation contractor assigning projects to TSPs.**

➡ ***Conclusion:* The industrial market, which often requires multi-year implementation schedules for efficiency projects, may view the 2012 revision to ESI's incentive structures (a revision consistent with those affecting all sectors) as an element of**

financial risk. In the 2012-2013 budget, overall levels will be lower (sometimes 40-50% lower) than in 2010-2011, which is likely to lead to a reduction in ESI activity.

Recommendation: **Create a process to support BPA COTRs coordination with utilities aimed at ensuring ESI incentives are planned in the utility's overall EEI funding**.

ESI's design and implementation, which represents a significant change from BPA's prior industrial sector approach, appear responsible for the program's successes in the 2010-2011 program cycle. In fact, ESI exceeded its energy savings targets for the 2010-2011 period. Looking forward, our findings suggest that a planned reduction in the number of the program's ESIPs, a possible increase in requests for TSP support among nonstandard-agreement utilities, a shift from standardized incentives to variable project incentives set by each utility, and utilities' perceptions of risk due to budget reductions, may impact the ability of the program to achieve its targeted savings in the 2012-2013 program cycle.

1 INTRODUCTION

Bonneville Power Administration (BPA) is a federal power marketing agency that supplies electricity to its customer utilities, which distribute electric services to industrial, commercial, and residential customers. BPA launched the Energy Smart Industrial (ESI) program in 2009 to assist BPA utility customers and their industrial facility customers in increasing cost-effective energy savings to support the efficiency goals as found in the Sixth Power Plan. The program is a primary mechanism for BPA's utility customers to achieve industrial load energy savings targets of 12 aMW in fiscal year 2010 and 15 aMW in fiscal year 2011 – nearly double the energy savings that were achieved in the previous two years.[2]

This process evaluation of the program's first two years (fiscal years 2010-2011) assesses its effectiveness and processes, and makes suggestions for improvement. Research Into Action, Inc. conducted the evaluation between June 2011 and May 2012.

PROGRAM OVERVIEW

ESI serves utilities and their respective end users with a portfolio of traditional custom projects, as well as trade-ally-driven lighting and small industrial projects. In addition, ESI includes the innovative Energy Management Pilot, which consists of three components:

- **Energy Project Manager (EPM)** – addresses end user staffing
- **Track and Tune (T&T)** – addresses operations and maintenance (O&M)
- **High Performance Energy Management (HPEM)** – addresses strategic energy management.

Enrolled utilities select the extent to which they participate with each ESI program component.[3]

The program is designed to target a diverse landscape of utility and end user needs; it includes the following elements:

- A marketing approach that relies on development of one-on-one relationships with customer utilities and industrial end users;

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2 See: *www.bpa.gov/energy/n/industrial/pdf/ESI_Program_FAQ_101909.*

3 See: *http://www.airbestpractices.com/energy-incentives/incentive-program-profiles/bpa%E2%80%99s-energy-smart-industrial-program?page=16.* This chapter draws on information presented in *Bonneville Power Administration Energy Smart Industrial Program Delivery Manual*, Revised 09/29/09 and *www.bpa.gov/energy/n/industrial/pdf/ESI_Program_FAQ_101909*.

- Professional technical resources to identify and guide projects to implementation;
- A broad assortment of program offerings, strategies, and incentives designed to meet diverse utility and end user needs;
- Heightened emphasis on strategic energy management and O&M opportunities;
- Leveraging participation from trade allies that are active in the marketplace;
- A quality control plan, which prescribes protocols for project management and tracking, savings attribution, document and materials storage, decision-making, issue resolution, and field work; and
- Synergy and consistency with other regional industrial efficiency initiatives.

PROGRAM CONTEXT

Prior to development of the ESI program, BPA's Energy Efficiency department identified several barriers internal to BPA hindering their programs engagement with the industrial sector, and posing challenges to effectively capturing increased industrial savings targets included in the Sixth Power Plan,[4] including:

- Lack of technical staff working in industrial markets
- Inconsistent incentive levels, documentation requirements, and market participation
- Need for disciplined project pipeline management
- Lack of dedicated roles/accountability

In 2009, BPA selected Cascade Energy, Inc. (formerly Cascade Energy Engineering, Inc.) as the implementation contractor (which it terms *program partner*) to assist in the redesign of its industrial program components and to implement the program. Cascade Energy is the prime contractor, and subcontracts with Evergreen Consulting Group, LLC, and Triple Point Energy to manage the lighting and strategic energy management components for the program, respectively. The BPA ESI technical services team manages the implementation contractor.

As this report will demonstrate, ESI exceeded its energy savings targets by addressing these barriers internal to BPA and meeting market needs.

[4] See: *www.bpa.gov/energy/n/industrial/pdf/ESI_Program_FAQ_101909.*

PROGRAM RESULTS

ESI's first program cycle began on October 1, 2009, and ended on September 20, 2011 (fiscal years 2010 and 2011). Response to the program was very favorable: since its launch, 74 of 103 utilities with industrial load have signed an agreement to offer at least one program component.[5]

The program exceeded BPA's goal to save 27 aMW during the program cycle – delivering more than 42 average megawatts (aMW) in verified first-year energy savings (Table 1) in 2010-2011. In 2011 alone, the program secured more than 28 aMW in energy reductions; this represents greater than triple the savings that BPA attained on an annual basis in the industrial sector prior to ESI program launch in late 2009.

For the purpose of comparing the program's metrics between program cycles, the evaluation recorded the following program metrics for the 2010-2011 program cycle:

- Number and type of trade allies: 36 Small Industrial, and 48 Lighting Trade Allies
- Number of TSP firms with a completed project: 14
- Number of participating utilities: 74[6]
- Utilities allowing use of ESI logo / marketing materials: 44[7]
- Number of utility account plans: 30[8]
- Repeat customers: 148

[5] Utility has signed agreement to offer at least one program component. Data from implementation contractor managed utility engagement report updated Sept 2011.

[6] Utility has signed agreement to offer at least one program component. Data from implementation contractor managed utility engagement report updated Sept 2011.

[7] Data are extrapolated from survey sample. Utility respondents were asked how ESI is marketed in their service territory; all responses where "ESI" or "Cobranded ESI and the Utility's brand" are counted here.

[8] The program targeted the top 30 utilities by industrial load size for signing account plans

Table 1: 2010-2011 Program Competent Total: Savings, Completed Projects, Incentives Paid, and Project Costs

	aMW	Completed Project	Incentives Paid	Project Costs
Custom Projects	29.52	427	$ 39,110,711	$ 69,712,200
Small Industrial	1.02	102	na9	na
Lighting	10.37	494	$ 7,504,393	$ 13,530,737
EPM[10]	--	--	--	--
HPEM	0.79	14	$ 174,680	na
Track and Tune	0.43	3	$ 192,175	$ 131,955
Total	**42.13**	**1,040**	**$46,981,959**	**$83,374,892**

METHODOLOGY

The process evaluation assesses the 2010-2011 ESI program – its design, implementation, and program administration – identifying strengths, weaknesses, and opportunities for improvement, and presenting achievement metrics.

The evaluation:

- Assesses the extent to which ESI program design and implementation addressed barriers internal to BPA (key areas of BPA's internal structure and process for engaging the industrial sector effectively, as identified by BPA), as well as utility and end user market barriers to industrial energy efficiency;
- Examines the effectiveness of the implementers' coordination of program activities, distribution of resources, and market interactions;
- Compares the program logic model with program implementation and assesses areas where the program is not working as expected; and
- Documents and assesses program quality assurance (QA) and measurement and verification (M&V) practices.

9 Incentive payment and project costs data were not available from the PTR database for some programs

10 EPM savings are captured under other program components

Evaluation Goals

The program theory assumes that effective program design, administration, and implementation are necessary to address barriers internal to BPA and market barriers to industrial energy efficiency. Figure 1 displays the ESI evaluation research goals divided into three topical areas. The arrows represent the relationships between each topical area. The evaluation assesses how effectively the program's design overcomes barriers to participation, produces sustainable program components, and attains participant satisfaction. It assesses how effectively the program was implemented – including development of market interest, program delivery, and documentation of activities and projects – and the effectiveness of BPA's administrative responsibilities of organizing program resources and overseeing program activities. Finally, the evaluation assesses program activities in comparison with the logic model.

Figure 1: Research Questions by Topical Area

Design Effectiveness	Implementation	Program Administration
How effectively the program design:	*How effectively implementer activities:*	*How well program supports BPA's staff in their roles to:*
• **Drives participation** by overcoming market barriers • Produces **sustainable program** components • Achieves high levels of **participant satisfaction**	• **Develop the market** through outreach, identifying and tracking opportunities, developing technical services base • **Deliver the program** to the market through scoping studies, project management, and assigning technical services • **Document activities** including communications with customers, project proposals, completion and M&V reports	• **Organize** program resources through planning, documentation, and data management • **Oversee** implementer and program activities and take corrective actions when necessary

We identified the following topics for evaluation of the program.

➡ **Design Effectiveness:** The report provides an assessment of the industrial market's acceptance and satisfaction with the program's design. To conduct this assessment, we examined the:

- Extent to which utilities and end users are willing to participate in program components
- Efficacy of program incentives and technical support to drive program participation

- Extent to which the program overcomes market barriers identified by BPA
  - Weak focus on industrial energy efficiency
  - Resource constraints
  - Risks posed by efficiency projects
  - Low levels of trust in BPA programs

➡ **Implementation:** The report provides an evaluation of the effectiveness of implementers' program activities. To conduct this evaluation, we examined the:

- Effectiveness of implementers' industrial outreach activities (including coordination with utilities)
- Extent to which implementers developed and make use of infrastructure and tools to streamline program activities
- Utility and end user satisfaction with program representatives' roles and services
- Thoroughness with which implementers document project activities through project proposals, completion and M&V reports

➡ **Program Administration:** The evaluation provides an assessment of BPA's administrative processes designed to facilitate organization of program activities, review program activities, and manage program budgets. To conduct the assessment, we examined the:

- Extent to which program documents and communications specified program representatives' roles and responsibilities, and organized program activities
- Administrative staffs' level of responsiveness to the activities of program implementers and representatives
- Extent to which ESI activities are coordinated with regional stakeholders (Northwest Energy Efficiency Alliance, Energy Trust of Oregon)
- Extent to which budgeting systems support stable program management

Evaluation Approach

Data Collection

We developed structured interview guides for data collection with utility and end user contacts. We conducted in-depth interviews with representatives of BPA's program administration staff and implementation contractor team staff. Table 2 displays our data sources and collection activities, the research topics addressed by each, and the analytic techniques (described in detail in Table 3) we used to derive insights from the collected data.

Table 2: Evaluation Data Collection Activities

TARGET	METHOD	DATE	KEY RESEARCH TOPICS	ANALYTIC TECHNIQUES
Implementers (n = 17) Cascade Energy (15) • *Management (7)* • *ESIPs (8)* Triple Point (1) Evergreen (1)	Interviews	Sept 6, 2011 - Oct 21, 2011	How program oversight is working Experiences working with utilities How program is evolving to deal with challenges How data is handled	Thematic analysis
BPA Staff (6) ESI Manager (1) ESI Engineers (3) ESI Analyst (1) Database Administrator (1)	Interviews	Oct 14, 2011 - Oct 24, 2011	How program oversight is working How program design deals with market barriers	Thematic analysis
Utilities (48), of which: NSA (4) I-937 (10)*	Phone Survey Online Survey	Dec 9, 2011 - Jan 9, 2012	Satisfaction with program and implementer activity Interest in pilot programs	Cross tabulation Exploratory analysis
End User (61) Custom (21) Small Industrial (11) Lighting (6) HPEM (7) T&T(5) EPM (11)	Phone Survey	Mar 12, 2012 - Mar 26, 2012	Experience with the program Satisfaction with programs Successes of programs Challenges of programs	Cross tabulation Exploratory analysis
Technical Service Providers (5)	Interviews	Apr 5, 2012 - Apr 16, 2012	Feedback about ESI Scoping study process Extent of work on pilot projects Extent and scope of work with ESIPs	Thematic analysis
Document Review	Review	August 2011 - May 2012	Identify program processes Understand history of program	Thematic analysis
Project Data Analysis	Secondary data analysis	August 2011 - May 2012	Identify trends in project numbers and savings	Cross tabulation Exploratory analysis

* The ten I-937 utilities include three NSA utilities.

Analytic Techniques

The specific analytical techniques we used to address these research objectives varied by data source(s) (see Table 2) and research question.

Table 3: Evaluation Analytic Techniques

TECHNIQUE	TYPICAL DATA SOURCE	PURPOSE
Literature Review	Documents, websites	Describe program processes, objectives, and context
Thematic Analysis	Interview (narrative) data, open-text survey data	Derive key topics from data for assessment and comparison between data points
Frequencies and Cross Tabulation	Structured survey data	Develop descriptive statistics summarizing data by frequency, percentage, and range
Exploratory Analysis	Qualitative or quantitative data	Describe relationships between data; useful for indicating influence of one condition on another

2 PROGRAM DESIGN

Use of an implementation firm was central to ESI's program design. The program's design targeted increased program participation through the use of contracted technical account representatives, referred to as ESIPs (Energy Smart Industrial Partners). The ESIP role was design to drive utility and end user program participation by providing both program outreach and some technical services.

Because the program's roles are integral to understanding the program's design, this chapter describes the program's roles prior to describing the program's design.

PROGRAM ROLES

BPA Management

At BPA, six internal staff – referred to as the ESI Core Team – administer the program and perform oversight functions over the implementation contractor. The ESI Core Team is led by the ESI program manager who manages the relationship between BPA and the implementation contractor. The ESI Core Team includes dedicated BPA engineers that provide technical oversight, as well as staff that conduct summary program tracking and reporting and project database management.

The implementation contractor conducts ESI marketing and implements industrial sector energy efficiency acquisition activities. In addition, the implementation contractor manages the activities of technical service proposal consultants (TSPs), who perform project-level technical services.

BPA Energy Efficiency Representatives (EERs) serve as overall relationship managers between BPA and the utilities relative to energy efficiency, but do not have a direct role in marketing industrial sector energy efficiency to utilities. BPA's utility Contracting Officer Technical Representatives (COTRs) are responsible for reviewing their utilities' ESI projects for approval.

Energy Smart Industrial Partners (ESIPs)

Energy Smart Industrial Partners (ESIPs) are a core part of the ESI program. ESIPs are consultants on the staff of, or subcontracted by, the implementation contractor; they serve as the primary point of contact for participants, helping them define, develop, and manage energy savings projects. ESIPs have a combination of technical expertise, broad program familiarity, and industrial experience.

The ESIP program component consists of two levels of personnel: the ESIP and the sector specialist. Sector specialists target key industries where the potential for large energy savings

exists; experience and existing relationships within the industry are prerequisites for sector specialists. The sector specialists serve under the ESIP to preserve the single-point-of-contact relationship between the utility and the ESIP.

Small Industrial Measures Team

The small industrial (SI) component is administered by the SI measures team, a subset of the implementation contractor team. The SI measures team role is to conduct outreach to trade allies to advance their ability to identify viable ESI project leads, promote tax credits and utility incentives and implement custom projects approved for measurement and verification "light" – the informal term for BPA's M&V procedures for projects with savings less than 200,000 kWh. The team also works directly with the trade allies to expedite project communication and paperwork processing.

Technical Service Providers

The implementation contractor contracted with about 15 technical service providers (TSPs) to perform project-level technical services for the ESI program, such as conducting scoping studies, developing project proposals, conducting savings measurement and verification, and preparing project completion reports. (ESIPs also provide these services; the TSPs offer advanced, specialized expertise.) ESI funds TSP services for utilities that participate in the ESI program.

Trade Allies

The Northwest Trade Ally Network (NWTAN) helps lighting trade allies grow their businesses through participation in regional energy efficiency incentive programs. NWTAN directs lighting trade allies to relevant incentive programs, offers trainings and industry news, and provides forms and resources.[11] Evergreen Consulting coordinates NWTAN members' involvement in ESI.

In addition to coordinating with NWTAN, the implementation contractor leverages trade allies in other categories (compressed air, refrigeration, welding, pumps, and others) to market ESI incentives on behalf of selling their goods and services.

PROGRAM DESIGN

The technical and organizational complexity of end users' firms poses unique challenges for end users who must approve and manage projects at their facilities, and for the utilities who manage industrial programs. This chapter summarizes the challenges faced by those who design

[11] See: *http://northwest-lighting.org/about.aspx.*

industrial energy efficiency programs and the program design choices BPA made to overcome these challenges.[12]

The greatest energy savings opportunities at industrial facilities typically are associated with greater degrees of technical complexity and demands on the organization. Manufacturing process and operations improvements frequently offer greater energy savings than facility upgrades; however, these improvements are viewed by end users as posing the greatest risks through potential interruption or damaged output. Furthermore, production managers are protective of both the performance of production processes and competitive advantages created by these processes, which means they require efficiency program staff they can trust with the technical aspects of their production processes, and the confidentiality of these processes.

In essence, the ESI program must change the market's focus on efficiency projects from *risks and concern* to a focus on the *rewards* of efficiency projects.

Market Barriers

The ESI program design targeted the following four key market barriers to overcome in order to increase industrial program participation, as we learned from our interviews with ESI staff and contractors:

- **Weak focus on industrial energy efficiency**: Utilities' and end users' strategic focus often concerns business areas other than industrial energy efficiency. Many utilities focus on less technically complex residential and commercial energy efficiency programs; and end users typically focus their efforts on operational output, rather than energy consumption.

- **Resource constraints**: Industrial projects are often costly and technically complex. Utilities and end users lack both the financial and staffing resources needed for successful industrial energy efficiency projects.

- **Risks posed by energy efficiency projects**: Industrial projects affect complex end users' operations, sometimes requiring several years to complete. Unpredictable and long project completion timelines pose risks to utilities' budgeting processes, as they are obligated to pay incentives at project completion. End users are sensitive to risks efficiency projects pose with changes to their operations.

- **Mistrust in BPA industrial energy efficiency programs**: Industrial end users and utilities' mistrust of BPA programs historically stem from: 1) confusion about the

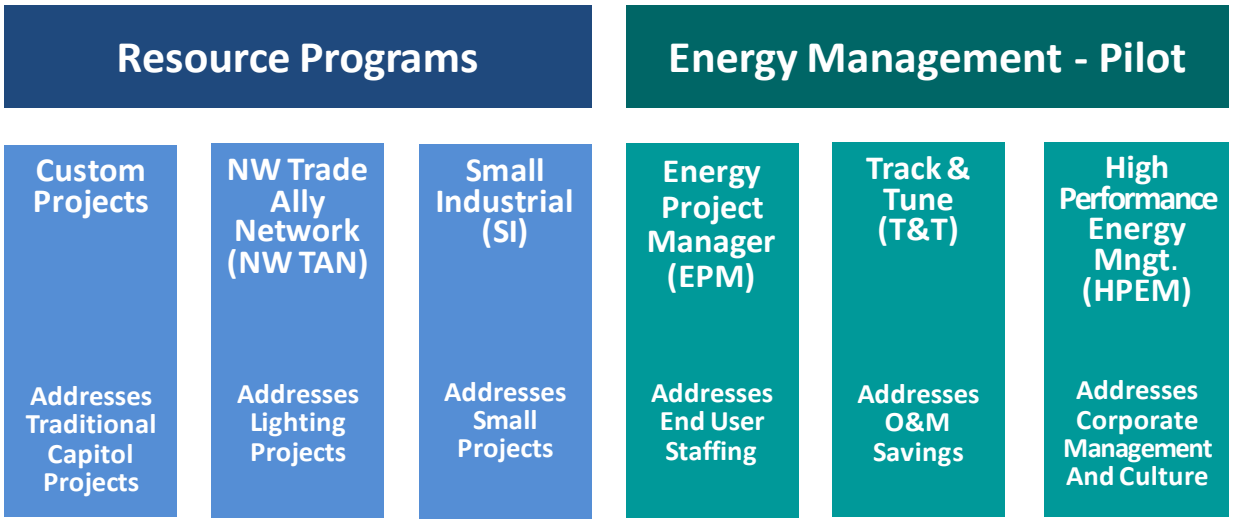
[12] This chapter draws on information presented in *Bonneville Power Administration Energy Smart Industrial Program Delivery Manual*, Revised 09/29/09 and *www.bpa.gov/energy/n/industrial/pdf/ESI_Program_FAQ_101909*.

program from unclear and nonstandardized marketing collateral used to explain program guidelines and incentives;[13] and 2) perceptions that BPA efficiency staff lack in-depth experience with industrial projects.[14,15]

ESI Program Components

ESI provides a broad assortment of program components designed to meet diverse utility and end user needs under the umbrellas of resource programs and energy management pilot programs. ESI's resource program components include custom projects, small industrial, and enhanced lighting; the energy management pilot program components include energy project manager, track and tune, and high performance energy management (Figure 2).

Figure 2: ESI Program Components



Resource Program Components

Custom Projects

Custom projects are measures or projects for which energy savings estimation must be planned and implemented for each site individually (i.e., there is no pre-determined savings or calculator); these projects require established measurement and verification (M&V) methods to estimate

13 The Cadmus Group, Inc, *BPA: Industrial Energy Efficiency Program Review*

14 Ibid.

15 Bonneville Power Administration, *Energy Smart Industrial Fact Sheet for Utilities*, Oct. 2010; pg. 1.

their savings. ESI projects that save more than one million kWh per year require a BPA ESI engineer's approval.[16]

Custom projects encompass retrofit and new construction efficiency, including qualifying lighting projects. ESI participants initiated 485 custom projects during the 2010-2011 program cycle. Implementation contractor contacts and a review of project tracking data both indicate that custom projects (including lighting) were the dominant method of ESI participation among end users, and accounted for about 90% of ESI program savings.

Small Industrial

ESI's small industrial (SI) component is designed to cost effectively increase the number of implemented small industrial projects. The small industrial component targets small-scale industrial facilities and small systems that have been historically underserved by traditional industrial efficiency programs.

Implementation contractor contacts explained that prior to ESI, end users and utilities typically did not prioritize small projects. Because the amount of time needed to process small projects was roughly the same as large projects, small projects were not cost-effective when administrative costs were considered. To improve cost-effectiveness, ESI's small industrial component used a trade ally project delivery approach coupled with streamlined administrative processing to minimize costs.

The small industrial component is administered by the implementation contractor's SI team. The SI measures team reaches out to trade allies to increase their ability to identify viable project leads, promote tax credits and utility incentives to help close sales, and push projects through to completion. The team also works directly with the trade allies to expedite project communication and paperwork processing. SI measures team contacts said they also help trade allies prioritize their SI outreach by identifying utilities that are highly motivated to secure industrial savings.

The SI team maintains a working relationship with participating utilities, with the ESIP providing the high-level support and oversight. The ESIP provides periodic reporting of small industrial activities to the utility and serves as a conduit for the utility to the small industrial component.

ESI includes three paths for assessing the savings of small industrial projects: *unit energy savings*, *calculators*, and *custom*.

- **Unit energy savings projects**: Projects for which the incentive and energy savings are predefined on a per-unit basis.

[16] M&V for the 2010-2011 ESI program followed BPA's *Energy Efficiency Implementation Manuals*, as discussed further in Chapter 4.

- **Calculators**: Projects for which energy savings are estimated using standardized measure savings calculations approved by BPA or the Regional Technical Forum (RTF).
- **Custom projects**: Projects for which energy savings are estimated using Energy Calculation with Verification (commonly known as the *light M&V approach)*, in which data logging is not performed.

Contacts and a review of the project database suggest the small industrial component was very successful. Because both the number of small industrial projects and the challenges in developing and deploying calculators were greater than program staff anticipated – leaving less time available to do a more difficult task than anticipated – a larger than anticipated proportion of small industrial projects had custom estimation of savings.

Enhanced Lighting

Enhanced Lighting (the component name used in the *Program Delivery Manual*; termed *NWTAN* in Figure 2) is a BPA initiative that helps lighting trade allies grow their businesses through participation in utility lighting efficiency incentive programs. It is an extension of the existing Northwest Trade Ally Network (NWTAN) to drive more industrial, as opposed to commercial, lighting projects.

ESI's Enhanced Lighting component standardized lighting project incentives across utility service territories. Implementation contacts noted standardized incentives were important to the lighting trade allies driving projects. Contacts noted that trade allies often work across utility territory boundaries and were better able to give consistent program information to end users because of standardization of program guidelines and incentives between utility service territories.

Enhanced Lighting staff and services help trade allies participate in utility incentive programs, offer valuable trainings and industry news, and provide useful forms and resources. Industrial lighting specialists are assigned to participating utilities to assist in these efforts. ESIPs play a key role as a third-party source of quality assurance to end users working with trade allies.

Through the TAN, trade allies (electrical contractors, distributors, manufacturer representatives, designers, and regional manufacturers) and utilities work cooperatively to help end users make cost-effective, energy-efficient lighting choices. Trade allies leverage the program incentives on behalf of selling their goods and services.

The Enhanced Lighting component delivered 10.37 aMW of energy savings according to program data, or 38% of the industrial savings targets set out in the Northwest Power and Conservation Council's Sixth Power Plan for program years 2010 and 2011. Implementation contractor contacts described TAN as successful, exceeding its lighting savings goals within the first year of the program. Contacts further noted that lighting projects frequently drive additional ESI projects.

ESI Energy Management Pilot Components

The Sixth Power Plan notes that 30% of BPA's available conservation potential lies in capturing energy efficiency opportunities resulting from strategic energy management and improved operations and maintenance (O&M) practices. BPA launched the Energy Management Pilot (Energy Management Pilot) in 2009 to capture such opportunities. Energy Management Pilot consists of three core pilot features: Energy Project Manager, which augments end user staffing to pursue capital improvements; Track and Tune, which addresses O&M savings; and High Performance Energy Management, which addresses strategic energy management at the corporate level.

The Energy Management Pilot components encourage firms' adoption of strategic energy management and implementation of low- and no-cost operational improvements. EPM provides resources to establish energy management and increase energy awareness within plants. Track and Tune and HPEM offerings are designed to help firms identify and demonstrate sustainable energy management practices. Contacts noted that end users were able to select their TSPs for technical work and energy saving estimates, which helped to increase end users' confidence in the Energy Management Pilot.

Energy Project Manager

Energy Project Manager (EPM) augments end user staffing to facilitate pursuit of other energy management pilot components and also custom projects (capital upgrades). EPM co-funds an energy champion or management representative to be responsible for increasing energy savings at sites with large savings opportunities and a willingness to invest, but limited personnel to make the projects happen.

When a customer signs up for this pilot component, it commits to develop a portfolio of projects that exceed one million kWh energy savings and to assign an individual to manage those projects. Participants hire or assign an employee to the role of EPM. Participating firms determine the level of compensation and the energy savings goals. BPA's EPM funding is linked to the size of the energy savings goals and performance in meeting those goals. One EPM can be shared by multiple industrial sites. The EPM coordinates facility-level activities with the ESIP.

BPA staff indicated that 23 EPMs were active during the 2010-2011 program cycle. Consistent with the program theory, which assumed that placement of EPMs would increase ESI project implementation, contacts reported that industrial firms with EPMs in place typically doubled the energy efficiency project uptake they had achieved prior to their participation in EPM.[17]

[17] *Industrial Energy Management Assistance*, Jennifer Eskil, December 9, 2011 (PowerPoint).

Track and Tune

Track and Tune (T&T) pursues O&M savings. T&T leverages technical expertise – ESI technical service providers (TSPs), industry or technology experts, or in-house experts – for facility tune-ups, action plan development, and implementation support for O&M savings. The program requires that the facility have a system to track energy performance and provides funds to install that system if needed.

T&T participation begins with a scoping audit, conducted by a TSP or ESIP, followed by a tune-up based on the results of that audit. TSPs and/or ESIPs work with facilities staff to develop action plans, which the facilities implement. Implementation staff conduct annual reviews throughout the participant's T&T agreement to track the achieved annual savings and provide incentive payments based on them.

Contacts said that T&T participation was lower than anticipated: six end users participated in T&T during the 2010-2011 program cycle. Contacts attributed the low program uptake to utilities' concerns about whether T&T projects could be absorbed by their goals and budget, because they are uncertain about the amount of their BPA allocations during subsequent two-year BPA program cycles.

High Performance Energy Management

High Performance Energy Management (HPEM) is a hands-on training program to address culture change through corporate management and goal planning related to energy management. Participants attend monthly sessions as one of a cohort of representatives from various industrial facilities and work through the process of planning and implementing energy management activities over the course of a year.

HPEM is designed to increase the number of energy efficiency projects at participant sites and seeks to make smaller projects more cost-effective. Contacts explained HPEM looks at: management within an organization; engages an executive sponsor and operations staff; develops long-term energy-savings goals; and provides low-cost and no-cost capital projects for consideration.

HPEM incentive payments are based on energy savings. Like T&T, HPEM requires participants to track energy performance and provides funds for installation of the equipment necessary to do so. In addition to offering incentives based on net energy savings, HPEM offers a per-unit-of-production method for calculating energy savings. Participants use program savings calculation tools to measure energy savings progress; the *CUSUM* reporting tool measures variances in facility energy use comparing usage before and after program supported efficiency improvements are performed.

Each cohort includes approximately ten facilities. The program seeks to ensure that none of the facilities in the cohort are competitors so that each member of the cohort will be willing to share information openly. However, some of the utilities implementing HPEM found it difficult to

conform to this guideline, since particular industries tend to be concentrated within the same region.

Program Theory, Strategy, and Tactics

Program Theory: Facilitate and Focus

Prior to development of the ESI program, BPA Energy Efficiency identified several barriers internal to BPA to engaging the industrial sector effectively and capturing the increased industrial savings targets included in the Sixth Power Plan, including: a lack of technical staff working in industrial markets; the need for disciplined project pipeline management; and a lack of consistency in market participation, documentation requirements, and incentive levels.[18]

The program theory assumed that project uptake would increase, and deep and sustained energy efficiency among end users would be achieved by addressing the barriers internal to BPA and providing the following program elements:

- A sufficient number of technically proficient engineering consultants to assess and develop energy efficiency projects;
- One-on-one personalized support to industrial end users;
- A diverse portfolio of energy efficiency program offerings, including traditional custom projects, trade-ally-driven lighting and small industrial projects, and strategic energy management components;
- Increased and standardized incentive levels; and
- Improved project pipeline management.

From interviews with ESI staff and reviewing the program's logic model, the evaluation team determined that the key program strategy is to leverage the entire program portfolio to move industrial energy efficiency from *measure-by-measure* approaches to *whole-of-enterprise* approaches. The logic model describes increased end user energy efficiency focus as a critical near-term program outcome driving project facilitation.[19] The program improves end users' focus on energy by overcoming barriers associated with project facilitation – which include providing

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18 See: *www.bpa.gov/energy/n/industrial/pdf/ESI_Program_FAQ_101909.*

19 Among other outcomes, the logic model (*BPA Energy Smart Industrial Program: Early Evaluation Report,* prepared by The Cadmus Group, Inc. for Bonneville Power Administration, June 18, 2010; page 26) describes increased end user focus and awareness of energy efficiency and efficiency investments as critical near-term program outcomes for driving intermediate and long-term program outcomes.

project resources, reducing end users exposure to risks from projects, and deepening end users' trust in program partners.

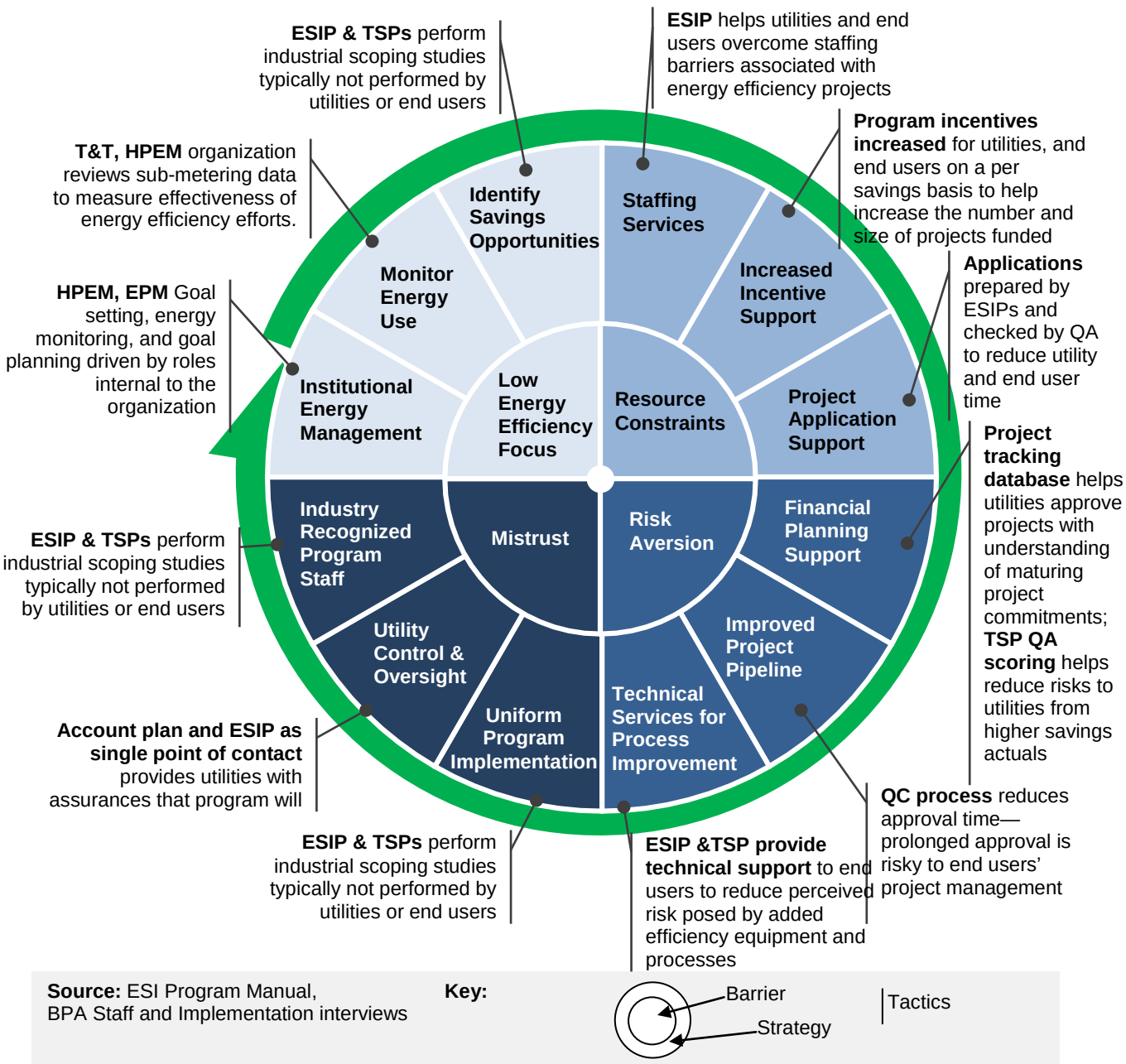
As the program gains end users' trust and awareness of energy savings opportunities, market actors can pursue more projects of greater complexity, such as custom projects and Track and Tune. Deepening marketplace trust in the program helps program representatives gain access to end users' organizational processes and management. End user participation in ESI strategic energy management components leads to greater energy focus among end users. As the program maintains its ability to facilitate projects and sustain higher levels of end users' energy focus, end users complete more projects through the program.

Strategies and Tactics

Figure 3 displays the ESI program activities to overcome the market barriers. The four barriers comprise the core of the figure; while the second *inner ring* represents the strategies to address these barriers. The *text callouts* are the specific tactics the program employed to implement the activities. The outer *green ring* represents deeper levels of marketplace energy focus.

For example, a custom project may begin with a scoping study performed by an ESIP or TSP to identify savings opportunities at end user sites. The ESIP manages program activities on behalf of the utility and project activities on behalf of the end user; program incentives help utilities and end users overcome financial constraints associated with the custom project. The TSP scoring system and project tracking database help: utilities to overcome financial risks and commit to projects by supplying a more accurate estimate of project completion timelines and project savings; and ESIPs and TSPs technical services to better ensure projects do not negatively affect end users' operations. Lastly, the program's utility account plan sustains utilities' trust in program activities by giving utilities oversight over a single point of contact; and the technical expertise and reputation of ESIPs and TSPs help end users trust the services they receive through the program.

Figure 3: **ESI Program Strategies and Tactics**



Source: ESI Program Manual, BPA Staff and Implementation interviews

Assessments of Program Design

We provide in Chapter 3 an assessment of program design effectiveness from the perspective of the market – participating utilities and end users. In this section, we present BPA and

implementation contractor contacts' assessments of the program design, based as well on our assessment of the consistency of the as-implemented program with the as-designed program, as reflected in the program logic model.

Contacts' Appraisal of Status of Program's Barriers

BPA and implementation contractor contacts, as well as the program's savings achievements, suggest the program successfully addressed utility and end user market barriers.

Resource Components

BPA's internal review recognized "disciplined project pipeline management" as an essential component to engage the industrial sector effectively. Implementation contractor contacts explained that ESI opportunities are at risk when firms have to wait for BPA approval on project activities; industrial budget cycles frequently require swift project approval processes to facilitate end users' ability to apply the incentive toward the project cost.

Most interviewed implementation contractor contacts described the project approval timeline and process as reasonable. According to one contact, "Ninety-five percent of projects are approved within a two week window." Proposals are reviewed by the team's QC engineer prior to submittal, increasing the likelihood that all data required by the reporting software and approval process are complete and accurate, thus facilitating rapid approval by the BPA utility Contracting Officer Technical Representatives (COTRs).

BPA COTRs are responsible for approving projects and managing aspects of ESI's Quality Control Plan. However, contacts agreed that there are times when the process is slow; delays are typically linked with resolving technical issues and addressing special requests. Contacts noted that COTR approval processes associated with "contracting issues" are particularly time-consuming. Some contacts described inconsistencies among COTRs in the criteria they use to assess project proposals. These contacts noted that sometimes COTRs provide different explanations for similar types of rejections. Such inconsistencies result in some projects being delayed while comparable projects are not.

To address this issue, implementation contractor contacts suggested streamlining QC COTR process flows, establishing guidelines for ESI project approval, and providing market actors with clear instructions to navigate them. Yet, even while desiring less inconsistency, one contact noted that requirements can be onerous at times, recommended that "resources [expended to meet proposal requirements] should be scaled based on the size and type of ESI project."

Program documentation specifies that implementation of the small industrial component would include development of calculator tools; that is, BPA and RTF-approved energy-savings calculators that can be used in implementation. BPA and the implementation contractor conceived of calculators as a means to improve the cost-effectiveness of small projects, by facilitating end users' and vendors' ability to fill in data about their pending projects and submit applications to BPA for review and approval.

The ESI team employed one calculator (for compressed-air) during the 2010-2011 program cycle, augmenting the few existing calculators. However, the team developed several template measure calculators; that is, calculators that are approved by BPA ESI engineers, but not by the RTF. Overall, contacts said ESI calculator development did not occur at the level or pace conceived prior to program launch. Regarding the pace of calculator development, SI measure team contacts reported a lack of time to engage in development of calculators following program launch, due to their day-to-day program management responsibilities. Furthermore, the contacts considered calculator approval processes and facilitating their ability to run in BPA reporting systems. The contacts anticipated having sufficient time to develop additional calculators during the 2012-2013 program cycle.

Additional long-term barriers to calculator development may curtail the pace of their creation. One BPA contact noted confusion over calculator ownership and maintenance may have slowed or stopped calculator development. Also, one implementation manger stated that trade allies often lack the technical expertise to accurately use the calculators.

Implementation contractor contacts said that during the 2010-2011 program cycle, most small industrial projects were processed through the regular custom project route. One contact recommended a cost-effectiveness review of SI's M&V processes, believing that the amount of time required to complete SI's custom M&V processes were roughly equivalent to those of large ESI projects.

The SI measures team was responsible for helping trade allies to use the compressed air calculator as intended. The contacts estimated that only about 15% to 20% of trade allies were capable of correctly using the calculators. SI contacts reported a need to consider the qualifications of the individuals using the calculators; they suggested that perhaps utility personnel or program staff could more readily use the calculators than trade allies.

Clearly, all of the resource program design elements work together to reduce utility and end user barriers to industrial efficiency. To highlight a few, the following design elements appear from contacts' assessments to be key to the program's success:

- **Dedicated staff** conducting outreach, project identification, project development, and project reporting/submittal activities;
- **Increased and stable funding**; and
- **Uniform program (incentives, services, requirements) across the region**, enabling the development of clear supporting materials (such as the website) and guidance for TSPs and trade allies.

Pilot Components

According to their analysis of projects at participating end users, implementation contractor contacts said that both the number and comprehensiveness of energy saving projects increased

among EPM and HPEM participants. These reports are consistent with the program theory, which assumes EPM and HPEM participation would deepen end users' energy focus.

Most BPA and implementation contractor contacts reporting on the energy management pilot noted that up-take of Track and Tune fell short of staff's hopes. Contacts attributed utilities' low Energy Management Pilot/ T&T program uptake to the following factors:

- Lack of familiarity or comfort with the Energy Management Pilot program;
- Concerns about whether BPA will continue to offer Energy Management Pilot during subsequent two-year BPA program cycles; and
- Concerns about absorbing Energy Management Pilot projects into their (contacts') goals and budget due to uncertainty about their BPA allocations during subsequent two-year BPA program cycles; lack of assurance from legislators that I-937 utilities can count Energy Management Pilot savings toward their I-937 goals.

During the program cycle, the ESI team investigated utility responses to T&T through focus groups and learned that a shorter end user time commitment reduces the utilities' risk. In response, in April 2011, the team reduced T&T's minimum five-year end user commitment to three years. According to implementation contractors interviewed in October 2011, no additional end users had initiated T&T participation. One implementation contractor contact expressed the point-of-view that T&T uptake would increase if the program commitment was further reduced to one year.

Implementation contractor contacts reported plans for additional modifications to T&T. Contacts noted that T&T's up-front costs and M&V requirements increase projects costs, thus lowering cost-effectiveness and making smaller T&T projects less attractive. Contacts said they were developing/revising program elements to support T&T projects and reduce costs. Such a program design change is anticipated to increase the appeal of T&T to both end users and utilities; the smaller financial obligations associated with smaller T&T projects would reduce the utilities' risks associated with the multi-year T&T end user contracts.

To further increase T&T's cost-effectiveness, one implementation contractor contact suggested calculating incentives on the basis of "straight energy savings" and eliminating the requirements to supply invoices and the verification of labor hours. The contact expressed that tracking labor costs around T&T projects are sometimes difficult for program participants.

One contact expressed the point-of-view that some end users do not have the right kind of corporate culture necessary to integrate HPEM's corporate management- and culture-related model. The contact noted that the first six months of HPEM's twelve-month training program focused on establishing end user goals, management plans, and teams; participants did not begin to implement energy-saving projects until the seventh or eighth month. The contact suggested modifying HPEM training to support end user identification and implementation of energy savings projects between the third and sixth month of the training period.

Additionally, one implementation contractor suggested offering end users less expensive options for participating in HPEM training (such as delivering the training via webinars) would help attract smaller industrial end users.

Comparison with Logic Model

The current evaluation includes the objective of comparing as-delivered program design and implementation with the program logic model, and assessing areas where the program is not working as expected. The logic model comprises four graphics: one for the ESI program as a whole and one for each of the three pilot components.[20] The Cadmus Group, Inc., under contract to BPA, prepared the logic model in early 2010, based on working sessions and interviews with ESI BPA and implementation contractor staff and on the *Program Delivery Manual*.[21] Program staff confirmed the logic model provided an accurate characterization of the 2010-2011 program. For our task of comparing the as-delivered program with the logic model, we primarily reference the *Program Delivery Manual*, as it provides more detail than the logic model.

We found that the implemented program closely follows the *Program Delivery Manual*, with the exception of the following two types of design modifications: incremental modifications – minor changes resulting in little or no impact to planned program activities; and major changes – changes to the status of key program resources, plans, or systems resulting in changes to market relationships or alterations to the focus of the program with regard to a target or goal.

Incremental Program Changes

As might be expected, the ESI program underwent incremental changes after development of the logic model. These deviations from the logic model reflect appropriate adaptive management and do not indicate a problem. We discovered the following key incremental program changes:

- Use of account plans with utilities that have the top 30 highest industrial load, instead of employing account plans with all utilities. Utilities with lower industrial loads have fewer technical and program staff to manage structured relationships outlined in custom account plans.
- Expansion of data systems to include a *Microsoft SharePoint* system to aggregate files, lists, and project databases functioning outside of *TrakSmart®* . These supplemental files help to document pre-project activities.

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20 *BPA Energy Smart Industrial Program: Early Evaluation Report,* prepared by The Cadmus Group, Inc. for Bonneville Power Administration, June 18, 2010.

21 *Bonneville Power Administration Energy Smart Industrial Program Delivery Manual,* Revised 09/29/09.

- Development of a protocol for implementation staff to *carbon copy* BPA on all program communications with end users and utilities. The program administration requested this protocol following initial issues with implementer program communications.

- Slowed pace of ESI calculator development causing small industrial projects to be measured and verified through the "light" M&V protocol as described in BPA's 2010 and 2011 *Energy Efficiency Implementation Manuals.*

- Addition of QC process performed by the implementation contractor's QC engineer not specified in the *Program Delivery Manual*. Proposals are reviewed by QC engineer prior to utilities submitting these proposals to the COTRs. This process was added to reduce proposal times caused by inaccuracies in submissions to COTRs.

Major Program Changes

We discovered the following key major program changes that depart from the practices set out in the *Program Manual* and the logic model. Major changes include::

- **Movement from BPA management of the TSP pool to the implementation contractor**. BPA staff explained this decision was motivated by a desire to save program budgets and reduce procedural redundancies. The initial *Program Delivery Manual* specifies a process allowing TSPs to submit project proposals directly to BPA, ESIPs were to review the submitted proposals. Under the current program implementation, the implementation contractor assigns projects to TSPs, rather than a BPA TSP Manager specified for this role in the *Program Delivery Manual*.

- **BPA discontinued direct marketing to data centers –** an emerging sector focus for the program – early in the program implementation. The program determined market barriers in this sector where difficult to deal with under the current program design.

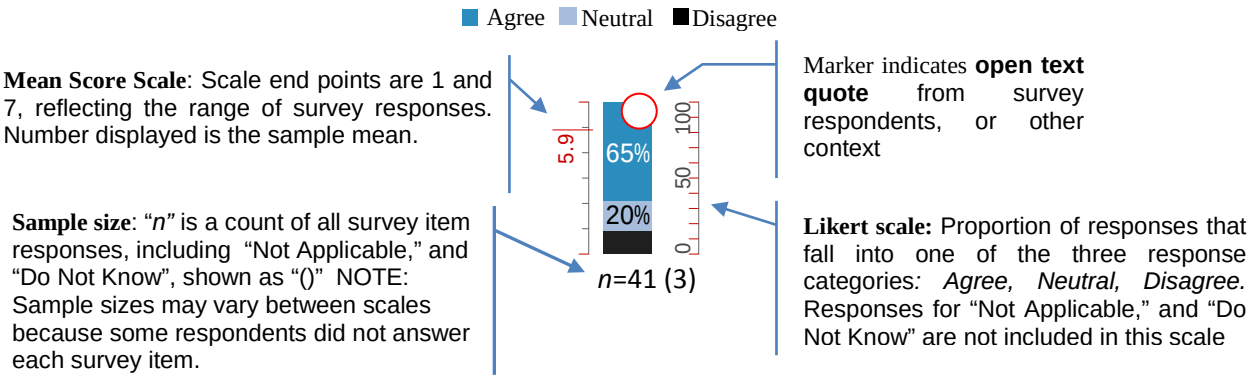
3 DESIGN EFFECTIVENESS

OVERVIEW

By providing numerous services to utilities and end users, the program influences utilities and end users to participate in ESI. These services also shape utilities' and end users' experience with the program and their ability to complete projects. This section: assesses the effectiveness of the program's design to motivate program participation and deliver a program that satisfies participants' needs; and describes resource components (custom projects, small industrial, and Enhanced Lighting) separately from the Energy Management Pilot components (Energy Project Manager, Track and Tune, and High Performance Energy) in order to better deal with the differences between these component clusters.

Findings in this section summarize data from surveys with utility representatives and end user contacts regarding their specific interests in and their experiences with the program. For most survey questions, respondents rated their level of agreement with statements about the program on a scale of 1-to-7, where: "1" indicated *strongly disagree* with the statement, "4" indicated *neither agree nor disagree*, and "7" seven indicated *strongly agree* (Figure 4). For reporting purposes, responses were classified into three agreement categories: survey responses "1" and "2" two were reclassified into *disagree*, "3", "4", and "5" were classified into *neutral*; and "6" and "7" were classified into *agree*. A combined mean score of the values between "1" through "7" are also reported. Additionally, key open text comments from survey prompts are included in the report to give more contexts to survey results.

Figure 4: How to Read Survey Response Diagrams



UTILITY ASSESSMENT OF ESI

Overall, the program generated participation from a large portion of utilities (72% of utilities either signed an agreement to offer an ESI component or completed a project through the program) and most utilities gave positive ratings of the services they received through ESI. All non-participating utilities have smaller- to medium-sized industrial loads. ESI's wastewater management sector focus ensures that all utilities have industrial load qualified under the program.

Reasons for Not Participating

The evaluation asked utilities why they chose not to participate in ESI, seven utility survey respondents do not offer any industrial programs in their service territory. Their responses for the reason can be grouped into two segments:[22]

- The utility believes there is not enough industrial load in their service territory to support program activities (three respondents mentioned).
- The utility believes industrial customers would not be interested in efficiency programs (two respondents mentioned).

Overall Support

Participating utilities were surveyed concerning their experiences with the program. Most responses indicate utilities find core program process and services helpful to increasing the number of industrial projects they complete. Survey results in Table 4 indicate 84% of respondents agree the program is comprehensive for "covering all types of industrial savings opportunities." Utilities with neutral perspectives on the program's comprehensive design tended to be larger utilities that offer ESI components to compliment their existing offerings.

The program's services and service quality helped reduce utilities' administrative burdens with ESI. The ESIP role manages most of the project administrative responsibilities for utilities, including measurement and verification of installed equipment, project reporting, and technical services. Additionally, one utility noted the quality of technical support delivered by the program significantly reduced their administrative and technical engagements on projects. .

Most utility respondents (79%) agree they "retained an appropriate level of control over the way the program was implemented." These utilities described their satisfaction with the program's reporting, which informed them about key activities in their service territory and helps them to

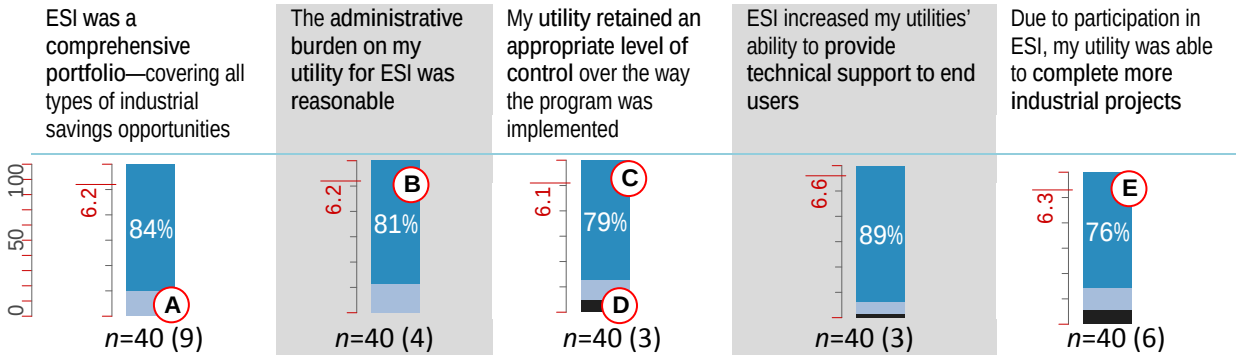
[22] Two respondents did not indicate a reason why their utility is not offering industrial programs.

maintain control over the program. However, a few larger utilities with existing programs indicated they would have preferred involvement in the program's design.

Eighty-nine percent of surveyed utilities agreed the program increased their "ability to provide technical support to end users."

More than three quarters of respondents agreed that the program helped them complete more industrial projects; most respondents indicated the ESIPs' technical expertise and dedicated utility role function greatly expanded their ability to generate and handle industrial projects.

Table 4: Utility Responses to Overall Program Experiences



A: "We only use ESI as a complement to our portfolio."

B: "I had 2 similar sized projects at one company; one was done by the facility's consultant, and the other by an ESI TSP. I had to rework the entire engineering analysis of the consultant's project (120 hours of my time), which is my experience working with consultants. The TSP did a wonderful job. We only had to attend a few customer meetings on that project."

C: "ESI keeps me informed about what is going on. It's easy for me to deal with the program. It's almost unreal."

D: "We would have liked more influence over the program design. BPA tends to do the 'one size fits all' when there are significant differences between large and small utilities. This has limited our ability to leverage the program."

E: "Having an ESI representative to handle the Industrial projects was a big part of our success. We would have never generated those savings without ESI."

RESOURCE COMPONENT

Surveyed utilities that offered at least one resource-based ESI component indicated their utilities' involvement with offering incentive components for custom project, small industrial, and lighting programs. Forty-eight utility survey respondents indicated whether ESI support was involved in delivering industrial program components in their service territory, if the utility offered their own component without ESI support, or they indicated if no component of the given kind was offered in their service territory.

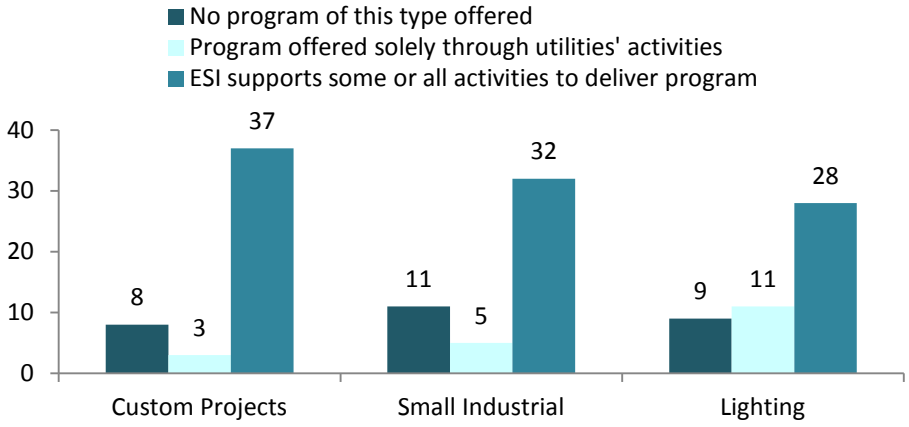
Forty of the forty-eight survey respondents indicated that a custom project component of some kind was offered in their service territory; eight respondents indicated that no custom project component was offered in their service territory (Figure 5). Three utilities offered their own

custom project component, and thirty-seven offered a custom project component with support from ESI.

Thirty-seven of the forty-eight surveyed utilities offered a small industrial component; thirty – two of these thirty-seven offered the component with support from ESI.

When compared to the other resource components, utilities are more likely to offer their own lighting component. Thirty-nine of the forty-eight surveyed utilities indicated that they offered a lighting component. Of the utilities offering a lighting component eleven out of thirty-nine offered the lighting component without ESI support.

Figure 5: Number of Surveyed Utilities Offering the Industrial Resource Components



Utilities' Interest In Resource Components

Utilities select the ESI program components to be offered in their service territory. Utilities most commonly reported not offering an ESI component because they offer a similar component (all utilities reporting this are nonstandard-agreement utilities; Table 5).

Table 5: Reasons for Not Participating in ESI (Multiple Answers Possible)

REASON	CUSTOM PROJECTS (N=4)	SMALL INDUSTRIAL (N=9)	LIGHTING (N=13)
Utility already had a similar program	3*	4*	4*
No customers in my service territory qualify for program	1	1	0
Don't know enough about program	0	1	0
Internal staffing problems	0	1	0

* Nonstandard-agreement utilities

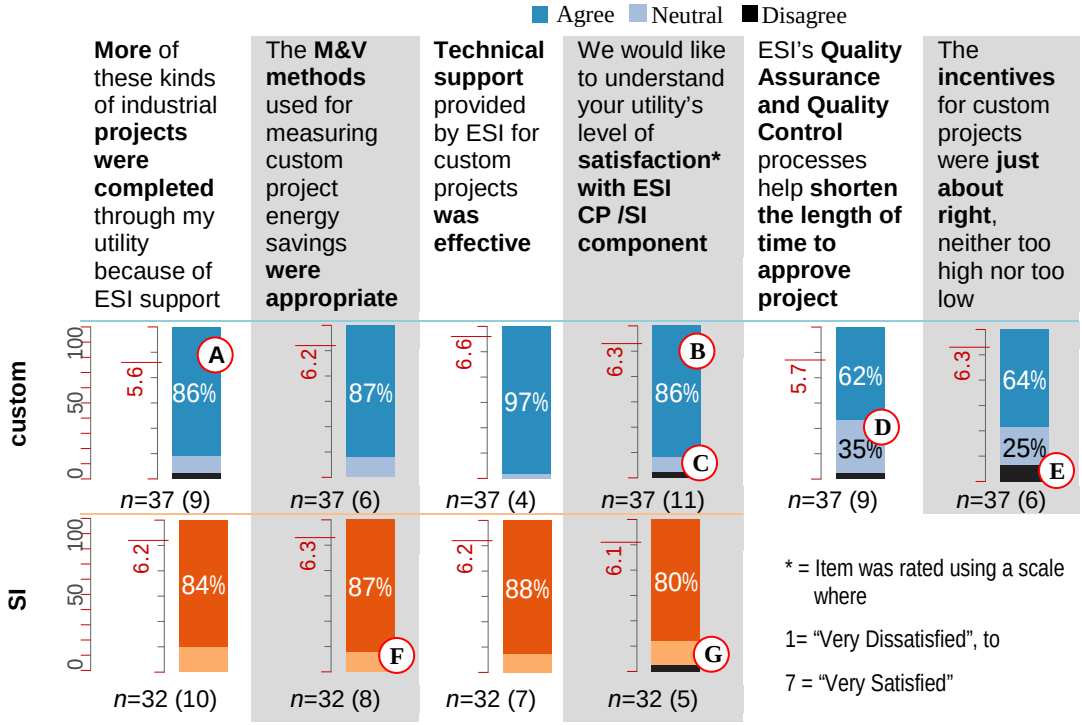
Utilities' Assessment of Custom Projects and Small Industrial Components

Overall, most utilities have a high level of satisfaction with ESI's custom project component (86% rated their satisfaction either a "6" or "7"), and small industrial component (80%; Table 6). Utilities were pleased with the program's technical support offered through ESIPs and TSPs, which help drive projects to completion.

However, custom project areas for improving the custom project component include: project approval times--utilities rated the program's QA/QC process lower than other program component elements because they feel custom project proposals require too much time; and one utility indicated concern that the program's incentives were too high, that customers might contribute a little more financially to their projects .

Small industrial improvement areas noted by respondents include a desire for increased program reliance on savings calculations, and a broader list of approved measures.

Table 6: ESI Program Support for Custom Projects (Custom Project) and Small Industrial (SI)



A: "ESI enabled us to offer technical knowledge to customers and complete projects."

B: "Higher incentives, ESIP's technical support, and the ability to interface with BPA made the program successful."

C: "I'm recommending my customers avoid ESI custom projects because the customers assume all the risks. We can't tell the customer when their project will be approved, what the incentives will be, or BPA may reject their completed project for any reason.

D: "If there is a QA/QC process it must be slowing projects down because approval times take too long."

E: "The savings levels are too high; they are not sustainable. The region and BPA had to cover the costs. Now incentives will require more BPA support. The customer needs some skin in the game."

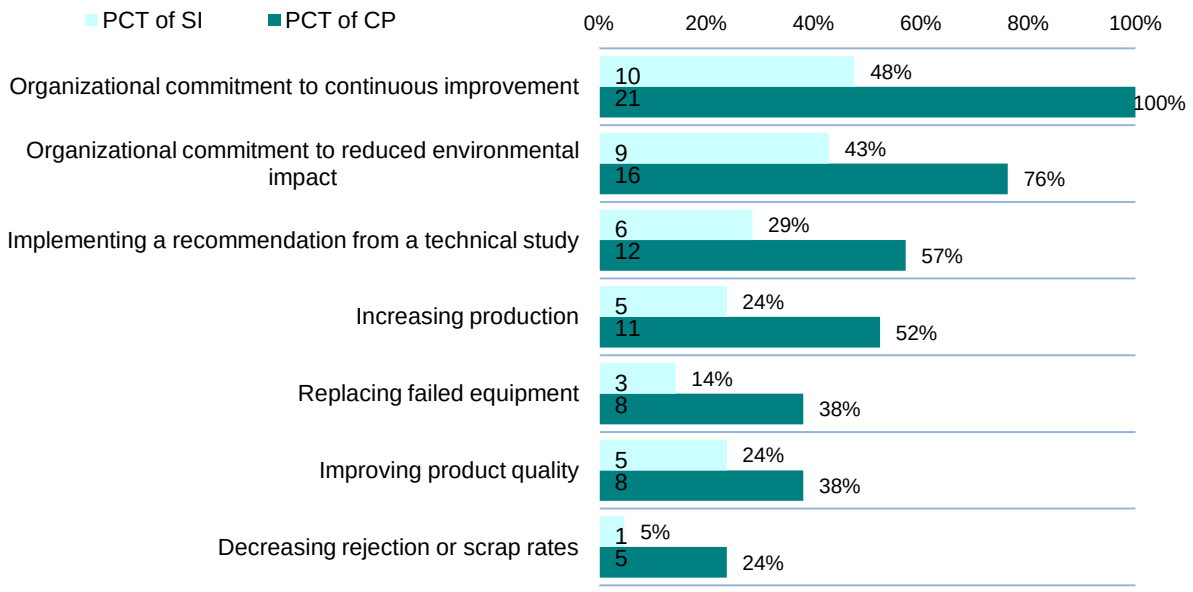
F: "All small industrial should been deemed savings."

G: "It would be helpful if there were more measures in this program."

End Users' Interests with Custom Projects and Small Industrial Components

End users are attracted to resource programs for reasons beyond energy savings and program incentives. Figure 6 summarizes reasons identified by end user survey respondents for why they chose to participate in the ESI custom project and small industrial components. The most common reasons for participating in one of these programs are: an organizational commitment to continuous improvement or reducing environmental impacts; and more than half of custom project participants became interested in the program because of a recommendation from a technical study or a desire to increase production as part of their custom projects.

Figure 6: Non-Energy Benefits of Participation for Custom Projects (CP) and Small Industrial (SI) Participants (Multiple Responses)



When program representatives contact end users early in their project planning, the ability of the program to influence projects plans and encourage program participation is improved. Table 7 indicates the program is contacting end users early in the project planning stage. Almost half of end user firms were contacted by the program when they were creating general efficiency plans and budgeting.

Table 7: Project Stage at Which Program Contacts the End User, According to End Users

PROJECT STAGE	CUSTOM PROJECTS/SMALL INDUSTRIAL	LIGHTING
No plans, program staff identified the project	3	2
General plans to pursue energy efficiency	10	3
Begun to gather information on efficiency, such as consulting technical experts	2	1
Created a preliminary plan for efficiency, perhaps with a cost estimate	16	0
Final plan for efficiency upgrade or upgrades, with an approved budget	1	0
Updated and prioritize list of efficiency upgrade projects	0	0
Ongoing energy use tracking	0	0
Not sure	0	0

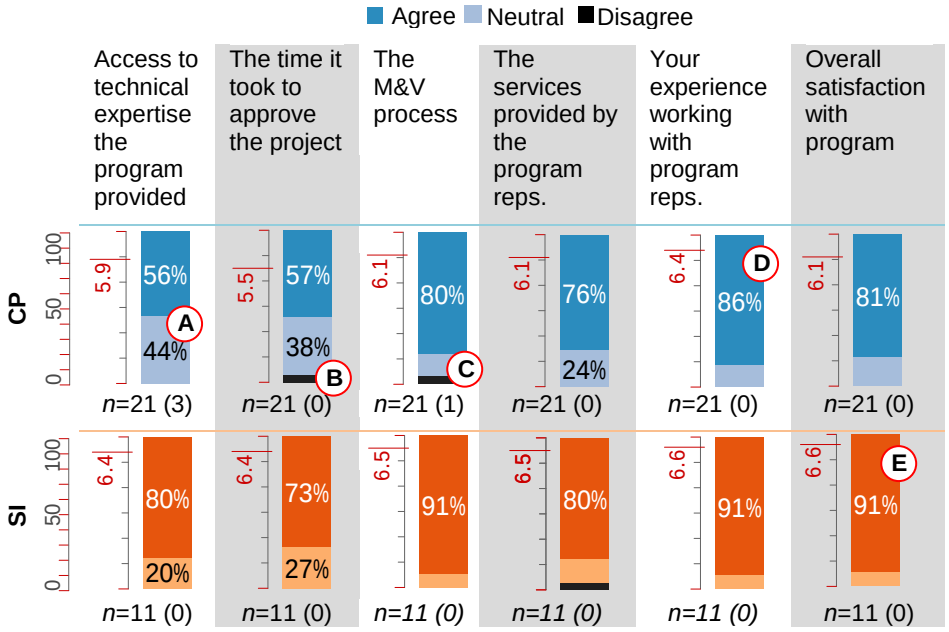
End Users' Assessment of Custom Projects and Small Industrial Components

Most end users had a high level of satisfaction with their custom and small industrial projects completed through the program (Table 8). Eighty-one percent of custom project participants and 91% of SI participants experienced high levels of satisfaction with the respective program components.

Custom project participants' overall satisfaction with the program component were moderated by perceived issues with access to technical support – 56% gave high ratings to access to technical support through the program; project approval times – 57% gave high ratings for the time it took to approve their projects, and challenges with the measurement process – 80% gave high ratings for the M&V process. Positive experiences working with program representatives – 86% of participants gave high rating, likely helped support overall satisfaction with the custom project program component.

The small industrial component's overall high satisfaction rating was likely driven by participant satisfaction with the M&V process, and their experiences working with program representatives – 91% of respondents gave high ratings to both of these survey items. Participants' overall satisfaction with the component was likely moderated by lower satisfaction with access to technical expertise through the program – 80% gave high ratings for access to technical support through the program; and project approval times – 73% gave high ratings for project approval times.

Table 8: End Users' Experiences with ESI's Custom Projects (CP) and Small Industrial (SI) Program Components



A: Evaluation observation - These are customers served by east region utilities with smaller industrial loads

B: "We have been waiting to hear back about our project for over a month."

C: "It was difficult to get BPA to accept our facility data."

D: "We knew nothing about energy efficiency prior to working with program; ESIPs have been really helpful."

E: "We have vastly increased production and at the same time have held energy use constant."

ENERGY MANAGEMENT PILOT COMPONENTS

BPA's Energy Management Pilot components emphasized organizational activities to monitor, target, and report (MT&R) energy usage as a means to increase end user firms' focus on energy efficiency.[23] Through these program components, participating end user firms were provided tools and training to: monitor energy use over time; quantify energy savings; target savings opportunities; and report progress on energy savings goals to staff and management. The three Energy Management Pilot components – Energy Project Manager (EPM), Track and Tune (T&T), and High Performance Energy Management (HPEM) – have features to address MT&R.

We assessed both utilities' and end users' concerns about participating in these programs, and their experiences with the programs. Findings in this section summarize survey responses from participating and non-participating utilities, and participating end users.

Utilities' Interest in Program Participation

Most utilities in the survey sample were active in at least one Energy Management Pilot component. Seventy four percent of utilities in the sample offered an Energy Management Pilot component, 45% offered Track and Tune, and 41% offered HPEM (Table 9). Three out of every

[23] [BPA] *ESI Program Delivery Manual,* September 2009, 72.

five utilities offering EPM completed a project in the 2010-2011 program, one in three offering T&T completed a project, and six out of eleven offering HPEM completed a project.

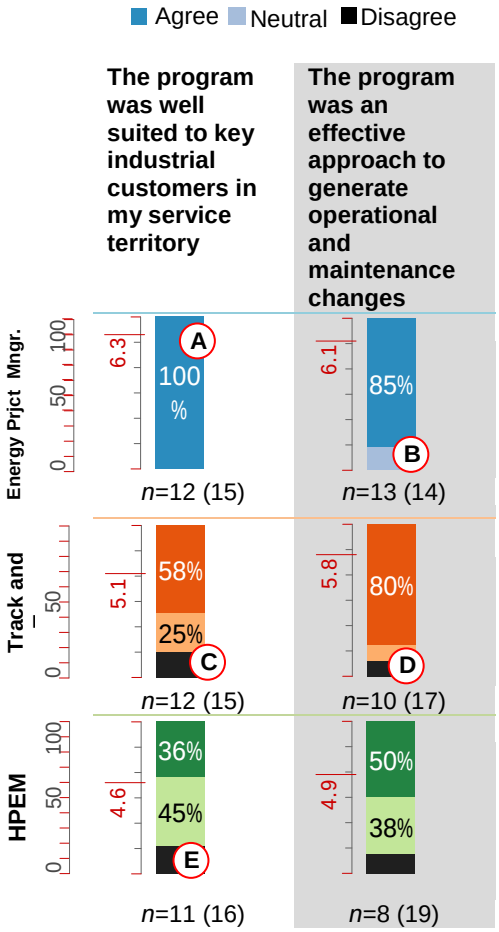
Table 9: Utility Survey Respondents by Level of Participation in Energy Management Pilot

	Energy Project Manager		Track and Tune		High Performance Energy Management	
	Count	Percent	Count	Percent	Count	Percent
Active (Completed Project in 2010-2011)	12	44%	4	15%	6	22%
Active (Did not complete project in 2010-2011)	8	30%	8	30%	5	19%
Sub-Total	**20**	**74%**	**12**	**60%**	**11**	**41%**
Not Active (Is not Enrolled in Energy Management Pilot Component)	7	26%	15	55%	16	59%
Total	**27**	**100%**	**27**	**100%**	**27**	**100%**

Utilities' perspectives on the suitability and effectiveness of Energy Management Pilot components vary between components. However, most utility respondents indicated they do not have an opinion about the suitability of these components for their service territory (Table 10). Utilities with opinions about EPM all agree the program is "well suited to key industrial customers" in their service territory. Comments by these respondents indicate their belief in the importance of having a dedicated paid position within companies to carry out energy efficiency work. A majority of respondents also indicated their agreement with EPMs' effectiveness at generating operational and maintenance changes.

Average utility ratings for the suitability of T&T (5.1) and HPEM (4.6) are relatively lower than ratings for Energy Management Pilot overall (6.3). Utilities either believe the cost of metering T&T projects are prohibitive for many industrial opportunities in their territories, or that HPEM's cohort model requires more large customers than are available in their territories.

Table 10: Utility Respondent Perspectives on the Suitability of Energy Management Pilot Components



A: "To fund a position that delivers EE is a good move that was not happening. Often EPM are held more accountable by their own company, b/c there are goals tied to the funding for EPM. Company has a bigger stick over EPM. Prior to program, projects were developed by volunteers in company."

B: "EPMs are not trained by program. It is a contracting mechanism to produce projects. EPMs have to have training through something like HPEM. The funding just secures a position."

C: "The program has a specific dollar amount for monitoring, and a high ceiling for customers they want to work with. They offer small amounts of money for metering needed to do T&T which I thought this will not work with most customers. There is a mismatch between the customer type they are targeting and the funds available for metering."

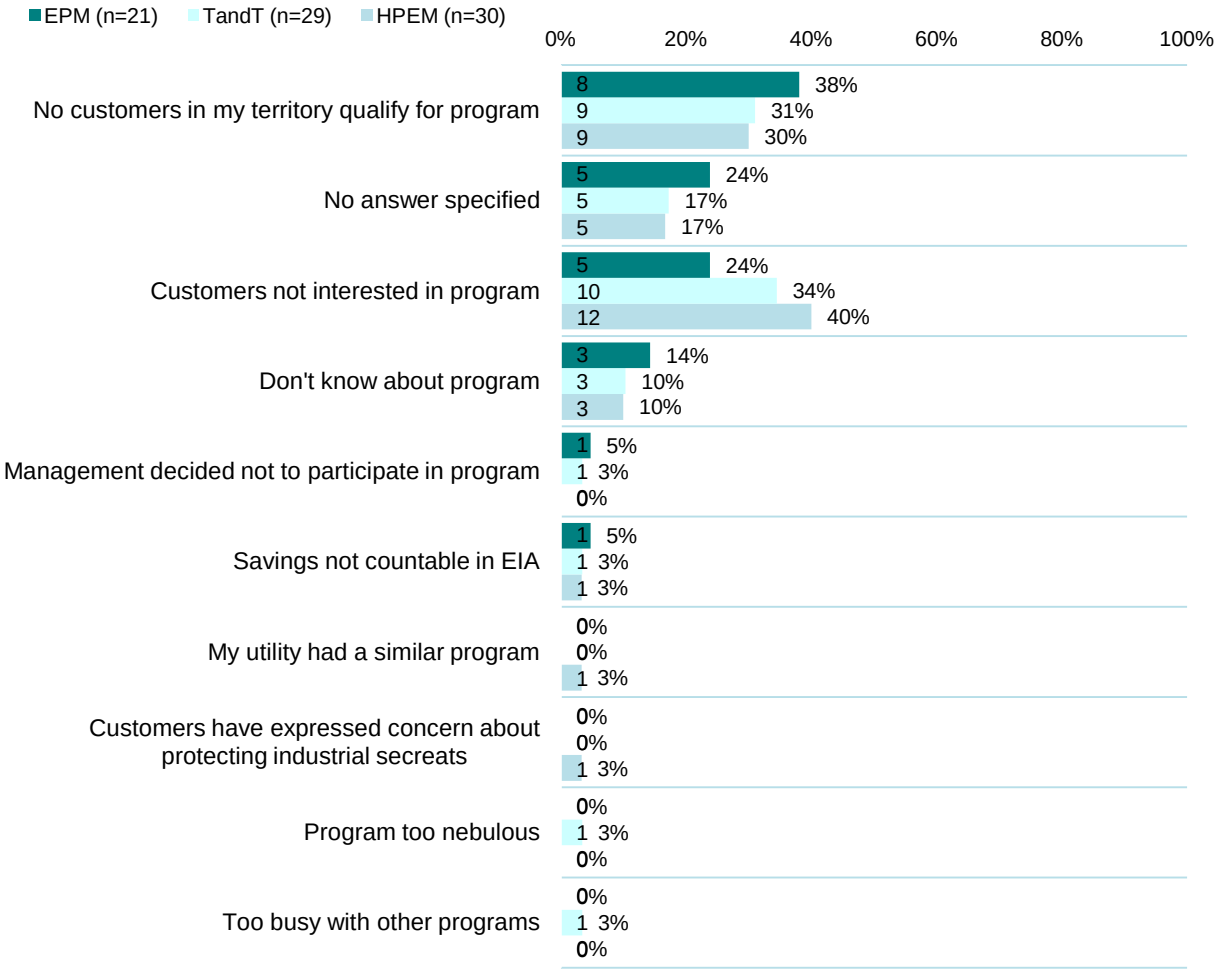
D: "This is a bad program. The region needs to look for hard savings not lifestyle-in-the-moment savings."

E: "We don't have enough cohorts to make HPEM work with our one large customer."

E: "We marketed HPEM with the launch of the program, but our customers either didn't qualify, or were not interested."

Figure 7 summarizes the reasons why utilities are inactive in the Energy Management Pilot components; responses were categorized into topics from open text responses. The most common reason utilities give for not participating in Energy Management Pilot components are the belief that customers in their service territory do not qualify for program components or the belief that customers are not interested in the components.

Figure 7: Reasons Why Utilities are Inactive in Program



Utility Experience with Energy Management Pilot Components

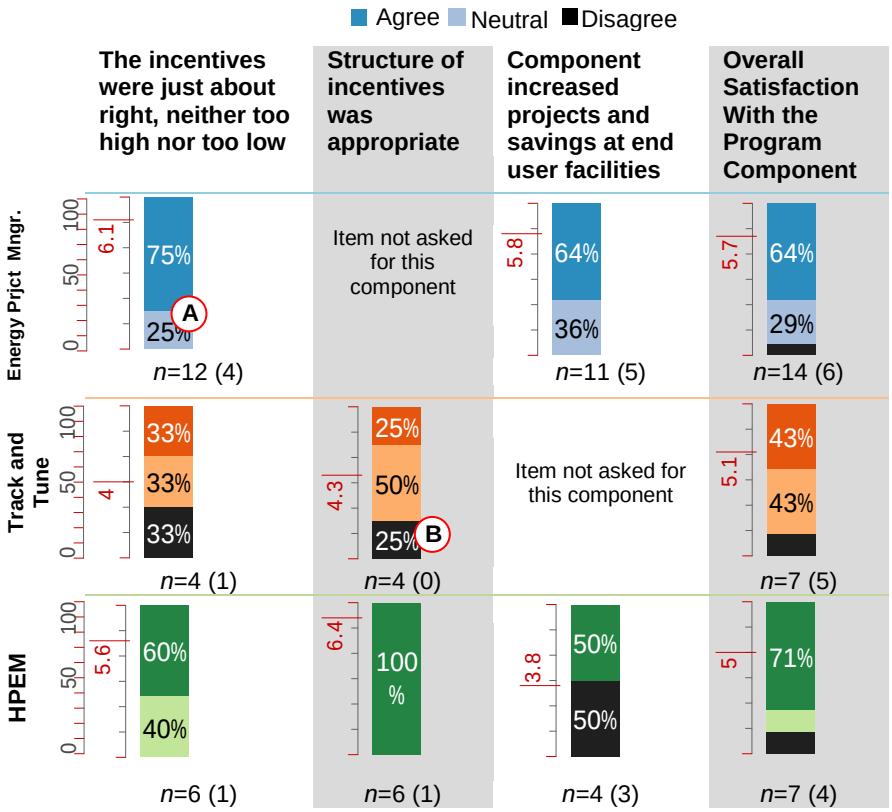
The Energy Management Pilot components had a small number of participating utilities with completed projects, as a result the survey samples for this section are smaller. Observations in this section may help BPA prioritize which aspects of programs to focus on, but these survey results should not be used for statistical inferences.

The proportion of surveyed utilities giving high overall satisfaction ratings for the Energy Management Pilot components ranged between 43% for the Track and Tune component; 64% for the Energy Project Manager component, and 71% for the High Performance Energy Management component (Table 11). Some of the relatively lower satisfaction ratings may have be driven by utilities trying to learn to manage and plan utility strategies around these new components. One utility indicated that their misunderstandings of the Energy Project Manager

measurement procedures lead to budgetary issues for the utility. Another utility expressed budgetary concerns related to allocating incentives for five years on Track and Tune projects.

The High Performance Energy Management component is designed to influence participating end users' organizational cultures to increase these firms focus on energy efficiency. One outcome of such organizational change is increases in the number of energy efficiency projects at participating sites. Two of four surveyed utilities disagreed with the statement that High Performance Energy Management increased efficiency projects at participating sites.

Table 11: Utility Experiences with Energy Management Pilot Components



A: "The program forced us to measure savings at the bus bar rather than measure site savings – which is our utility's way of measuring savings. This caused budget issues for our utility because reported savings were greater than planned."

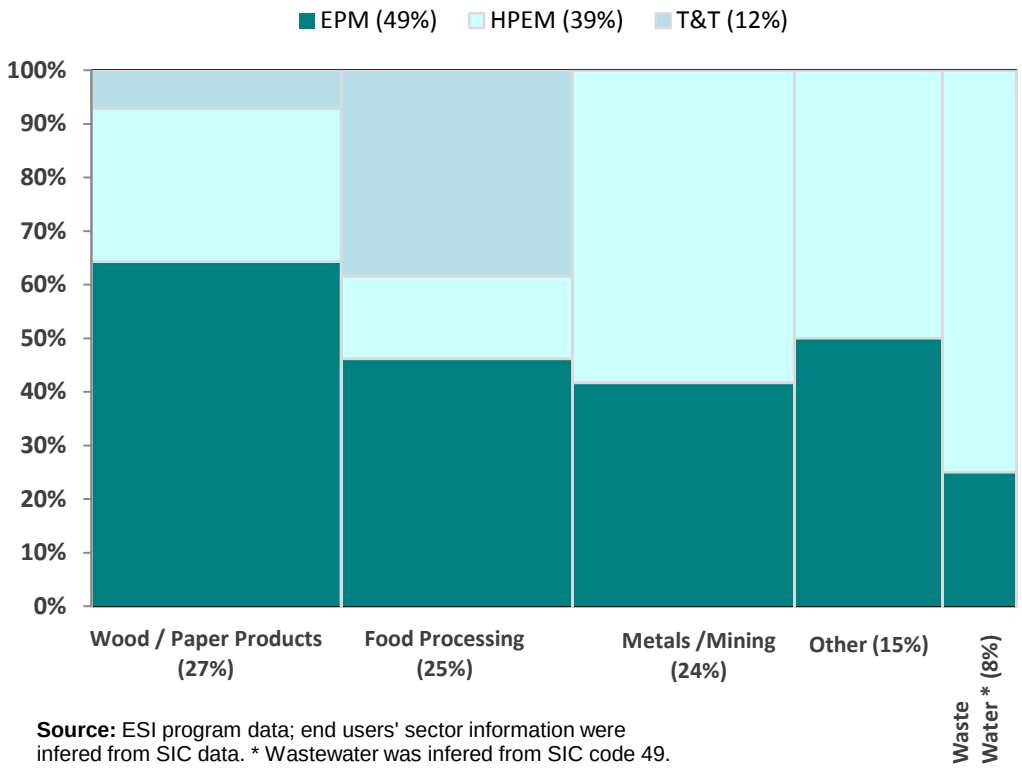
B: "We are promising funds 5 years out and we have no assurance the funding is going to be there. There is a mismatch between longevity of program and funding mechanisms."

End Users' Interests in Participating in Energy Management Pilot Program Components

The distribution of Energy Management Pilot projects tended to favor some sectors when program component type is considered. As shown in Figure 8, participation in Energy Management Pilot components was mostly driven by ESI's two largest sectors: wood / paper products (27% percent of Energy Management Pilot participants) and food processing (25% of participants). Participation in Track and Tune was limited to ESI's larger developed sectors. However, the wastewater emerging sector was more likely to participate in High Performance Energy Management than any other component. The distribution of Energy Management Pilot

participants between emerging and developed sectors is consistent with the proportion of custom projects delivered by these sectors (see Chapter 4). The EPM component delivered nearly half of all Energy Management Pilot projects, mostly from higher EPM project volumes by the wood/paper products sector.

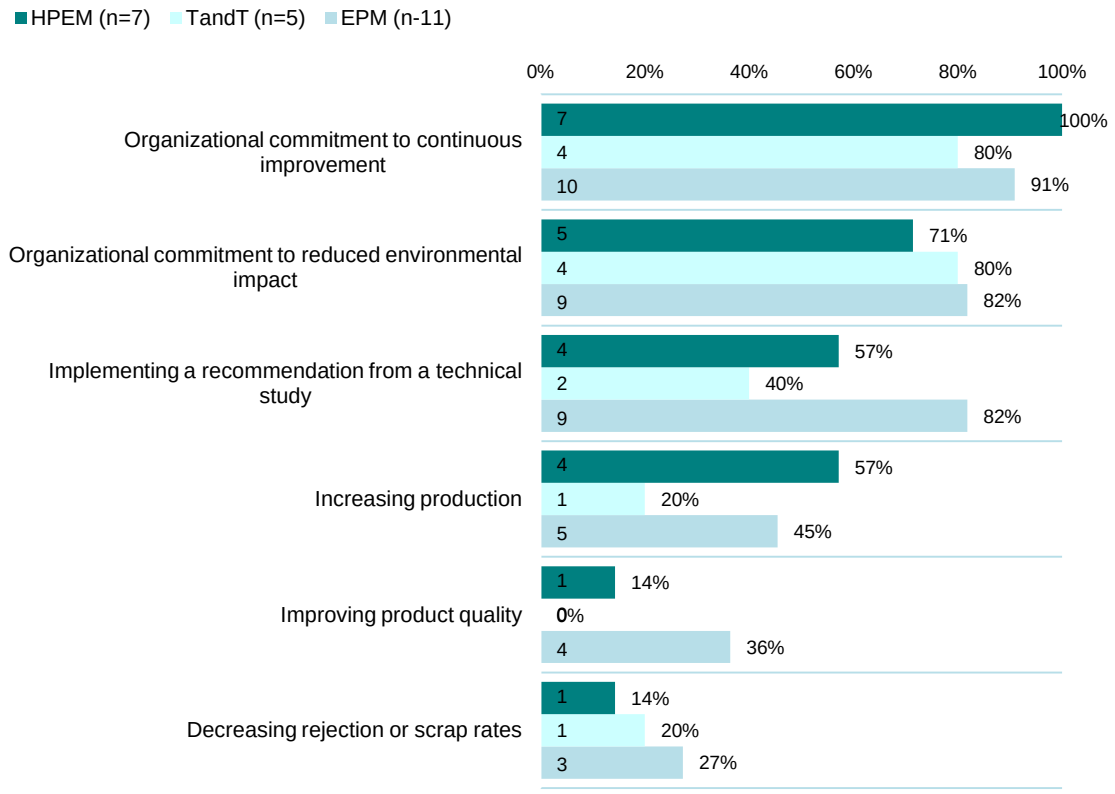
Figure 8: Energy Management Pilot Proportion of Energy Management Pilot Projects by Sector



Source: ESI program data; end users' sector information were infered from SIC data. * Wastewater was infered from SIC code 49.

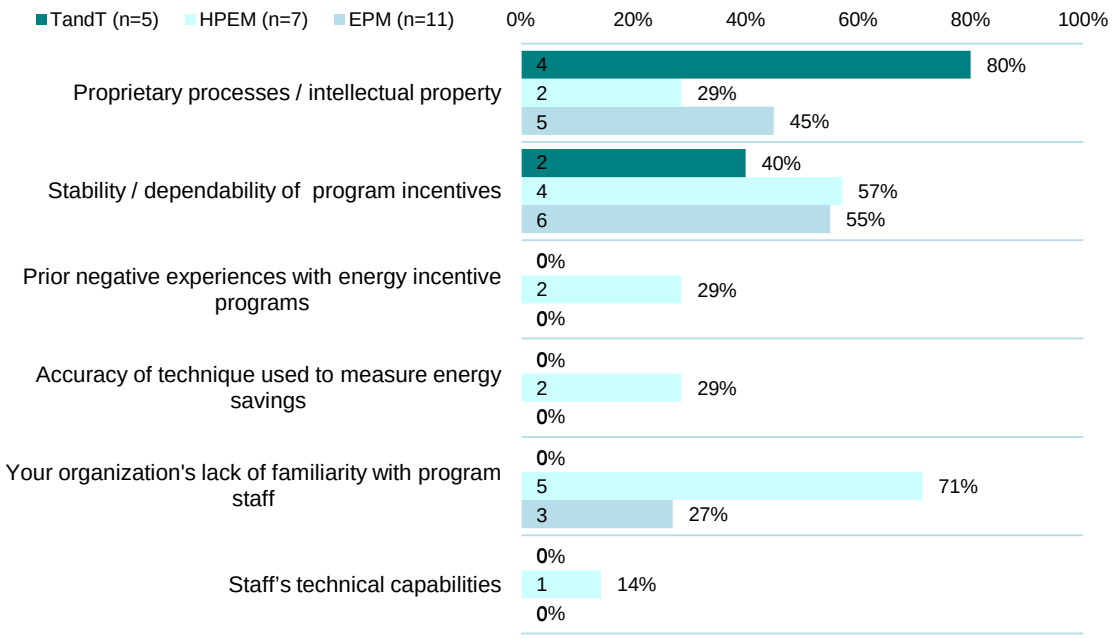
Numerous non-energy benefits were important to motivate end users to participate in Energy Management Pilot components. Similar to the participation motives of resource component participants, most end user survey respondents indicated that their organizations' commitment to continuous improvement and reducing environmental impacts motivated the organization to participate in Energy Management Pilot components (Figure 9).

Figure 9: Non-Energy Benefits of Participation for Pilot Program Participants



The program overcame numerous end users' barriers regarding participation in Energy Management Pilot components; participating end users identified concerns their organization discussed regarding potential participation. Concern over "stability / dependability of program incentives," and risk of competitors learning about their firms' "proprietary processes / intellectual property" were the most common concerns considered by end user firms prior to program participation (Figure 10). Nearly all of the Track and Tune participants (80%) were initially concerned with the exposure of proprietary processes through their program participation. HPEM participants were more likely to be concerned with their "organization's lack of familiarity with program staff" than other Energy Management Pilot participants.

Figure 10: Perceived Barriers to Participation for Pilot Program Participants



End Users' Energy Management Pilot Program Component Experiences and Outcomes

ESI's Energy Management Pilot seeks to primarily drive savings through improvements to operations and maintenance, and end users' policies and practices related to energy use; as well as increase the volume of custom projects during and beyond the program cycle. It provides participating end user firms with the tools for monitoring and reporting energy use at their facilities. From a survey with participating end users, we assessed: participating end users activities around monitoring and reporting energy savings; the effects that increased energy focus has on these firms' development of energy efficiency goals and initiatives; and their willingness to pursue efficiency management without program support.

End Users' Organizational Outcomes from Energy Management Pilot Experiences

All end user participants reported monitoring energy use at their facilities, and reporting energy use to staff and management at their firms. From survey responses, we identified three segments of program participants, with varying levels of commitment to continuing energy management activities and pursuing new activities. End users associated with 21 of the 22 Energy Management Pilot projects in the survey sample indicated that they planned to continue the energy management activities they pursued under the program, including capital investments and O&M, even after support for these activities from the program ends.

The most common segment in the sample are *Achievers* (64%, Table 12), which are end user firms with expectations of adding new energy management activities to their organization after program support ends, and have specific capital improvement and O&M strategies linked to their energy efficiency goals. Five out of seven HPEM participants, six out of ten Energy Project Manager participants, and three out of five Track and Tune participants are located in this segment. The high representation by HPEM participants in this segment would be expected, given HPEM's emphasis on organizational development around energy efficiency goals.

Strivers (18% of the samples) are similar to *Achievers,* but lack specific O&M and capital improvement strategies to realize energy efficiency goals. Two out of seven HPEM participants, and two out of ten Energy Project Manager participants were classified into this segment.

One-Offs are firms that will likely not add new energy management activities after program support ends. Higher representation in the *One-Off* segment by firms with Track and Tune projects is consistent with Track and Tune's system-specific approach to energy management.

Table 12: Segments of Energy Management Pilot Participants

SEGMENT	CHARACTERISTICS	PROJECT COUNT BY COMPONENT			PERCENT OF PROJECTS
		EPM	T&T	HPEM	
Achievers	Plans to continue energy management activities after program support ends Plans on adding new energy management activities after program support ends Has specific O&M / Capital strategies linked to energy efficiency goals	6	3	5	64%
Strivers	Plans to continue energy management activities after program support ends Plans on adding new energy management activities after program support ends Has specific energy efficiency goals, but no specific O&M / Capital strategies to achieve these goals	2		2	18%
One-Off	Does not plan to add new energy management activities Three of four firms plan on continuing energy management activities after program support ends	2	2		18%

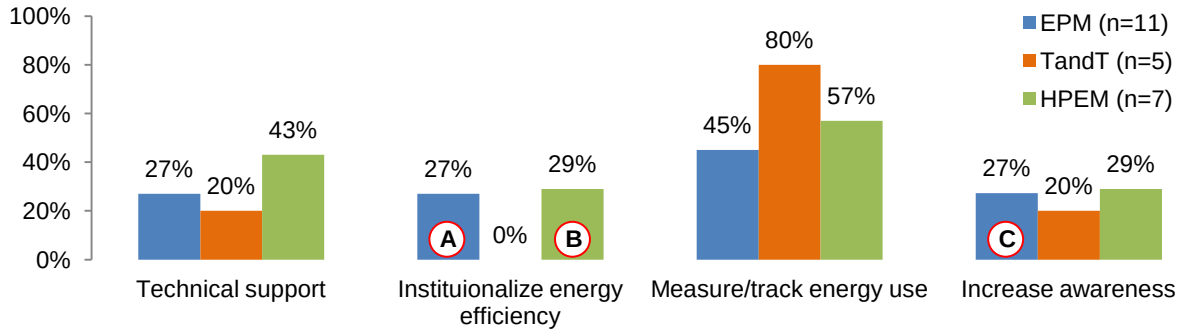
Source: Data are from end users participating in Energy Management Pilot components. Survey questions concerned firm's specific organizational commitment to energy efficiency through goal planning and specific O&M / Capital strategies; plans to continue energy management activities after program support for those activities end, and plans to add additional energy management activities other than those currently pursuing under the program.

Participants were most likely to identify *measuring and tracking energy use* as the aspect of the program component most critical to continuous process improvement (Figure 11); respectively eighty percent of Track and Tune, 57% of High Performance Energy Manager, and 45% of Energy Project Manager respondents cited *measuring and tracking energy use* as a critical aspect

of the program component. *Technical support* and *increased awareness of energy efficiency* were cited as critical aspects of the component by roughly one in five to one in four participants in each component.

Additionally, respondents' comments elaborated on broader energy management practices developing at their firms because of their participation in Energy Management Pilot. One respondent described that the EPM role arose out of their firm's desire to institutionalize environmental practices, and that the EPM role has grown to involve promotion of energy efficiency awareness at that organization. Similar to the *Achiever* and *Striver* segments, one respondent described how their firm's institutionalization of energy management activities has led to the adaptation of energy management activities specific to one system to be applied to different systems at their organization.

Figure 11: Aspects of Program Component Most Critical to Continuous Process Improvement at End Users' Firms (Recoded Responses, Multiple Responses Possible)



A:"We have done a lot of infrastructure work to run more efficiently from lighting to compressors. The Energy Project Manager has helped us raise awareness of energy efficiency in the company down to the smallest wrench turn. We want to be a good corporate citizen as well as save money."

B: "We are now reapplying sensible perspectives to non-typical areas. A good example is typically you shut down a refrigeration condenser when it is not needed. We now reapply that concept to a process heater."

C: "I would say raising awareness across the organization and the delegated role to push projects through across departments such as operations, engineering, and finance. The EPM role can tie these folks together and get a project implemented."

Most participants reported no difficulties using the energy savings reporting tools made available to them through the program (Table 13). However, some participants in the HPEM and EPM components reported issues communicating with program representatives about the reporting tools. One participant explained that the CUSUM tool used to measure energy savings was not working correctly for the first few months of use.

Table 13: Participant's Experiences with Reporting Program's Energy Savings Reporting Tools (Recoded Responses)

EXPERIENCE	HIGH PERFORMANCE ENERGY MANAGEMENT (N=7)	TRACK AND TUNE (N=5)	ENERGY PROJECT MANAGER (N=11)
No problems	4	3	8
Initial challenges communicating with program representatives	2	0	2
Too early to tell	0	2	1

End users reported that participation in Energy Management Pilot has elevated employees' awareness of energy management and efficiency at their organizations (Table 14). All end user respondents with an opinion on the subject agreed that their organization's employee's awareness of energy management has increased as part of their organizations' participation in Energy Management Pilot.

Table 14: Effect of End User Participation in Program Components

"HAS YOUR ORGANIZATION'S PARTICIPATION IN [EPM/T&T/HPEM] HELPED TO INCREASE EMPLOYEE AWARENESS OF ENERGY MANAGEMENT AND EFFICIENCY AT YOUR ORGANIZATION?"	HIGH PERFORMANCE ENERGY MANAGEMENT (N=7)	TRACK AND TUNE (N=5)	ENERGY PROJECT MANAGER (N=11)
Yes	7	5	10
No	0	0	0
Not sure	0	0	1
Total	**7**	**5**	**11**

Respondents offered insights into program improvements that would lead participating firms to greater awareness of and actions in energy management. Most responses concerned stable and increased program funding (Table 15). Equally important were suggestions to train others in their organization beyond the program sponsored Energy Champion regarding energy management; some of these comments concerned expanded training for management concerning energy efficiency.

Table 15: Participants' Suggestions for Program Changes Leading to Greater Efficiency (Recoded Responses, Multiple Responses Possible)

SUGGESTION	HIGH PERFORMANCE ENERGY MANAGEMENT (N=7)	TRACK AND TUNE (N=5)	ENERGY PROJECT MANAGER (N=11)
Make program funding consistent	2	0	2
More funding/incentives	2	0	2
Provide technical information about the impact of behavior change on saving energy	0	1	0
Train others in organization about program including management	1	1	2
Do not require giving out production data	0	0	1
More face-time with program representatives	0	1	0
No changes mentioned	2	2	4

Table 16 presents participants' suggestions for resources to support energy management practices; discussion follows the table.

Table 16: Participants' Suggestions for Resources to Support Energy Management Practices (Recoded Responses, Multiple Responses Possible)

SUGGESTION	HIGH PERFORMANCE ENERGY MANAGEMENT (N=7)	TRACK AND TUNE (N=5)	ENERGY PROJECT MANAGER (N=11)
More incentives	5	2	7
More technical support from program	1	1	1
Ways to convince finance department of importance of energy management	1	1	1
Provide information about new technologies	0	2	1
Provide information about best energy management practices	1	0	1
Follow-up with participants after program to encourage future energy savings	0	1	0
Specific systems training	2	0	2
Nothing specified	0	0	2

Survey respondents were prompted to describe additional program resources that would support continued levels of energy management practices at program participating firms. Most responses involved increased program incentives (Table 16, above). Other comments concerned technical

information and support including: increased technical support from the program, information about best energy management practices, and specific systems training. Other respondents would like information to help Energy Champions work with their finance departments on energy management requests and occasional follow-ups by the program to encourage future savings after their program participation has ended.

End Users' Experiences with Energy Project Manager

Overall, EPM program participants had a high level of satisfaction with most aspects of program component. Survey respondents rated their level of satisfaction with five aspects of their program experience. Responses were rated on a one to seven scale where one was "very dissatisfied", and seven was "very satisfied". Because of the small sample size, the results are reported below in narrative form. Survey responses of six and seven are reported as "high levels" of satisfaction.

All Energy Project Manager participants (*n = 11)* reported high levels of satisfaction with working with program representatives, having access to technical expertise, and the measurement and verification process. However, five out of seven respondents (four respondents indicated "not applicable" to the survey item) reported lower levels of satisfaction with the time it took the program to approve their projects.

End users reported that the EPM role has been effective at identifying energy savings opportunities. Ten out of 11 respondents agreed that their roles have been "very effective" at identifying energy savings; the remaining respondent agreed the roles have been "moderately effective." All respondents believe their organization has been acting on the opportunities identified by the Energy Project Manager, training for this role includes a focus on the identification of capital projects.

Respondents reported additional outcomes their organizations experienced as a result of their participation in EPM; these outcomes included:

- Increased organizational focus on energy efficiency (6 responses)
- Larger energy efficiency projects, and projects of a different variety (3 responses)
- Better lighting and lighting controls at their organizations (2 responses)
- Elevated visibility of energy efficiency projects throughout their organization (1 response)

End Users' Experiences with Track and Tune

Track and Tune participants have high levels of satisfaction with most aspects of the program. All survey respondents (*n*= 5) reported high levels of satisfaction with working with program representatives, services provided by program representatives, and the measurement and verification process.

On average, survey respondents reporting acting on, or having plans to act on, roughly 85% of the action items recommended by the program; the lowest reported value was acting on, or plans to act on, 75% of recommended items. The reasons respondents gave for not acting on some of the recommended action items include:

- Potential project costs and lower return on investments
- Additional staffing required
- Concern that action items might decrease product quality

Four of five respondents noted their firm installed new equipment as part of their T&T action items; all four respondents reported that the equipment is still in use. All five respondents reported that their firms have not discontinued any tune-up activities.

Monitoring and reporting sub-metered data is important to the overall success of T&T. All respondents reported that their firms continue to review sub-metered data. Four respondents reported the roles of the people who review the sub-metered data, those roles include:

- Engineering manager / industrial engineer (2 mentions)
- Environmental manager
- Plant engineer

Two of the five respondents reported that their organization uses the sub-metered data to generate custom reporting used by production and maintenance managers at their organizations.

End Users' Experiences with High Performance Energy Manager

High Performance Energy Management participants had high levels of satisfaction with access to technical expertise through the program (seven out of seven respondents gave high ratings), and the measurement and verification process (five out of seven respondents gave high ratings).

Participants gave lower levels of satisfaction for working with program representatives, and the services provided by the program representatives—two of seven respondents gave a neutral rating of four to both of these program aspects, and one respondent gave a rating of five to each aspect). Comments from respondents reflect a possible tension in cohort meetings caused by variations in the level of technical sophistication and needs of cohort members.

One respondent with higher technical needs questioned the program's ability to accurately measure savings at their facility, stating:

- *I felt like some of what they [program representatives] did, particularly around energy mapping and energy tracking, indicated that they hadn't dealt with a facility as large or as complicated as ours. They seemed to rush details like identification of what projects*

might have occurred during the baseline period and how that impacts the baseline… Instead of understanding process, they took data that they didn't know where it came from and just pushed it through statistical models. We didn't agree with their work, so we had to do it over to make sure data was accurate.

Conversely, another respondent indicated the cohort meetings were more complex than his needs, stating:

- *It was difficult to get to the same level of understanding as rest of group. There should be more focus on how to implement easy projects. The focus was more on implementing complex projects. We were six months into HPEM before we realized we could do small industrial projects; our industry is down, so we can't do large capital projects. Small industrial projects are quicker and cheaper to do. We would like to do smaller projects to prove to management how important savings are.*

Most respondents valued the meetings for giving them an opportunity to learn about energy management from peers, which helped participants believe in the effectiveness of projects similar to those completed at other organizations.

Respondents reported that HPEM's process for recognizing energy savings achievements with management has contributed to an increase in their managements' focus on energy efficiency, involvement of other groups and departments in energy efficiency activities throughout the organization, and expanding energy management to other facilities.

HPEM has a process for management to review progress and set new goals at the end of the program. Two of five respondents reported that the review meeting occurred with management. Respondents reported that they did not meet with management to review goals because: energy management savings exceeded goals, so there was no need for meeting with management; the organization was too busy to meet and review goals and progress; or the organization was too focused on economic factors impacting their business, such that management could not meet to review goals.

4 IMPLEMENTATION

EVALUATION FRAMEWORK

In a move to meet aggressive savings goals outlined in the Sixth Power Plan, BPA chose to deliver the 2010-2011 ESI program to the market through an implementation firm (Cascade Energy). Historically BPA relied on its own staffing to deliver industrial programs; however, BPA delivers ESI through an implementation firm because the firm offers needed specialized engineers who can work across multiple sectors and who have existing relationships with industrial end users.[24]

This chapter documents evaluation items requested by BPA to assess program implementation staffs' effectiveness at: 1) developing the market and driving program participation; 2) delivering the program; and 3) documenting program activities and assuring quality.

To conduct the evaluation of implementation staffs' activities, we performed:

- In-depth interviews with implementation firm managers, engineers, and staff to document the activities they perform, how they access and distribute program resources, and how they interact with the market and BPA;
- Semi-structured surveys with utilities and end users to describe their experiences and level of satisfaction at working with implementation staff, and detail the contributions utilities make with the promotion and delivery of the program; and
- Reviews of databases, project closeouts, and measurement and verification documents to assess the consistency by which implementation staff follows program guidelines and procedures.

MARKET DEVELOPMENT

ESIPs work with both utilities and end users to develop interest in ESI in local service territories. The programs' outreach approach relies on intensive relationship-building between implementation staff, utilities, and end users – an approach encouraged by previous research indicating that successful industrial programs rely on building and maintaining lasting one-on-

[24] BPA staff shared this reasoning in a kickoff meeting on 06/15/2011.

one relationships with industrial end users.[25] Consistent with this one-on-one approach, the marketing plan specified in the *Program Delivery Manual* relies on ESIPs serving as a single point-of-contact with end users and utilities, helping them identify ways the program can help meet their industrial energy savings goals.

This section, the first of the three major themes addressed in this chapter, describes the types of market development activities ESIPs perform with: 1) BPA's utility customers; and 2) industrial end users. To perform this evaluation, we interviewed ESIPs regarding the types of program enrollment activities they perform with utilities and outreach activities they perform with end users; we surveyed utility customers and end users concerning their initial experiences with the program.

Program Relationships with the Utility Market

ESIPs' initial market development activity involves working with utilities to customize the program's implementation for their service territory. Through their agreements with BPA, utilities maintain an active role in the program's delivery. Utilities' program responsibilities include determining which program components will be offered in their service territory, approving and funding all projects submitted to BPA through the program, and outlining the level of oversight and activity the utility will have with the program. This section describes: key characteristics of large and small utility service territories that affect program activities; the level of involvement utilities have with the program; and the account planning process which shapes the program's relationship with the utility and its service territory.

To conduct the evaluation of this topic, we performed interviews with implementation staff and survey utilities to describe:

- The reasons various utilities have for participating in ESI, and reasons for not participating
- How the program structures it relationship with utilities through the use of account plans
- The types of utility resources and activities involved with the program implementation

Characteristics and Program Involvement

According to ESIPs we interviewed, utilities' industrial load size is a good predictor for the way utilities participate in the program. Table 17 summarizes the similarities and differences between large and smaller utilities' program participation. Large utilities differ from small to medium

[25] Chittum, Anna; R. Neal Elliott and Nate Kaufman. 2009. *Trends in Industrial Energy Efficiency Programs: Today's Leaders and Directions for the Future*. American Council for an Energy-Efficient Economy. Report Number IE091.

sized utilities in several ways. Large utilities are noted for having one of the top twenty largest industrial loads, and these utilities often have experience implementing industrial programs prior to working with ESI. Conversely, small to medium sized utilities are more likely to be located in service territories with large geographic coverage. Additionally, these utilities often lack prior experience implementing industrial programs and often lack the technical expertise to implement these programs.

Table 17: Utility Characteristics, Program Challenges, and Involvement with ESI

CHARACTERISTIC	LARGE UTILITIES	SMALL/MEDIUM UTILITIES
Number	20	83
Characteristics	Utilities with top 20 industrial load Includes four NSA26 utilities	Relatively larger geographic service territories
Experience with industrial programs	According to ESIPs and utility contacts, most large utilities were involved with industrial programs prior to their involvement with ESI. Many of these utilities implemented industrial programs prior to ESI.	According to ESIPs and utility contacts, a low proportion of small/medium sized utilities were involved with industrial programs prior to ESI. Most small, and many medium sized utilities lack technically skilled staff to implement industrial programs.

Table 18 describes utility program participation by utility segment. Participation in the custom projects / small industrial component is higher among utilities with large industrial loads (90%) when compared to utilities with smaller industrial loads (63%); overall 68% of all utilities are participating in the custom projects / small industrial component, and an additional 11% of utilities have expressed interest in offering the custom project component. Participation levels in the Energy Management Pilot program are greater with utilities with large industrial loads (70%) compared to small utilities (10%). Overall 95% of large utilities have some interest (either currently offer a component or have expressed interest in offering a component) in offering Energy Management Pilot program components, the combined level of interest by utilities with smaller industrial loads is 25%. One hundred percent of utilities with large industrial loads participate in at least one of ESI's components (custom projects, small industrial, Energy Management Pilot, or Enhanced Lighting), and 65% of utilities with smaller industrial loads have offered at least one of these components. (Data source for Table 19: Utility engagement report, managed by the implementation contractor, updated September, 2011. Report is used to monitor utility participation and interest in each program component.)

[26] NSA—Non-Standard Agreement.

Table 18: Program Participation (Findings from Program Data Sources of Signed Agreements with Utilities, and Count of Projects)

	Completed a Project of this Kind, or Utility Signed Agreement to Offer Component			Utility has Expressed Interest in Offering This component		
	Large Utilities (N=20)	Small/ Medium Utilities (N=83)	Total (N=103)	Large Utilities (N=20)	Small/ Medium Utilities (N=83)	Total (N=103)
Custom Projects / Small Industrial	90%	63%	68%	10%	11%	11%
Energy Management Pilot	70%	10%	22%	25%	13%	15%
Enhanced Lighting	50%	25%	30%	40%	24%	27%
Completed a Project or Offers at Least One Component	100%	65%	72%	--	--	--

Table 19 summarizes utility survey findings and ESIP interviews related to utilities' reasons for not participating in some or all of ESI's program components. Although all large utilities offer at least one program component, end user participation in some components are lower than expected given those utilities'' larger industrial end user base. These utilities are typically nonstandard-agreement utilities that offer resource programs in addition to ESI's resource components. Utilities with smaller industrial loads indicated that they did not offer ESI components because they believed they did not have end users with industrial loads, or that their end users with industrial loads would not be interested in energy efficiency projects.

The structural challenges to delivering program components are greater in smaller utility service territories where there are relative deficiencies in access to regional TSPs. Conversely, structural challenges for large utilities most concerned reporting behavior energy savings to I-937 energy regulators—who may not accept behavioral based energy savings, although most I-937 utilities reported that they intended to report behavioral savings to these energy regulators. Program implementers overcame different relational barriers to deliver the program across utilities with large and small industrial loads. ESIPs reported longer engagements with larger utilities in order to work through 'strained' relationships those utilities had with BPA; whereas, ESIPs reported a greater need to develop relationships with industrial end users located in smaller utilities because those utilities did not have as many relationships with industrial end users.

Table 19: Program Challenges

	LARGE UTILITIES	SMALL/MEDIUM UTILITIES
Reasons why utilities have low / no participation in ESI	According to some NSA utility contacts, many of their end users participate in utility resource programs offered independent of ESI.	Reasons for utilities not participating in ESI: • No industrial end users in service territory • Utility believes end users not interested in energy efficiency projects
Structural challenges	I-937 utilities are working with regulators to apply energy management saving toward their savings goals; surveyed utilities intend to report behavioral savings as part of their I-937 goals	According to implementation contractor contacts there are regional deficiencies in access to TSPs caused by geographically dispersed industries which may lead to increased administrative cost from additional program travel throughout rural territories
Relational challenges	According to ESIP contacts, the program implementation was delayed in some of the larger utility service territories because these utilities had 'strained' relationships with BPA which lead the utilities to hesitate about participating in the program	The program spent much of its initial implementation developing relationships with end user firms because many smaller utilities lacked existing relationships with their end users.

Table 20 summarizes utility survey responses concerning utilities' involvement with the program's outreach and staffing contributions to the program. Forty percent (*n*=15) of utilities with large industrial loads reported having some involvement with ESI's program outreach, 65% (*n*=26) of smaller utilities reported involvement with program outreach. The program is offered with ESI branding, or co-branded with the local utilities' brand in 54% and 61% of large and small utilities' service territories respectively. Large utilities are likely to assign roughly 0.7 FTE to program activities, most of these FTE are engineering support; whereas, utilities with smaller industrial loads contribute nearly 0.5 FTE to program activities, and most of these FTE are clerical activities.

Table 20: Participating Utility Involvement and Contributions to ESI[4]

	LARGE UTILITIES	SMALL/MEDIUM UTILITIES
Involved with program outreach	40% (*n*= 15) of surveyed utilities report involvement with ESI outreach	65% (*n*= 26) of surveyed utilities report involvement with ESI outreach
ESI branding in utility service territories	BPA/ESI brand: 27% Utility brand:13% Co-branded: 27% No marketing: 33%	BPA/ESI brand:15% Utility brand:19% Co-branded: 46% No marketing: 19%
Average utility FTE assigned to ESI activities by role	**Total Average FTE 0.7**: 0.4 FTE from engineering; 0.3 FTE program management	**Total Ave. FTE 0.5**: 0.3 FTE from clerical support; 0.2 FTE program management

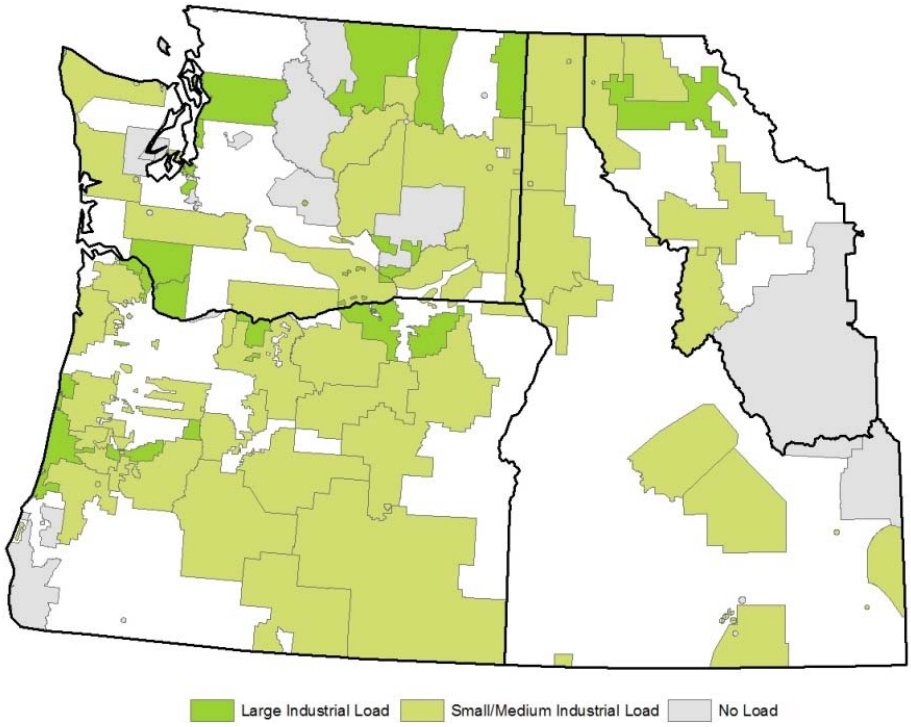
[1] Nonstandard-agreement (NSA) utilities have special contractual relationships with BPA wherein the utility supports more of the energy efficiency responsibilities in its service territory.

[3] Data from internal ESI reporting, *Utility Engagement Report*, updated August 2011.

[4] Findings from survey of BPA customer utilities.

In general, utilities with larger industrial loads have more experience with industrial programs and dedicate more technical staff to the program's delivery. However, according to interviews with implementation contacts strained relationships between these utilities and BPA greatly delayed larger utilities' participation in the program. Additionally, some of these utilities continue to offer their own custom projects program, rather than rely on ESI's custom projects component.

Figure 12: Distribution of BPA Utility Customers by Industrial Load Category



Nearly 72% of BPA utilities have either signed an agreement to offer at least one of ESI's components or have completed a project through an ESI component. All large utilities are participating in at least one component or have completed at least one ESI project, and 65% of small utilities are participating in at least one component or have completed at least one ESI project. A higher proportion of large utilities (70%) are participating in at least one Energy Management Pilot component, compared to smaller utilities (10%); additionally, 25% of large utilities not participating in the Energy Management Pilot are discussing possible participation in an Energy Management Pilot component.

Account Plan

ESI's *Program Delivery Manual* specified that ESIPs and the utilities would develop "account plans," when utilities first opted into the ESI program." According to the *Manual*, account plans

would describe utility energy efficiency goals, and the level of oversight and control utilities would have over ESI program implementation within their service territories.

The implementation contractor contacts estimated that the 30 BPA customer utilities with the largest industrial loads developed account plans, which they say represented 90% of BPA customer utilities' industrial load. Overall, the contacts said that most utilities that developed account plans were reluctant to engage in account planning as formally as envisioned in the *Program Delivery Manual*. For example, the contacts said that account plans typically did not include comprehensive reviews of utility end user accounts and developing specific strategies to engage them, as outlined in the *Manual*. Contacts said that ESIPs account planning activities with small utilities were typically limited to informal verbal agreements.

The implementation contractor contacts said that account planning resulted in most utilities maintaining a "medium level" of involvement and oversight in marketing and communications with their customers. The contacts said that utilities that selected a "high level" of oversight tended to be utilities that had contentious relationships with BPA, and large utilities that wanted to maintain existing relationships with end users. Contacts noted that during the initial stages of the program's implementation ESI's processes were frequently delayed among utilities that required a high level of oversight.

After 2012, overall utility budgets from BPA will be fixed to utilities' proportion of BPA energy sales. In the 2012-2013 budget, overall levels will be lower (sometimes 40-50% lower) than in 2010-2011, which is likely to lead to a reduction in activity in ESI.

Developing the End User Market

The program employed market development strategies to both grow the market through a special focus on *emerging* sectors and increase the depth of program activities in *developed* markets through stronger relationships with end user organizations. To achieve these strategies, the program's outreach emphasized the development of one-to-one relationships between ESIPs and industrial end user organizations. These relationships are important to industrial end users who require program staff who are trusted industry experts, and who can work with their facility, operations, and business management decision-makers.

Because the program is inextricably linked with the ESIP to end user relationships, BPA directed this portion of the evaluation to assess both the effectiveness ESIP outreach activities and the regularity by which ESIPs follow BPA's guidelines for ESI marketing and outreach.

To conduct the evaluation of this topic, we performed interviews with ESIPs and surveyed end users to describe:

- Outreach activities ESIPs perform with developed and emerging sectors;
- Challenges and successes ESIPs have promoting the program to end users; and

- The regularity by which ESIPs follow marketing and outreach procedures acceptable to BPA.

Sector Focus

ESI assigns Sector Specialists to work with emerging sector end users. Sector Specialists have industry-specific talents and reputations, and they manage sector-specific projects to help the program overcome technical and relationship barriers with end users in these new sectors. These emerging sectors include: data centers, wastewater management, high-technology, and chemical producers.

Developed Sector

The implementation contractor contacts referred to the *developed sector* as large-scale industrial and manufacturing companies that have a history of implementing industrial energy efficiency. These sectors include: food processing, wood and paper product producers, metal manufacturing and fabricating, and mining.-Contacts noted that, because many of the firms classified in the developed sector have already completed most of the obvious energy-efficient equipment upgrades, it was frequently necessary to implement new approaches to saving additional energy, such as capturing energy efficiency opportunities resulting from strategic energy management and improved O&M practices.

The developed sector produced at least three-fourths[27] of all custom savings for program cycle 2010-2011, Table 21 summarizes custom project activities by sector. Nearly half of all custom project savings were delivered from projects in the Wood and Paper Product Producers. The Food Processing sector contributed roughly one-quarter of all savings.

Emerging Sector

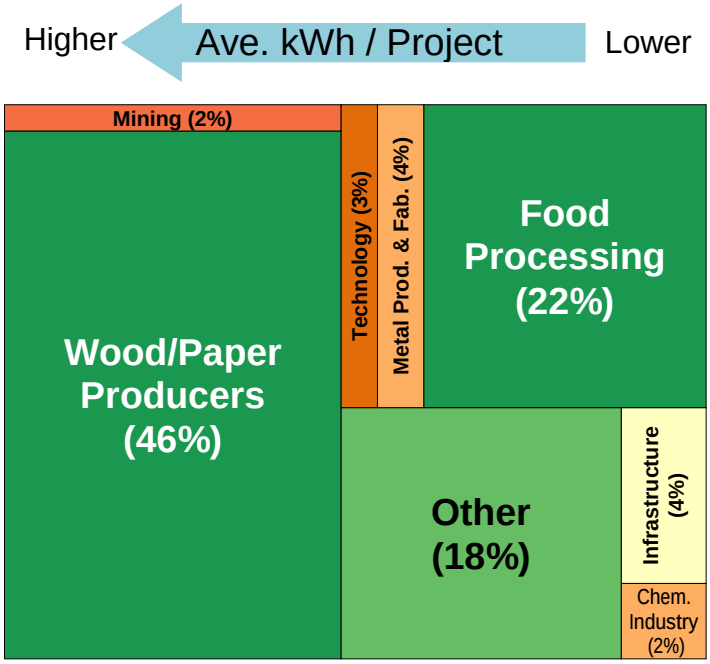
The program included a special focus on *emerging sectors* to broaden the geographic presence of the program, and involve new end users in the program. This focus achieves greater geographic coverage by including wastewater management as an emerging sector; almost all utility service territories have end users with wastewater facilities.

The program included data centers, high-tech, and chemical processing sectors as a way to involve new end users in ESI. One BPA contact noted the rapid development of technologies in these sectors pose a unique challenge to ESI, as the program is pressured to keep up with the pace of new energy efficient technologies in these sectors.

[27] Savings for sectors recorded as “Other” in the project database were not attributed to either developed or emerging sectors.

Collectively, emerging sectors contributed at least nine percent of the program's custom project savings for program year 2010-2011. Wastewater management (included in the infrastructure sector[28]) contributes 4% of the entire program's custom project savings. The Technology sector contributed 3% of the program's savings and the chemical sector contributed 2% of the program's savings.

Table 21: Proportion of Total ESI Custom Project Energy Savings by Sector, Program Year 2010-2011



	Percent of Custom		Ave. kWh / Project
	Projects	Savings	
Wood/Paper	29%	**46%**	914,467
Food Procs.	30%	**22%**	429,130
Other	25%	**18%**	414,852
Infrastructure	6%	**4%**	386,833
Metal Prod. and Fab.	3%	**4%**	680,462
Technology	2%	**3%**	861,405
Mining	1%	**2%**	982,069
Chemicals	3%	**2%**	293,405

Source: Data are reported custom project savings to from BPA's PTR system from program cycle 2010-11. Project sector information were inferred from SIC codes contained in database. The "Other" sector includes: Miscellaneous Manufacturing Industries, Communications, Rubber and Miscellaneous Plastic Products, Wholesale Trade - Durable Goods, and Agricultural Production - Livestock and Animal Specialties

Data Centers

Contacts said that identifying data centers was difficult. As one implementation contractor contact explained, although data centers or servers are a component of almost every company, because their function is mission-critical, companies do not want their existence or location made public. Related to their secrecy, contacts said that that data centers frequently prefer to implement energy efficiency projects themselves. Due to the numerous market barriers associated with marketing the program to data centers, BPA formally asked the implementation contractor to cease direct marketing to data centers during the third month of the 2010-2011 ESI program cycle. Contacts said that BPA might have plans to target data center efficiency with a separate BPA data center efficiency program.

[28] The Infrastructure sector is derived from the U.S. Census Bureau's Standard Industrial Classification (SIC) code 49, *Electric, Gas and Sanitary Services*.

Wastewater

The implementation contractor contacts indicated large potential for energy savings among wastewater facilities. Furthermore, the contacts believe this market has a high volume of end users; they estimated 3,500 operational wastewater facilities in the Pacific Northwest. The implementation contractor contacts reported a tension between balancing the dual objectives of leveraging program incentives to target large wastewater projects and broadening the program's geographic coverage among smaller utilities where wastewater end users have smaller savings potential. To address this, contacts said the ESI Wastewater Specialist divided time equally between meeting the two objectives.

The implementation contractor contacts reported success with targeting the wastewater industry at trade and continuing education series of events in wastewater. One contact emphasized the importance of obtaining buy-in from consulting engineers that work with wastewater facilities to make inroads with wastewater management decision-makers. The implementation contractor contacts noted it often requires three years to complete ESI projects among municipal wastewater facilities, because wastewater facilities are typically subject to three-year public sector budget cycles.

High-Tech and Chemical Manufacturers

Contacts noted that implementation of the ESI program included completing projects with high-tech end users, primarily silicon wafer manufacturers. The contacts noted an opportunity for increased outreach to chemical manufacturers.

Marketing and Outreach

The evaluation team learned from interviews with ESIP contacts that ESIPs marketing ESI to industrial end users face three challenges: 1) Identifying and working with key decision-makers at industrial organizations; 2) explaining program resources to end users, specific to the savings opportunities at their facilities; and 3) assigning program representatives with recognized industry credentials to work with end users.

In addition to assessing these areas of implementers' marketing and outreach activities, we also assessed the regularity by which implementers follow marketing protocols established by BPA and the utilities.

Working with Industrial End Users

Table 22 summarizes ESIPs' initial outreach and marketing activities with end users, and summarizes end users' and utilities perspectives of these outreach activities. The evaluation team found that 40% of end users learned about the program from their utilities' representatives, their TSP, or other sources. These high levels of program outreach activities from utilities and other market actors likely follow from successful activities by utilities and BPA prior to or during ESI,

and current activities by the ESIPs to help engage other market actors in the promotion of the program.

ESIPs employ multiple outreach methods to promote the program and involve new program participants, methods include: end user site visits, conference attendance, and hosting seminars. Sixty-five percent of surveyed utilities agree these activities by ESIPs have helped to identify new program participants.

Table 22: Program's First Contact with End Users

INTERVIEW FINDINGS		SURVEY FINDINGS
ESIPs, Sector Specialists, and SEM Program Managers reported multiple end user outreach methods including: end user site visits, attending conferences, and hosting seminars. The program concurrently performs outreach to consulting engineers and trade allies. The program leverages these groups' market relationships to help market the program.		***How end users learn about the program (participating end users, n=63):*** 60% of end users learned about the program from their ESIP, 13% from their utility representative, 8% from a TSP, 19% from other sources, ***How well ESI broadens end-user participation (n = 34):*** 65% of utilities surveyed *agreed** with the statement that ESIPS "helped identify new program participants." • Two-thirds of the utilities that did not agree with this statement are actively involved with delivering at least one industrial program • Two NSA utilities explained that ESIPs do not identify new projects, instead the utility assigns projects to their ESIP
OUTREACH ACTIVITIES		
SITE VISITS	ESIPs visit end users, many of whom are identified from utility-provided lists. Often **ESIPs and utility a representative attend the first visit together** because, as one ESIP stated, "bringing a utility representative for the first contact helps to 'open the door.'" Involving utility staff is more common with utilities that have an active role in industrial projects. **ESIPs deepen relationships at end user organizations,** by working with operations and senior management on production matters. ESIPs reported the lists received from utilities are frequently limited to facilities staff involved with capital improvements.	
CONFERENCES	At NW Industrial conferences program representatives **discuss the program with end users** and provide them with important marketing collateral and information, and **engage consulting engineers and trade allies** with the program	
HOSTING SEMINARS	Regional wastewater seminars held at utilities: Wastewater specialists and area engineering consultants present program's benefits to multiple wastewater mangers	

INSIGHTS:

The program **engages multiple marketing channel partners** to perform outreach to industrial end users; this likely contributes to the fact that 40% of end users learn about the program through means other than their ESIP.

ESIPs **expand the program to new participants** in territories where utilities have low involvement with industrial programs and **deepen existing relationships** in territories where utilities have active involvement.

* Survey respondents were asked to rate their level of agreement with statements on a scale from one to seven, where one meant "strongly disagree", four meant "neither agree/disagree", and seven meant "strongly agree". All responses rated with either a six or seven are here reported as *agreed.*

Explaining ESI Resources

ESIPs commented that their end user engagements often begin with a meeting concerning program offerings, strategies, and the incentives most effective for end users. Evaluation findings in Table 23 indicate end users find their initial engagements with ESIPs effective for identifying savings opportunities and learning about program resources. In these engagements, ESIPs report reviewing end users' capital projects lists and performing walkthroughs of end users' facilities.

Table 23: ESIPs' Effectiveness with Articulating the Program to End Users

INTERVIEW FINDINGS		SURVEY FINDINGS
In face-to-face meetings at end user facilities ESIPs said they perform the following activities:		***End Users' perception of ESIP's performance at identifying savings opportunities (n=27):*** 93% of end users *agreed with the statement* that their ESIP "effectively identified savings opportunities" at their facilities ***ESIPs' effectiveness at explaining program incentives:*** 97% of end users (*n*=29), and 31 of 32 utilities agreed that their ESIP "effectively explained program incentives and rebates" to end users
FACE-TO-FACE ACTIVITIES		
Identify Opportunities	• Review end users' capital projects lists • Perform walk through of facility	
Explain Program Resources	• Discuss savings opportunities and relevant program components • Explain program incentives	

INSIGHTS:

End users find ESIPs' facility walk through activities, and review of their capital project lists effective for identifying savings opportunities at their facilities. End users and utility staffs find ESIPs' process of explaining program incentive to be effective – ESIPs discuss program components and incentives following a review of end user savings opportunities.

Program Representative Credibility

To overcome end users' concerns about committing to projects, ESIPs initiate smaller projects with end users, and assign program staff and TSPs with specific industry knowledge to projects (see Table 24). Most utilities find ESIPs' end users engagements as a significant expansion of their utilities' ability to provide technical support to end users; 92% of utilities agreed with the statement that "ESI increased the ability of their utility to provide technical support to end users". Furthermore, 15 of 21 end users agreed with the statement that their program representatives "brought needed industry knowledge" to their custom projects. The remaining end users gave a neutral agreement rating ("5" on a 7-point scale); most of these end users were located in eastern utility service territories.

Table 24: Program's Effectiveness of Overcoming End User Concerns with Credibility

INTERVIEW FINDINGS	SURVEY FINDINGS
To overcome end users' concerns over risks posed by technically complex projects, ESIPs said the program affirms program representatives' expertise and reputation by : • Initiating smaller/ less technically complex projects and gradually increasing project size and scope as end users become more familiar with program representatives • Assigning program staff with specific industry knowledge to work with end users' production and process engineers; the program contracts specialized TSP support when end users request specific technical specialists	***End users perception of program representatives' reputation (n=21):*** 71% of end users with custom projects agreed with the statement that program representatives "brought needed industry knowledge" to custom projects • Remaining end users, primarily in eastern utility service territories, provided a neutral/slightly positive rating ***Utilities' perception of program's delivery of technical services (n=37):*** 92% of utilities surveyed agreed with the statement that "ESI increased the ability of their utility to provide technical support to end users" • *"Our ESIP met with customers 'one-on-one' and facilitated scoping walk-throughs; he increased our capacity to work with industrial customers because he is an expert engineer who works with the customer and asks the right questions."*

Marketing and Communication Guidelines

The program requires ESIPs to promote the ESI brand or the utility brand in all market communications with end users, and follow communication plans outlined in utility account plans. ESIPs noted most end users view the program as either BPA's or "the utility's." One ESIP mentioned that end users with longstanding relationships with the ICs may associate the program more heavily with the implementation contractor. To reduce end users' confusion about the program, this contact reported avoiding detailed discussions with end users about the relationships between BPA, the utilities, and the implementation contractor. We reviewed program marketing materials and found no instances of the implementation contractor's brand identity.

ESIPs' program communication has significantly improved since the initial program launch. According to open text comments from utilities heavily involved with the program, "program representatives' communications improved to become more consistent with utility expectations." The added program process, of ESIPs sending a carbon copy email of all their program communications to the ESI Core Team, may be associated with ESIPs' improved program communications.

PROGRAM DELIVERY

Following market development and outreach – the first major theme of this chapter – program delivery includes all activities performed by implementation staff to effectively realize completed projects. We first discuss the program infrastructure – the underpinnings of all program activity, and then assess the effectiveness of program delivery.

Program Infrastructure

Some of the initial program responsibilities of ESI implementation staff include the development of technical tools and administrative procedures to help reduce program costs, streamline processes, and efficiently organize program activities. Specifically ESI implementers are responsible for developing:

- Regular meetings between implementation firms, implementation management, and field engineers to coordinate and prioritize activities
- Tools to assist implementation
- Process for assigning TSP work

Meetings and Communication

As the prime implementation firm, Cascade Energy (Cascade) is responsible for coordinating the activities of subcontracted implementation firms, as well as ESIPs' activities, to effectively coordinate implementation activities. In these meetings the implementation firm needs to respond to challenges experienced by its representatives working in the field, and assign personnel to prioritized market opportunities.

We learned from Cascade staff that they coordinate program activities through weekly phone meetings involving: Cascade management and executives, management from all sub-contracted implementation firms, and all ESIPs. Meeting attendance is recorded and minutes are published so non-attendees can read them. In the meeting: Cascade management relays messages from BPA concerning program updates, concerns, and other expected changes; program component managers describe developments and progress with their activities; and the ESIP manager delivers a summary of key projects and any expected issues. The meeting concludes with review of protocols, including QC protocols, assignment of TSPs, the status of the *TrakSmart* database, and new marketing collateral.

Program Tools

Calculator Tools

Calculator tools are RTF-approved energy-savings calculation algorithms. BPA and the implementation contractor conceived of calculators as a means to improve the cost-effectiveness of small projects by facilitating end users' and vendors' ability to complete ESI paperwork, thereby reducing implementation staffs' administrative burden.

During the 2010-2011 program cycle, BPA announced a new version of its *Lighting Calculator* spreadsheet, which implementation contractor contacts said was an improvement based on earlier versions. In addition, BPA and the implementation contractor developed a calculator for compressed-air. Overall, contacts said ESI calculator development did not occur at the level or

pace conceived prior to program launch. The contacts considered calculator approval processes and facilitating their ability to run in BPA's reporting system to be time-intensive. They reported a lack of time to engage in calculator development, due to their day-to-day program management responsibilities. Consequently, implementation contractor contacts said ESI processed most small industrial projects through the custom projects route.

The SI measures team was responsible for helping trade allies to use the calculators as intended. The contacts estimated that only about 15% to 20% of trade allies were capable of using the calculators correctly. SI contacts reported a need to consider the qualifications of the individuals using the calculators; they suggested that perhaps utility personnel or program staff could use the calculators more readily than trade allies.

I-Score

The implementation contractor contacts assign ESI projects an Implementation Score (I-score), a scoring system which rates each ESI project in terms of its potential to deliver large, cost-effective energy savings. The implementation contractor contacts said I-scores help implementers to scale ESI resources to the savings potential of each project, select relevant ESI program offerings, and determine appropriate next steps, including whether additional resources should be assigned.

I-scores take into account utilities' and end users' level of readiness to undertake ESI projects and end users' level of energy consumption, access to capital, past participation in industrial programs. The tool supports the implementation contractor's decisions to proceed with more formal studies on projects.

Figure 13 presents comparison of BPA's Industrial Custom project cost effectiveness between program years 2008-2009 and 2010-1011; discussion follows the figure.

Figure 13: Comparison of BPA's Industrial Custom Project Cost Effectiveness between Program Years 2008-2009 and 2010-2011

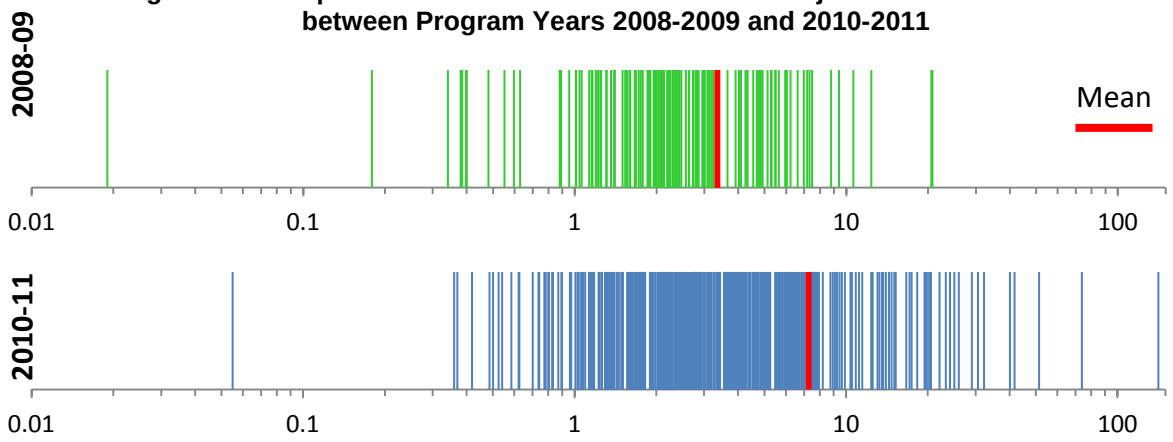


Figure 13 (above) indicates the average industrial project's cost effectiveness more than doubled from 3.4 in the 2008-2009 program cycle, to 7.3 in the 2010-2011 program cycle. This change

likely is driven primarily by the doubling of avoided costs in 2010, yet it is possible that selection of projects through the use of the I-score tool may have helped to increase the average project's cost effectiveness between program cycles.

CUSUM Report

The *CUSUM Report* is a report used by end user participants in Energy Management Pilot programs. The custom report summarizes end users' monthly energy use so they can assess the impact of their energy management practices. End users explained the value of the *CUSUM Report* during phone surveys. HPEM participants often remarked at how easy it is to interpret this report, which is important to sharing the results of energy management throughout the company. End users indicated that the report is used by operations and business managers; in one case, the report is used by a "Green Team" focused on initiatives to reduce their company's environmental impact.

Process for Assigning TSP Work

ESI provided enhanced funding for Technical Service Proposal (TSP) scoping and M&V activities. TSPs provide technical assistance to end users, helping them identify and complete capital, O&M, and comprehensive energy management projects. The program used 14 different TSP firms on projects. Use of TSPs helped to significantly improve the implementation, response, and effectiveness of BPA's industrial program. Activities and outcomes related to ESI's management of TSP consultant contracting activities are highlighted below.

TSP Consultant Oversight

At program launch, BPA's Industrial TSP Manager oversaw TSP consultant contracting, but then shifted those responsibilities to Cascade during 2010. The program's design assigned the implementation contractor the role of evaluating the quality of TSPs performance. BPA viewed the expansion of the implantation contractor's TSP oversight role—to include project assignment, to be an administrative cost savings measure.

The implementation contractor's quality director uses the TSP quality assessments to assess TSPs' level of quality for each project they complete. This assessment uses a qualitative rating system with a 1-to-5 scale[29] to score TSPs on the quality of their technical analysis, M&V activities, and project administration. Additionally, project quality is measured by the accuracy of TSPs' savings estimates in relationship to their projects actual savings. The implementation contractor combines that information with each TSP firm's proximity to end users, as the basis for its assignment of TSPs.

[29] Contacts said TSPs are required to complete additional work on ESI projects that receive a score of "3" or less in any of the categories.

Three of the five interviewed TSP contacts considered the implementation contractor's dual role as manager of TSP consultant contracting and TSP-provider a conflict-of-interest and said the implementation contractor unfairly favored its own contractors when assigning TSP work. One of the five TSP contacts described being highly satisfied with the implementation contractor's management of TSP consultant contracting. The contact noted that, in general, his firm identified ESI projects on its own, requested that the implementation contractor issue a "contract release" for the firm to conduct additional TSP-work, and retained TSP assignment on those projects. The contact clarified, "We're bringing our own projects in, and, in general, if you do the marketing they will assign it to you."

Contacts that were generally disappointed with the implementation contractor's responsibility of assigning TSPs to projects were disappointed with the number and quality of TSP assignments they received. These contacts also pointed out specific conflicts, summarized below:

- One contact said the implementation contractor received a TSP assignment on an ESI project, although his firm had helped identify the project and invested funds to conduct the initial scoping work[30].
- Another TSP contact suggested that the implementation contractor unfairly gave his firm a low score on a quality assessment, due to a disagreement about a technical matter[31].

The implementation contractor contacts said that their assignment of technical work does not unfairly favor the implementation contractors' TSPs. They explained that TSP assignment records indicated that the implementation contractor TSPs were assigned to approximately 50% of ESI projects – just as they had been before the implementation contractor assumed TSP consultant contracting responsibilities. The implementation contractor contacts attributed TSP firms' dissatisfaction with the number of project assignments they received to a sharp decline in ESI enrollment toward the end of the 2010-2011 program cycle. However, it is important to note that the three contacts who said the implementation contractor's dual roles presented a conflict-of-interest reported dissatisfaction with both the number and quality of TSP assignments they received.

30 The contact considered his firm qualified to perform the technical work. He considered the implementation contractor's decision inconsistent with the policy in the Program Delivery Manual which states, "TSP consultants that bring potential projects to the ESI program are retained to provide subsequent technical services if qualified."

31 At issue was an ESI project that, based on the ESIP's initial assessment, appeared likely to deliver large, cost-effective energy savings. However, this TSP contact said his firm found substantial flaws in the ESIP's preliminary design that presented major safety hazards. The contact said that his firm's re-design of the project likely would double the ESIP's cost estimate and deliver only one-half of the projected savings. Each firm stood behind their results. Subsequently, the implementation contractor notified BPA about the disagreement. However, the TSP contact said the disagreement was left unresolved.

TSP Assistance

Prior to ESI, utility staff issued requests for TSP assistance. Contacts said they considered this approach problematic because the utility-generated requests frequently lacked sufficient technical detail. After ESI began, ESIPs most frequently completed requests for TSP support and submitted Technical Work Requests via the *TrakSmart* system. The implementation contractor contacts said that this approach was an improvement over the pre-ESI approach, because ESIPs provided the necessary technical detail and helped increase their confidence in the program. Most implementation contractor contacts considered the amount and quality of TSP support sufficient. However, one ESIP said the TSP pool should be increased to facilitate additional cost-effective energy savings. ESIP contacts said they appreciated the programs flexibility to use non-TSP consultants to provide technical services when authorized, and that they frequently use this mechanism to find appropriate technical support, because some end users have existing relationships with energy engineers that are not program TSPs. However, contacts noted that it is necessary to work closely with both qualified TSPs and approved non-TSP consultants to clarify program policies and expectations. One ESIP contact projected that demand for TSP services among NSA utilities would increase, but was concerned that ESI funding will not support the additional demand for TSPs in the 2012-2013 program cycle.

ESIP Coordination and Involvement

Overall, TSP contacts reported being satisfied with ESIPs' coordination of activities at end user sites. However, one contact said that ESIPs directly compete with his firm for technical work. In particular, this individual said that, since ESIPs are outreach contractors for the program, the program financially supports their pre-project assessment work, while his firm receives compensation only for pre-project work on ESI projects that move beyond the pre-project stage. This contact was dissatisfied with the overlapping roles of ESIPs and TSPs.

Technical Work Requests

The implementation contractor contacts estimated that ESIPs submit Technical Work Requests—a pre-project approval form, on approximately 10% to 15% of custom projects. The contacts said the proportion of custom projects that required Technical Work Requests was warranted, because ESI's savings goals and inclusion of O&M components produced a greater proportion of projects that required technical assistance.

Effectiveness of Program Delivery

This section assesses the effectiveness of ESI program delivery by describing utility and end user's appraisal of the ESIP role, and their satisfaction with the way the program is delivered.

The ESIP role, as the single point-of-contact, is the central figure for the entire program delivery, responsible for: managing utility and end user relationships with the program, initiating and completing projects, and coordinating TSPs and trade allies' activities. Because the ESIP role is

so fundamental to the program delivery, this evaluation assesses the effectiveness of the program delivery by examining the effectiveness of the ESIPs' activities.

From interviews with ESIPs, the implementation contractor's management, and BPA staff, we identified two primary functions of the ESIP role: supporting utilities with program administration, and managing projects.

The following sections: 1) describe the consistency by which ESIPs perform the role of the single point-of-contact in the day-to-day execution of the program; 2) assess the effectiveness of ESIPs' support of utility program administration; 3) examine the effectiveness of ESIPs' project management; and 4) describe end users' and utilities' level of satisfaction with their ESIPs' program activities.

ESIP Role

In addition to their specific utility assignments, ESIPs frequently support ESI activities among specific industrial sub-sectors. This creates the potential for end users and utilities to interact with multiple ESIPs. In addition, contacts noted that end users frequently interact with TSPs, Sector Specialists, and ESI small industrial staff, independently of ESIPs. However, implementation contractor contacts generally agreed that ESIPs are informed about such interactions. In contrast, contacts noted that trade allies have no obligation to include ESIPs in communications and frequently interact with end users independently, particularly when implementing unit energy savings measures ESI projects.

ESIP and implementation management contacts said that, while ESIPs are the *primary* point of contact, they typically are not the *single* point of contact on trade ally driven projects, such as Enhanced Lighting and small industrial projects. ESI contacts noted that early in the 2010-2011 program cycle, the increased ESI project activity frequently reduced ESIPs' ability to coordinate the roles and responsibilities of different staff and subcontractors involved in ESI projects. To address this, during 2010, BPA and the implementation contractor dedicated an additional ESIP position assigned to the eight customer utilities with the highest ESI project activity, in order to avoid any issues related to communication and response protocols. In supporting the role of the ESIP as the single point-of-contact, this special ESIP role introduced the possibility of fragmentation and/or multiple ESIP contacts in a single utility service territory.

Although implementation contractor contacts acknowledged the benefits of ESIPs' roles as primary points-of-contact, they considered strict adherence to the single-point-of-contact policy impossible in some circumstances, and ineffectual in others. However, contacts said stricter adherence to the single-point policy could be enforced among implementation contractor staff, if end user or utilities' experiences during the 2010-2011 program cycle suggested that doing so would increase program effectiveness.

Market Satisfaction

Overall utility respondents and end users reported high levels of satisfaction with their ESIPs' performance: 34 of 35 utilities, and 48 of 53 end users surveyed gave a high rating for their level of satisfaction with their ESIPs' performance.

Utilities' Program Administration

Table 25 summarizes the activities ESIPs perform to inform utilities about program activities, administer projects on behalf of utilities, and report project statuses. Most all utility survey respondents reported that their ESIP is keeping them sufficiently informed about ESI activities. ESIPs inform utilities of program activities through weekly or monthly activity reports or personal communications.

ESIPs support project administration by prioritizing projects within utility budgets, and completing project proposals and completion reports for the utility to submit to BPA. Most utilities feel these activities helped reduce their administrative burden with regard to the program.

Table 25: Effectiveness of ESIPs Supporting Utilities with Program Administration

	Interview Findings	Survey Findings
Informing Utilities of Program Activities	ESIPs noted they inform utilities of program activities in the following ways: • Submitting weekly or monthly program activity reports to utilities which summarize data stored on the BPA ESI *SharePoint* • In-person, telephone, and email communication with utility personnel, as needed; in addition, one ESIP contact reported communicating with utilities via regularly scheduled conference calls	***Effectiveness of ESIPs at informing utilities of program activities (n=39):*** 87% of utilities surveyed agreed that the program kept them "sufficiently informed about ESI activities"
Project Administration and Project Status Reporting	ESIPs described many of the project administration activities they perform on behalf of utilities, such as: • Prioritizing projects within utilities' budget constraints • Completing project proposals / reports to be submitted by utilities	***Contribution of ESIP's role at reducing program's administrative burden on utilities (n=38):*** 89% of surveyed utilities agreed that their "ESIP helped reduce the industrial project administrative burden" on their utility • *"Our ESIP off-loaded work that utility staff had been doing previously."* • *"My ESIP understands our utility's budget and finds projects that work within our budget."*

Project Management

Table 26 summarizes ESIPs project management activities, and utility and end users' experience with ESIPs' project management activities.

In general, most end users agree their ESIP helped reduce project administrative burdens and communicated project progress. Most utilities and end users agree their ESIP provided adequate technical support for projects. Utilities were more likely than end users to agree their ESIP drove projects to completion; this difference in ratings is likely caused by the fact that some custom projects are implemented by engineers other than ESIPs.

Table 26: ESIPs Project Management Effectiveness

	INTERVIEW FINDINGS	SURVEY FINDINGS
Supporting End Users' Project Administration	ESIPs work with end users' business, operations, and facilities management to help shape some project administrative decisions; in many cases, end users have enough experience to deal with the administrative aspect of project decisions on their own	***End user evaluation of program representatives' performance:*** 78% of end users (*n*=27) agreed with the statement that their program representative "significantly **reduced the project administrative burden** on your organization" 80% (*n*= 25) agreed their representative "**communicated project progress** to you"
Technical Support / Project Completion	ESIPs and TSPs both support technical aspect of projects; overall, TSP contacts reported being satisfied with ESIPs' coordination of activities at end user sites	***Utilities' Evaluation of Program Representatives' Performance:*** 35 of 37 surveyed utilities *agreed* with the statement that their ESIP "**provided adequate technical support** when needed" 32 of 38 *agreed* their ESIP "helped **drive projects to completion**" ***End User Evaluation of Program Representatives' Performance:*** 81% (*n* = 49) agreed their ESIP" **provided needed technical support** / access to technical support 65% (*n*=26) *agreed* their ESIP **"helped drive projects to completion**"
Project Status Reporting	As the single point-of-contact, ESIPs are responsible for informing utilities about project statuses	***Effectiveness of program to inform utilities of project status:*** 26 of 36 surveyed utilities agreed the ESI program provided their "utility with timely reports on project progress" • *"Projects were rushed to meet September 30 reporting deadline set by BPA."* • *"We are not getting emails back from BPA on proposals and completion reports. The implementation contractor's QC folks are very responsive"*

DOCUMENT ACTIVITIES

The final theme concluding our chapter on implementation addresses program documentation activities, including quality assurance.

Industrial project management requires detailed data analysis and reporting as part of project proposals, reporting, measurement and verification (M&V), and monitoring, tracking, and reporting (MT&R). The accuracy of these data and documents reported through the program are critical to BPA's project approval process, and the overall precision of savings estimates attributed to the program.

This section describes the practices in place to protect end user data, assure quality of projects and documentation, and conduct M&V. Our discussion of M&V includes ESI's activities for custom projects, an independent review of custom M&V documentation, and ESI's activities for HPEM and Track and Tune projects.

End User Data Management and Access

Program representatives analyze sensitive end user data as part of M&V and MT&R reporting. BPA requested the evaluation also document how these data are accessed and stored. To describe how end user data are managed, we interviewed the QC Team concerning data storage, coding, and access procedures for both custom projects and Energy Management Pilot project data.

End user's custom project data captured by the program may be retained among the implementation contractor's centralized program files, or held by ESIPs or TSPs; summary project data are uploaded to *TrakSmart*. The implementation contractor accesses the raw end user data when the QC Team requests it from the ESIP or TSP as part of their detailed review of completion reports. These data are not part of the official submittals to BPA; however, the QC Team explained these data are subject to the same level of security as data submitted to BPA. Project data are moved from receiving servers to repository servers; no protocols for data encryption or password protection were reported for these files.

For HPEM and Track and Tune, end user baseline and pre and post data may be stored in two locations: in BPA's *TrakSmart* database, or in *Excel* files kept by end user project managers, ESIPs, or TSPs. The QC Team uploads raw data to the secure *TrakSmart* database; these data include raw data for the baseline model, data captured during the reporting period, and other pre-implementation data.

End user data are further protected through the use of data coding practices. The program asks end users to mask their data by using a normalization factor in the MT&R models. To maintain consistency with the data throughout the period, end users record these normalization factors.

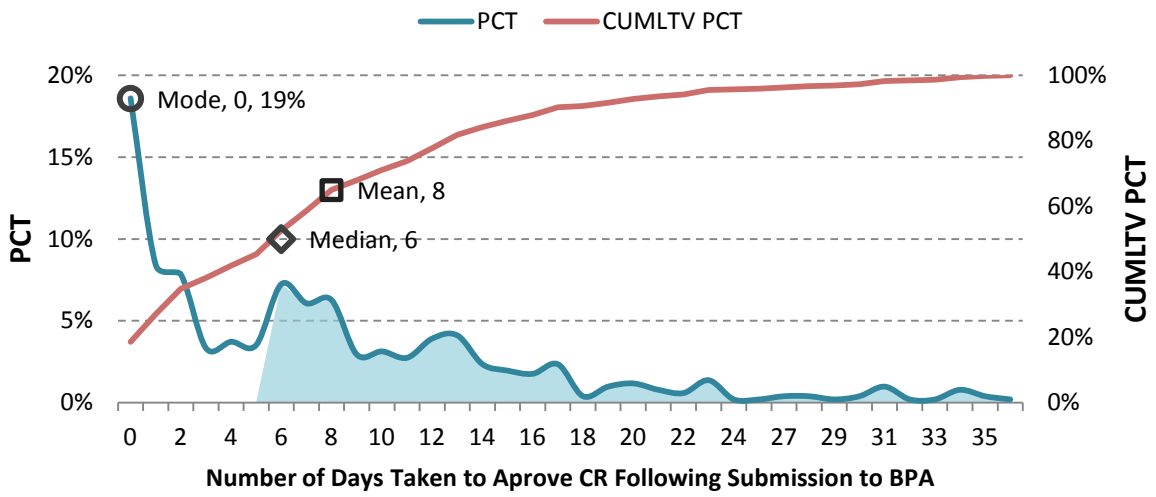
Quality Assurance

To help reduce project approval times, the program developed a Quality Control (QC) Team that makes recommendations to COTRs for each custom project proposal (CPP) and project completion report. COTR's approval of completion reports trigger BPA to issue project incentive funds to the respective utility. The QC Team is comprised of personnel from the implementation contractor.

The QC team reviews both CPP and custom project completion reports submitted by the utility to BPA through its PTR system. The QC Team writes recommendations to the respective COTRs suggesting the COTR approve or disapprove submissions based upon their findings. To preserve the independence of the quality control activities from the implementation activities, the QC Team typically does not review M&V plans while under development by ESIPs and TSPs or prior to submitting to the PTR. Noted exceptions to this occur when the QC Team assists new ESIPs with particularly unique or challenging projects. The QC Team also participates in weekly implementation staff meetings where the Team advises meeting attendees about common reasons for CPP and completion reports being returned for rework. The QC Team noted 13% of CPPs were returned in program year 2011.

QC Team activities are designed to help reduce the COTRs' decisions on submitted completion reports. Figure 14 summarizes the number of days required to approve custom project completion reports following their submission from the utility to the PTR. The typical (median) project required six days to approve during the 2010-2011 program cycle; the average approval time was 8 days; and the most common project approval occurred the same day the project was submitted. BPA's policy is ten working days to approve a project, but those submissions returned for modification may have longer periods between initial submission and approval.

Figure 14: Days to Approve ESI Custom Project Completion Reports – 2010-2011 Program



Data Source: Project Data from BPA's PTR database. Data are not corrected for BPA's weekend and holiday schedules.

Custom Project M&V

The ESI program conducts M&V on custom projects (including custom Small Industrial and custom Lighting) and MT&R on HPEM and Track and Tune projects. The program conducts these activities for all standard-agreement utility projects and for the HPEM and Track and Tune projects of nonstandard-agreement utilities. Nonstandard-agreement utilities conduct their own custom project M&V; COTRs, not the ESI program, provide quality assurance for these projects.

ESI M&V plans are inspected under the criteria and requirements specified in BPA's *Implementation Manual*. The 2010 and 2011 *Implementation Manuals* governed the 2010-2011 ESI program.

In general, there are four steps in the process, from the development of M&V plans by ESIPs and TSPs, to the approval of completion reports by COTRs. We documented these M&V steps through interviews with QC Team staff.

Step 1: M&V Plan Development

The ESI implementation team conducts step 1.

An M&V plan is developed during the custom project proposal (CPP) phase. ESIPs write M&V plans for most projects. TSPs support larger projects and they typically write the M&V plan as part of the assessment report, as they collect baseline data to conduct the assessment. The ESIP, having greater understanding of BPA and utility needs, has the leeway to use the TSP's M&V plan as is, modify it, or not use it and instead create its own M&V plan. Similarly, it is the utility that submits the CPP to BPA through the PTR system and so it, too, can accept, modify, or replace with its own creation an M&V plan prepared by ESI team members and can submit custom projects without using ESI services. Among the possibilities, a utility could ask a vendor to develop an M&V plan.

BPA does not require baseline data to be included in M&V plans; plans stating that baseline data will be collected are approved under appropriate circumstances. However, the majority of CPPs include summary baseline results. The implementation contractor has plans to create a two-page M&V check-list to assist ESIPs in creating M&V plans. In helping the ESIP to identify the appropriate BPA-approved M&V protocol, the check-list will also assist any reviewer to understand the plan.[32]

[32] The BPA-approved M&V protocols governing the 2010-2011 ESI program are given in the following sources: *Site Specific Verification Guidelines*, BPA (Harding, Gordon & Kennedy), May 1992; *Energy Savings Verification Protocols*, Regional Technical Forum, September 2000; *Conservation Resource Comments Database,* Regional Technical Forum.

Step 2: M&V Plan Review

The ESI QC team conducts step 2.

The QC team conducts the first of several reviews conducted for all custom projects. Once a utility has submitted a custom project to BPA, one member of the two-member QC team reviews the M&V plan using a mandatory check-list developed and provided by BPA. If they have no issues with the M&V plan, they email the utility's COTR with the completed check-list and a recommendation to approve the plan. If they have issues, they email the utility's COTR, recommending that the project be returned to the utility, via the PTR system, with a request that specific actions, identified by the QC team, be done to improve the plan.

The QC team tracks the status of all M&V reviews: date of plan approval; date of plan rejection, with reasons for the rejection; date of revised project, and accompanying plan. While the PTR system tracks only the dates associated with the final plan, the team tracks the dates associated with each iteration of the plan.

The QC team assesses each document with respect to five criteria:

- **Administrative –** problems include such things as multiple typos or punctuation errors that make the description hard to understand, wrong dates, and in the case of completion reports, errors with project costs calculations
- **M&V plan** – the plans may be rejected if they are unclear, or issues with the plan would be expected
- **Cost or invoice issue** – the PTR system itself conducts a number of checks, such as a check of the project benefit-cost ratio and date checks to ensure the project did not commence prior to COTR approval
- **Incomplete submissions**
- **Technical (primarily spreadsheet errors) –** such issues as a decimal in the wrong place, or error with a formula, as well as some issues with the data set; these errors might be in the project's assessment report, energy savings calculation and estimate, the M&V plan, and (in a subsequent step) the completed M&V report

The QC team recommends to the COTR rejection of M&V plans that are unclear, as well as problematic. Yet the team might simply desire additional information; if the information is forthcoming from the ESIP or TSP and reasonable, the initial need for such information does not result in a recommendation to reject. The team tries to anticipate in its requests the questions BPA might have. If the team has received additional information during the review process, they include it in the note section of the check-list or in the email to the COTR, for example: "We verified that one year of data is needed."

Step 3: M&V Plan Approval

BPA staff conduct step 3.

For projects with savings less than one million KWh, the COTR may unilaterally approve (or not). The approval occurs in the PTR system, which automatically issues an email to a distribution list saying the project is approved. The PTR system includes instructions for each utility as to who is on the distribution list; typically, the lists include the utility contact, the ESIP, the QC Team, and a few BPA staff.

For projects with savings of, or in excess of, one million kilowatt hours, the BPA engineer assigned to the submitting utility must also approve the project. The QC team calls this requirement out to the COTR when it submits the email recommending project approval; a copy of the email goes to the ESI distribution list, which includes three BPA engineers, including the assigned engineer.

Step 4: Project Completion Report and Review

The ESI implementation team and the ESI QC team have successive involvement in this step.

As with the CPP, the ESIP typically either conducts the M&V activities and writes the completion report or works with the TSP to do so. As with the CPP, the utility or trade ally might be involved or assume full responsibility. Generally, the person developing the CPP also develops the completion report.

The utility submits the completion report and its submission triggers an approval process similar to that for the CPP. The QC Team reviews all project documents and data (including post-implementation data and, if not previously reviewed, baseline data), completes the BPA check-list, and, if all is satisfactory, recommends approval to the COTR. The QC Team requests raw data from the ESIP or TSP if there is a need to investigate beyond the summary data.

If the QC Team is not satisfied with the M&V submission, the QC Team recommends rejection to the COTR and identifies the items needing correction or revision. When the process is complete, the PTR system notifies the utility of the approved completed project.

The QC Team reviews both the M&V documentation and project invoice documents, checking for accuracy and clarity. The QC Team recommends (or not) project approval to the COTR based on its review.

Independent Review of Custom Project M&V

We contracted Quantum Energy Services & Technologies, Inc. (QuEST) to perform an independent review of the program's M&V documentation. From their analysis, QuEST concluded that the M&V being conducted for ESI is robust and representative savings are being documented. It determined that appropriate protocols were followed for all projects given the

projected savings. Suitable documentation was provided to assess the rigor of M&V and all projects had been internally reviewed.

This analysis was performed on a stratified sample of 31 completed custom and small industrial projects, as shown in Table 27. (CP denotes custom projects and SI denotes Small Industrial.)

Table 27: Sampling Plan for M&V File Review

STRATA (KWH SAVINGS DEFINITION)	STRATA PERCENT OF COMBINED CP + SI PROJECTS	STRATA PERCENT OF CP + SI SAVINGS	SAMPLE SIZE	SAMPLE PERCENT OF TOTAL
Small (<200,000 kWh)	**64%**	**11%**	**8**	**27%**
…Small CP	27%	5%	4	13%
…Small SI	37%	6%	4	13%
Medium (<1,000,000 kWh)	**26%**	**30%**	**10**	**33%**
…Medium CP	20%	26%	8	27%
…Medium SI	6%	4%	2	7
Large (all CP) (=>1,000,000 kWh)	**10%**	**60%**	**12**	**40%**
Total	**100%**	**100%**	**30**	**100%**

Framework Structure

The analysis employed the following "report card" framework for reviewing the M&V files. QuEST submitted its per-project and summary findings to BPA under separate cover, as *Excel* workbooks.

➡ **M&V Procedural Elements**

- **Energy conservation measure (ECM) clearly defined:** Are descriptions clear? Are steps in the implement and install clearly listed? Was data used to identify ECM?
- **Type of M&V used** (i.e., energy modeling, energy indexing)
- **M&V elements:** Are elements well documented/clear? Are they reviewed and approved? Are significant comments made? Were comments addressed? Was anything missed? Were copies of calculations/analysis received in the M&V plans and reports?

➡ **Technical Assessment**

- **Proper assessment of ECM impact**?
- **Based on before-after energy use measurements**?

- **Operational verification:** Are systems performing as expected? (Well planned and documented? Light or thorough treatment?)
- **Planned data collected**: Is correct data collected? Is the duration (amount) of data (baseline and post) appropriate? Do the data capture all operating ranges? (Assessment of data collected)
- **Calculations/analysis**: Is it well documented? Is it transparent – are all algorithms explained/understandable? Are assumptions noted and described? Is the assessment of rigor in the analysis appropriate or not?

Findings

QuEST described the treatment of each criterion in words, as well as giving it a numerical score (1 through 5) comparing the project M&V to what rigorous M&V procedures should be using IPMVP as the standard ("5" indicates fully aligned with rigorous procedures). QuEST then gave each project a summary (average) numerical score.

On a scale of "1" to "5," all of the projects except two outliers scored between "4" and "5." Considering the robust nature of the M&V (high scores), QuEST anticipates an impact evaluation would confirm the project realization rates indicated by the project completion reports.

One interesting project in the medium category achieved a realization of 304%. This project consisted of replacing a damaged fan with a new high-efficiency fan. The reason for such high savings is that the baseline calculation vastly underestimated the inefficiency caused by the damaged fan. They estimated the new fan would draw 93 kW when post install data showed the new fan drawing 40 kW.

Also noteworthy are two projects in the medium category that achieved high enough savings to push them into the large category. These two projects utilized additional metering in the post install because the savings were high enough to justify the additional costs.

None of the projects reviewed, including the large category, used an IPMVP Option C whole-building approach. When projects are projected to save a significant percentage of a given facility's entire utility bill, an Option C approach is the most cost effective. The whole building approach requires little to no monitoring and is statistically the most accurate way of verifying a project's savings.

Many of the projects in the small and medium category used a calculator tool of some kind (compressed air tool, lighting calculator). The M&V conducted was simply to verify that the inputs were realistic or to correct them if they were wrong. Although calculator tools streamline analysis and include industry standards, sometimes using a calculator to model a complicated compressed air retrofit – such as a project involving controls or tying two systems together – becomes more challenging and accuracy is sacrificed.

HPEM and Track and Tune MT&R

For its behavioral energy management components, ESI uses MT&R (monitoring, tracking, and reporting) to estimate, measure, and verify savings from HPEM and Track and Tune activities (savings from EPM are documented through other components of ESI). The measurement of savings is reported through the MT&R reporting methodology referred to as the CUSUM report,[33] which reports energy savings as the difference between a system or facility's baseline energy usage compared to its energy usage after some program intervention. From interviews with QC leads, the evaluation discovered that QC activities for these projects are carried out by the Energy Performance Tracking (EPT) Team – described as the MT&R Team in the *Program Delivery Manual* – which is comprised of the QC leads from the QC Team and lead by a BPA engineer. The EPT is responsible for developing MT&R protocols and administering these protocols with HPEM and Track and Tune projects.

The MT&R *Reference Guide* draws heavily on the *International Performance Measurement and Verification Protocols* (IPMVP) Option C approach – a whole facility modeling method. The MT&R report serves as the M&V plan for HPEM and Track and Tune projects, and is used to generate completion reports for those projects. The MT&R process has two essential steps, described below.

Step 1: MT&R Baseline Model

At the outset of every HPEM and Track and Tune project, the project team is responsible for the development of a baseline model of energy use. Independent variables are tested and the model is developed to provide statistical significance. The *Reference Guide* identifies the appropriate metering duration: typically, full-year, pre- and post-periods, for multiple years of post-implementation.

The models are developed by team engineers (typically, the end user and utility are not precluded from model development). For HPEM, the engineer collaborates with the HPEM coach. All models are reviewed by the full EPT team, which typically meets monthly. Mid-month review and direction of model development occurs, as well through use of a file-sharing site. Both the BPA and the implementation contractor EPT team leads must approve the final baseline models, which then are submitted to the utility. Analogous to custom projects, utilities include the MT&R report in their CPP submittals, and the COTRs review and approve.

Step 2: MT&R Completion Report

Typically, the person creating the model monitors energy use throughout the reporting period. That person then summarizes the data and subtracts any savings attributable to custom projects

[33] *Bonneville Power Administration Energy Smart Industrial Program Delivery Manual,* Revised 09/29/09; pg. 74.

implemented subsequent to the baseline. These data and analyses are approved by the full EPT team. The BPA and the implementation contractor EPT team leads both must approve the HPEM and Track and Tune completion reports. While the baseline review is primarily technical, all aspects of the project are reviewed at completion, including invoices.

5 ADMINISTRATION

EVALUATION FRAMEWORK

An effective evaluation of the ESI program must include a discussion of BPA's administration of the program. To gather that information, we interviewed BPA program staff, implementation managers, and utilities and reviewed relevant program literature.

We identified two key administrative functions responsible for ensuring the overall consistency and effectiveness of the ESI Program: 1) organizing and monitoring program activities; and 2) managing oversight of the program implementation. Because these two administrative functions are shaped by numerous BPA departments within its Energy Efficiency department, this report expands the concept of "ESI administration" to include the BPA program manager, the ESI Core Team, and the BPA Energy Efficiency Management Team (see Figure 15). These departments' decisions and activities directly affect the organizational, oversight, and budgetary guidelines of the ESI program.

ADMINISTRATIVE ORGANIZATION

The key BPA organizational activities supporting successful administration of ESI include:

- **Strategic planning**: clearly defining program goals and strategies to achieve them
- **Defining program roles and responsibilities**: to help the program focus activities around program goals
- **Communicating about the program with key regional stakeholders**: such as Energy Trust of Oregon (Energy Trust) and the Northwest Energy Efficiency Alliance (NEEA)
- **Data tracking and reporting in support of achieving situational awareness**:[34] managing information to better assess program activities, and predict how and when the program will achieve its goals

To assess these aspects of ESI's organizational effectiveness, we: held interviews with the ESI Core Team and COTRs, implementation contractors and subcontractors, ESIPs, and regional

[34] *Situational awareness* (E. S. Toner, M.D. June 2009, *Creating Situational Awareness: A Systems Approach*, [*www.iom.edu/~/media/Files/Activity%2520Files/PublicHealth/MedPrep/Jun-10-11-2009-Commissioned%2520Papers/Jun-10-11-2009-Commissioned-Paper-Creating-Situational-Awareness-A-Systems-Approach.pdf*]) is an emerging concept within applied organizational fields dealing with organizational learning and strategic decision-making (Thomas, James B; Stephanie Watts Sussman; Henderson, John C in *Organization Science*; May/June 2001; 12, 3; ABI/INFORM Global pg. 331).

partners; reviewed program documentation; evaluated program-provided project databases; and surveyed utilities.

Strategic Planning

In order to manage a program to achieve its goals, program administrators must define clear program goals, and align those goals with key program protocols and metrics. The evaluation discovered the following goal-oriented program protocols and metrics:

- **Program goals and instrumental targets are clearly stated.** Program documents and manuals clearly stated the program's industrial saving goals of 12 aMW and 15 aMW for program years 2010 and 2011 respectively. These goals are linked to instrumental targets of increasing the number of completed custom projects, expanding customer utility participation, and increasing energy savings.[35]

- **Logic models are aligned with program goals**. The program's administration contracted an evaluation firm to develop logic models of the ESI program that would assist in the continued alignment of program protocols with savings goals. Program staff reviewed and approved the four logic models.[36]

- **The implementation contractor's contract with BPA is structured around metrics aligned with the program's savings goals**.[37]

Defining Program Roles and Responsibilities

In a kick-off meeting, BPA requested that we assess the way program roles have been defined to and determine the extent to which roles are distinct and comprehensive enough to achieve desired program outcomes. To assess the program roles, we reviewed the ESI *Program Delivery Manual* for specificity of roles and responsibilities, interviewed program staff and partners to understand their experiences with their roles, and surveyed utilities to understand their experience with the program's roles.

We assessed the *Program Delivery Manual* for completeness by which it articulates program roles and responsibilities; we found that roles are well defined and protocols for program communication and authority are detailed. Program roles specify the level of authority, reporting

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35 [BPA] "Bonneville Power Administration: Energy Smart Industrial-Frequently Asked Questions"; September 2009, 1. *http://www.bpa.gov/Energy/N/industrial/pdf/ESI_Program_FAQ_101909.pdf*

36 The Cadmus Group, Inc. 2010. *BPA Energy Smart Industrial Program: Early Evaluation Report. www.test.bpa.gov/energy/n/reports/evaluation/pdf/ESI_Early_Evaluation_Report_20090618_FINAL.pdf*

37 Findings came from interviews with the implementation contractor's management.

responsibilities, and communication protocols for field staff and program managers. Additionally, project tasks are clearly described with specific responsibilities for specific roles.

The ESIP role clearly delineates all project level responsibilities throughout the program. The *Program Delivery Manual* defines this role as the single point of contact for all ESI activities in each utility service territory. This role helps to overcome the potential for unclear responsibilities in the vertically integrated BPA energy efficiency delivery market. As the single point-of-contact, the ESIP is responsible for all program activities at both the utility level and the end user level; and he/she is responsible for monitoring and engaging in all trade ally and TSP activities in the utilities' service territories. The *Program Delivery Manual* further details protocols for appropriate communication between the ESIP and utilities and end users.

Further evaluation of program roles was completed through interviews with BPA implementation staff, and utility surveys. BPA staff members who work noted that utilities have been identifying and contacting the appropriate program representative when they have project level questions. In interviews, ESIPs and other implementation contractors noted that the *Program Delivery Manual* clearly defines their roles and responsibilities, and describes the communication path they are to use for information requests and reporting program and project issues.

Two-thirds of utility staff surveyed agreed[38] with the statement that "BPA staff and the implementation contractor staff roles were clear and distinct, without overlap or confusion." For the one-third of utility contacts that responded neutrally or disagreed, their open text comments suggested there are three primary reasons why utilities are unclear about distinctions between the BPA and implementation contractor roles. These reasons include:

- Utility respondents explained that they learned to understand the ESIP role after a couple of interactions with the program.
- Confusion over BPA's staff roles, stemming from utility staffs' experiences with BPA preceding ESI implementation.[39]
- ESI branding efforts – intended to convey a unified organizational approach to program deployment – sometimes make BPA and implementation contractor staffs' organizational affiliation confusing to utility staff.[40]

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38 Survey respondents were asked to rate their level of agreement with statements concerning the ESI program on a scale from one to seven, where one meant *strongly disagree*, four meant *neither agree/ disagree*, and seven meant *strongly agree*. All responses rated with either a six or seven are here reported as *agreed.*

39 One respondent remarked, "BPA roles were before the ESI implementation, and are very unclear; and their responses frequently contradict each other. The roles of TSPs were never explained. In fact, BPA sometimes will deny their very existence."

Communications

This section discusses program communications. In general, program managers need timely information to understand how market demand and program activities will impact achievement of program goals and objectives, both immediately and in the near future. To achieve an adequate level of situational awareness, managers need to organize meetings and communicate with program staff and partners, and develop a data management and reporting system to effectively monitor program outcomes.

ESI program managers are informed about important project and program issues through regular meetings and frequent communication with program staff and partners. These meetings are important because administrators may learn why incomplete program or project activities are stalled; whereas summary reporting from project databases often solely reflects completed activities and past achievements.

Meetings among BPA Staff

The program manager is the central reporting role, both responsible for administering the program and reporting to the Energy Efficiency Management Team. Figure 15 describes the program manager's reporting relationships, which include weekly meetings with the ESI Core Team and the implementation contractor's management, and occasional meetings with BPA's Energy Efficiency Management Team.

The ESI Core Team is comprised of analysts and engineers who perform field administration tasks. Each ESI Core Team member is assigned a specific program area to focus their attention on. These areas of focus include: marketing (budgets), TSPs, Enhanced Lighting, small industrial, Energy Management Pilot, and regionally divided East and West BPA service territory technical issues.

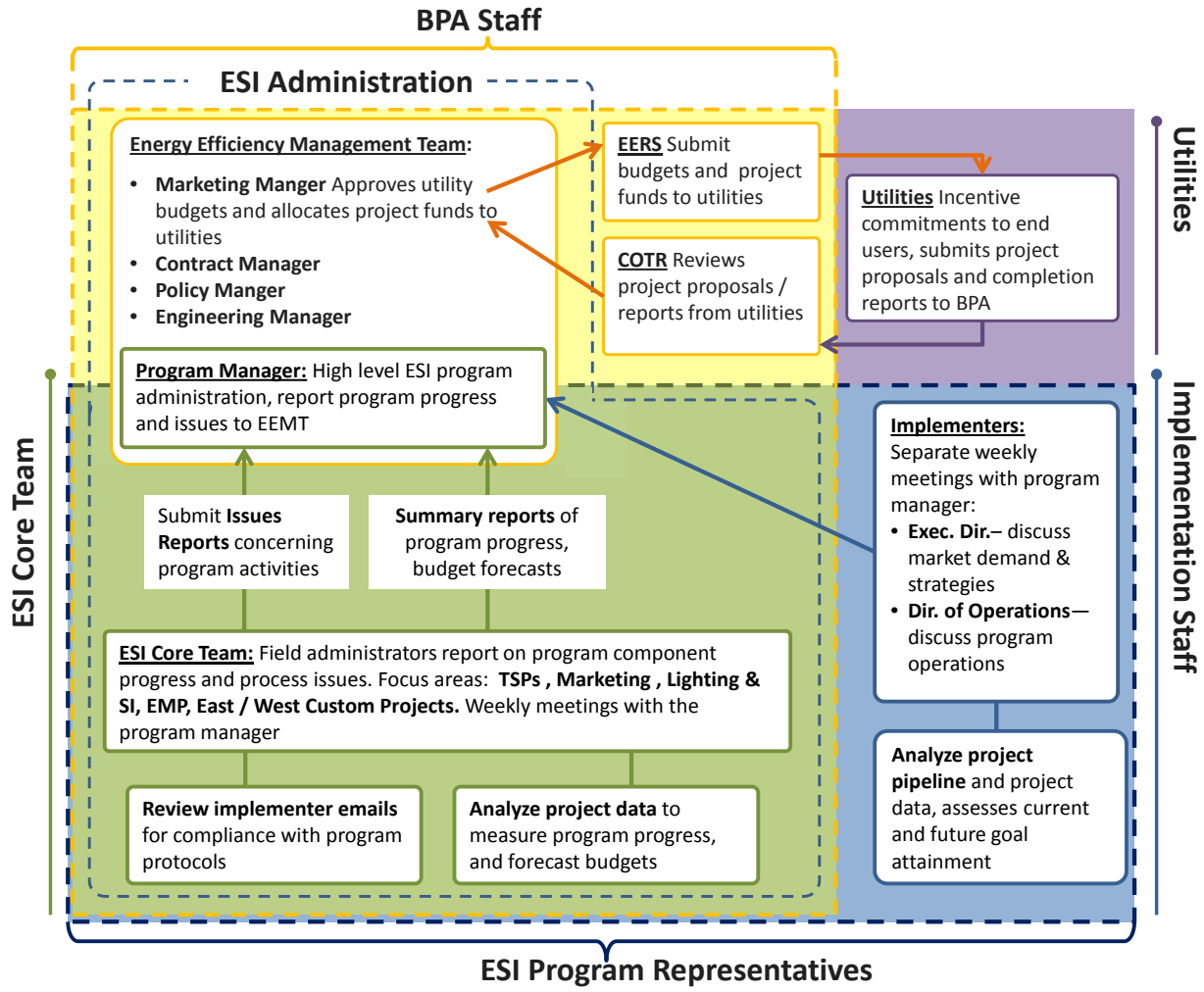
We learned, from interviews with ESI Core Team staff, that ESI Core Team responsibilities include:

- Documenting project and program issues through frequent communication with utilities, end users, and implementation staff. Issues are documented in an *Issue Report* submitted to the program manager;

[40] One respondent remarked "[ESI staff] would attend a meeting and it was not clear whether they worked for BPA, or the implementation contractor, or someplace else. I started asking if they were contracting with BPA to do this service. It became a task I had to do to clarify roles. It was not until the first HPEM meeting that [it became clear to me that] the person running the meeting was not the implementation contractor employee. They … identified everyone working on the program as ESI. They would show up in ESI jackets instead of telling us they were separate entities. We had difficulty knowing who was BPA and who was not."

- Updating budget forecasting and program progress reports from their analysis of project databases;
- Reviewing implementation contractor communications and emails for compliance with program guidelines; and
- Evaluating large project M&V proposals and communicating with ESIPs on technical project details.

Figure 15: ESI Communication Model Between ESI Program Staff and Implementation Contractor, and ESI Staff and BPA Administration



The program manager explained that the Core Team's reporting is comprehensive and thorough for the needs of administrative decision-making. The comprehensive nature of their reporting

likely follows from the fact that ESI Core Team responsibilities are distinct and allocated along the program's entire portfolio of components.

Interviews with Core Team members confirm the consistency of their field administration activities. Regional technical field administrators said that they contact utilities, end users, and ESIPs to review technical project issues and learn of key project statuses. The small industrial and Enhanced Lighting field administrator contacts the implementation subcontractors and identifies areas of program improvement. The marketing field administrator updates program budget forecasts and program progress reports, and reviews implementation contractor invoices on a monthly basis.[41] The Energy Management Pilot field administrator has performed walk-throughs at end user sites where T&T and EPM projects were performed. This administrator explained there is not enough time to perform walk-throughs at HPEM sites. The TSP field administrator is informed about issues TSPs experience; however, one TSP firm said that they had submitted an issue to the TSP field administrator concerning their issues with the implementation contractors' management of TSP Contracting Services and had not received feedback back from BPA on these matters.

Additionally, ESI Core Team members review implementation staffs' communication with end users and utilities on a weekly basis. When corresponding with end users' and utilities' implementation staffs, TSPs send a copy of the email to a central email account. ESI Core Team members access this central email account and review emails to ensure implementation staffs' program communication and activities are consistent with program policies.

BPA's Energy Efficiency Management Team (EEMT) manages utilities' energy efficiency budgets, allocates project funds to utilities, manages contracts between BPA and utilities, and revises program policies. The program manager has a standing meeting with the EEMT policy manager once every three weeks, where program policy issues are discussed. Interactions between the program manager and the EEMT often follow structured processes where the program manager documents topics in an *Issue Report*, which is routed to the appropriate EEMT manager. The COTR also submits ESI budget projections to the EEMT; however, the program manager explained that these reports were typically not used by the EEMT. Additionally, the program manager said the EEMT did not share utility budget reports and utility project allocations with the program manager.

Communication with Implementation Contractors

Two levels of meetings take place between BPA ESI administrators and the implementation contractor. High level meetings take place between the program manager and the implementation

[41] This analysis included an evaluation of utilities' *TOCA* (Tier One Cost Allocation) or utilities' allocation of Energy Efficiency Incentives (EEI) source: *http://www.bpa.gov/Energy/N/post-2011/WG1-EEI.cfm.*

contractor's management. Project-level meetings occur between ESI Core Team technical field administrators and ESIPs.

BPA contacts reported that the program manager holds separate weekly meetings with the implementation contractor's executive director and operations director. The program manager discusses topics concerning market demand and program policy with the executive director. With the operations director, the program manager: discusses project development and completion reports; compares program savings figures from reports generated by the implementation contractor and ESI Core Team; and discuss any issues with the implementation contractor's staff.

This reporting structure between the program manager and the implementation contractor does not provide direct communication between implementation subcontractors and the program manager. Some program components are managed by subcontractors to the implementation contractor. Through interviews, we confirmed the absence of direct communication between subcontractor management and the program manager.

We interviewed ESI Core Team technical field administrators and ESIPs concerning the types of meetings they have with each other. In these meetings, the technical field administrators often discuss M&V protocols and appropriateness of measures for resource projects, and infrequently discuss the way COTRs will make decisions regarding project proposals.

Communications with Key Regional and National Stakeholders

Program managers of new programs often have two broader communication roles with the energy efficiency industry. The first involves coordination with regional stakeholders which helps the program take advantage of related activities and contribute to broader energy efficiency initiatives. The second communication role assumes a national leadership role wherein the program manger describes the program, and his or her experiences with its implementation to the broader energy efficiency community.

Coordination with Regional Stakeholders

At BPA's request, we spoke with the industrial energy efficiency program leads at NEEA (two contacts) and Energy Trust (one contact) to assess the level of coordination the ESI team has had with these key regional stakeholders.

All contacts described the ESI program manager as being firmly committed to collaboration, with the manager's collaborative efforts beginning in the program design phase and continuing throughout implementation. As one example of the early collaboration, the ESI manager conferred with the other program leads when reviewing responses to BPA's RFP for an implementation contractor, as many of the proposers were already active in Northwest industrial energy efficiency and had worked or were working with the other organizations. Contacts described the ESI design and implementation as "entirely transparent," with "great documentation." Said one contact, "I have been amazed by their willingness to coordinate and

collaborate. I am sure this feels like a time drain for them, but it is amazing for us. They always default to communication, even when they could make a beeline to their own goals."

The contacts each believe all three programs make important contributions to Northwest industrial efficiency. "BPA's role in the market is so important. Having them own strategic energy management has been extremely helpful. We share many customers [serving different facilities] and can serve the region with a unified approach. BPA is the anchor that makes that true."

Contacts characterize the Northwest has being a national leader in industrial energy efficiency and strategic energy management, and note that the ESI program manager has spent time advancing this role. "BPA has a big bully pulpit and so is influential throughout the country. They facilitate the transfer of technical information nationally. BPA is an accelerator of market change."

Contacts said the collaboration continues, and they noted areas in which they are looking for continued evolution. Contacts for NEEA, which is charged with market transformation, would like the two programs to mesh better in terms of services provided to a single customer or industry. All contacts held the opinion that in some circumstances BPA's M&V activities circumstances exceed their own and, in their opinion, may be excessive. One contact was concerned about the burden for customers, while another was concerned about the effect of these activities on Energy Management Pilot project cost effectiveness.

National Leadership Communication

The program offers the industrial energy efficiency community new ideas concerning implementation through a field engineer account representative (referred to as an ESIP in this program), and energy management components specific to the industrial sector. We found that the program manager is describing this program and relevant experiences with its implementation to other program managers and implementation firms across the nation. In this national leadership role the program manager, ESI Core Team, and the implementation contractor firm have authored published papers,[42] attended conferences[43] and symposiums, and corresponded with program evaluators and other program managers.

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[42] Some papers include: Jennifer Eskil, Jennifer Wood, and Marcus Wilcox, *Boots on the Ground: Staff Shortages to Work with Utilities and Industry, in 2011 ACEEE Summer Study on Energy Efficiency in Industry*. Todd Amundson, Jennifer Eskil, and Steve Martin, *Key Personnel Drive Energy Projects for Industry*, in *2011 ACEEE Summer Study on Energy Efficiency in Industry.*

[43] Conference attendance includes, but is not limited to: AESP's *21st National Conference & Expo* – where the program received honors for "Outstanding Achievement in Energy Program Design or Implementation." Presented *Early Foresight: Bridging the Gap Between Implementation and Evaluation*, at *AESP's Fall Conference*, held October 15-17.

Data Tracking and Reporting

BPA requested that a section of the report focus on data handling practices of implementation contractors and the suitability of the program databases for future evaluations. BPA would like to confirm that implementation contractors are using secure methods to store program data, and are storing data so that BPA or future ICs could retrieve and use the information.

This report focuses on the supplemental project data systems'—used to store and retrieve project data, suitability for future evaluations. These data systems, located on a server administered by BPA, are accessed through *SharePoint front end applications*. Most internal program reporting are driven by these data systems. Additionally, a majority of our project data access was provided from files on the *SharePoint* site. Greater reliance on these supplemental data systems were likely a resulted from *TrakSmart*'s limited reporting and project querying features which were temporarily inaccessible, a likely outcome of BPA focusing much of its database resources on the deployment of EE Central.

This section of the report describes: 1) the security and accessibility of program data used by implementation contractors; 2) how the program's data systems work together; and 3) how BPA can assess the program's reporting capabilities and data quality for future evaluations.

Security and Accessibility of Program Data

BPA is concerned with the security and accessibility of program data used by implementation contractors. Implementation contractors and subcontractors have access to end user contact information provided by BPA and from the utilities. Furthermore, program contractors generate new project data and end user contact information through their program activities. Concern over end user data security has lead BPA to take steps to prevent contractors from using "shadow databases" – data files not accessible to or known by BPA – to store program data. Use of shadow databases may pose threats to the security of end user information as data in these data files might be stored in unsecure environments.

To evaluate the implementation contractors' management of program data, we held phone interviews with ESIPs and program component mangers. Interview questions concerned the use of the *TrakSmart* and *PTR* databases, and reliance on other databases for program delivery.

Implementation contractors reported the use supplemental databases to augment perceived shortcomings of *TrakSmart*. Table 28 is a summary of the supplemental program databases we discovered in use by the implementation contractor. BPA staff verified the presence of these files on their *SharePoint* server (see Figure 16), confirming they have access to these supplemental files.

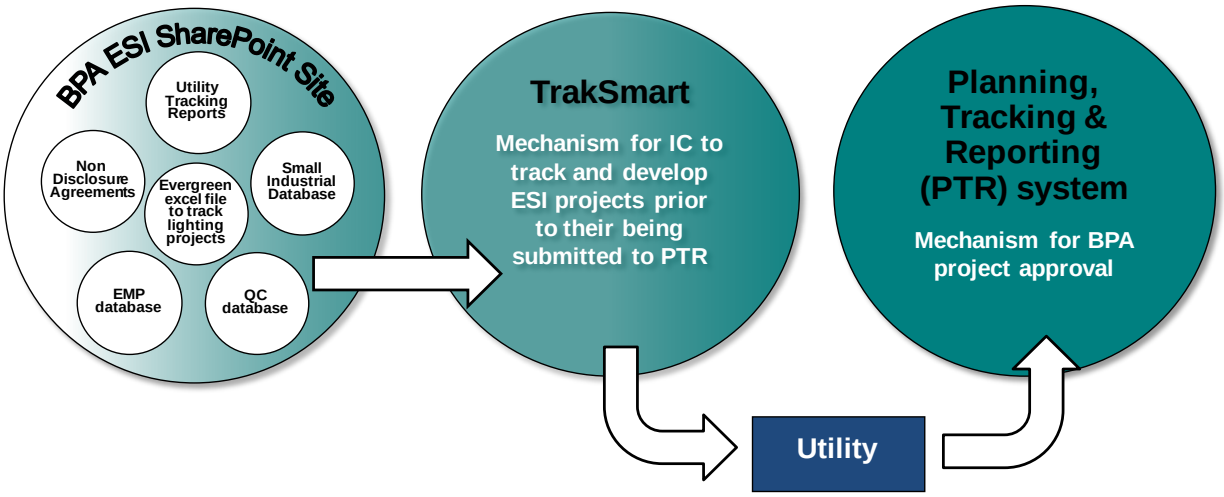
Table 28: Supplemental Databases Used by Implementation Contractors

FILE NAME	HOW FILES ARE USED	FORMAT
Energy Management Project Summary	Tracks potential, active, and completed Energy Management Pilot projects	*Excel*
ESI Small Industrial Database	Tracks small industrial projects	*Excel*
NW TAN Project Tracking	Tracks projects where lighting specialists have been involved	*Excel*
Utility Tracking Report	Spreadsheet used by ESIPs to prioritize and track customer interactions, and as a tool to generate summaries of ESI program activities	*Excel*

Integration of Program Databases

BPA and the implementation contractor developed ESI's data systems to track projects from pre-development through closeout, and to generate reports summarizing program status. Each database provides distinct information and reporting capabilities. Figure 16 depicts one example of how the databases in this system interact. The arrows depict a linear progression, from ESI project pre-development through project closeout: the implementation contractor tracks pre-project activities in databases stored on BPA's *SharePoint* site, and develops Custom Project Proposals (CPPs) in *TrakSmart*, which enables the implementation contractor to generate the draft CPP template utilities use to produce their ESI submittals to PTR.

Figure 16: ESI Project-Tracking from Pre-Development through Closeout



BPA Reporting

Customer utilities used the PTR system in 2010-2011 to submit project proposals for BPA approval. ESIP contacts reported that they monitored the utilities' use of the PTR system and

directed utilities that experienced any problems with the system to contact the PTR technical support staff. These contacts said they had few problems with utility PTR submissions, although some smaller utilities did not understand how to use the PTR system. In such cases, the implementation contractor provided support staff to assist the utilities with their PTR submittals.

TrakSmart

ESI projects are tracked in both the PTR System, and *TrakSmart*, a program management tool. Contacts affirmed the need for a reporting tool with project reporting project reporting capabilities beyond the limited project details captured by the PTR. BPA added *TrakSmart* to facilitate project management tracking, performance of quality control reviews, and reporting capabilities to assist with program management. In addition, implementers tracked ESIPs' technical service requests and the provision of ESI's technical services in *TrakSmart*. *TrakSmart* enabled the implementation contractor to generate draft CPP templates, which reduced the burden on utilities when generating their PTR submittals. The *Program Delivery Manual* states that *TrakSmart* would provide utility staff with direct access to end user program and project status.[44] In contrast, ESIP contacts said that the utilities did not typically access *TrakSmart*; instead, the utilities relied on ESIP-generated ESI reports and their own utility databases to track ESI activities. The implementation contractor relied heavily on *TrakSmart* to generate monthly, annual, and final reports to BPA summarizing ESI program status.[45]

SharePoint

Contacts noted that *TrakSmart* was not design to function as a customer relationship management tool; it had limited ability to support outreach and project development activities. For example, although the implementation contractor tracked customer interactions in *TrakSmart*, it cannot extract the summaries of these interactions and other data necessary to identify outreach targets and prioritize customer contacts. In addition, the implementation contractor could not track T&T projects in *TrakSmart*, so they tracked them in a separate Energy Management Pilot spreadsheet on *SharePoint*.

To address these limitations, BPA and the implementation contractor initiated and maintained a secure BPA ESI *SharePoint* site only they can access. They used the database to track pre-development projects and customer interactions, and to store program documents they could not store effectively on *TrakSmart*, including:

- Reports, utility plans, account plans, end user project status reports, and non-disclosure agreements

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44 *Bonneville Power Administration Energy Smart Industrial Program Delivery Manual*, Revised 09/29/09.

45 This chapter draws on information presented in *BPA Energy Smart Industrial Tracking Systems*, Revised 08/23/12.

- Utility tracking report spreadsheets used by ESIPs to prioritize and track end user interactions, and as a tool to generate summaries of ESI program activities
- Database which includes all ESI projects that involved lighting specialists
- QC database, which represents a review of all custom project proposals before they are approved by BPA

At the time of our interviews, contacts said the program's tracking systems were in transition to the new EE Central database. The contacts speculated that EE Central will both replace PTR's function as a mechanism for BPA project approval, and provide improved access and reporting capabilities that are similar to *TrakSmart*.

Supplemental Databases

Program administrators require quality program reporting to measure ESI's performance. Therefore, to assess the overall effectiveness of program data systems, we assessed both the quality of program reports and the data used to drive these reports. Quality program data are necessary to quickly and accurately build program reports.

Reporting

To assess the quality of program reports, we reviewed the program reporting quality criteria outlined in the early program's evaluation,[46] and determined additional criteria aligned with program goals and objectives. Quality reporting tools should describe *how well the program is performing*, *how and when the program will achieve its goals*, and *how involved the program delivery channels are*. Therefore, ESI quality reporting metrics for these criteria include tracking the following data:

- Number of utilities participating in the program
- Number of utilities enrolled in each program component
- ESIP associated with each utility
- Summary of savings by program component for each utility
- Pre-project activities – including proposals, agreements, and aborted projects
- Project value – scoping studies, baseline usage, savings estimates
- Program component savings goals compared against achievements

[46] The Cadmus Group, Inc. 2010. *BPA Energy Smart Industrial Program: Early Evaluation Report: 7 www.test.bpa.gov/energy/n/reports/evaluation/pdf/ESI_Early_Evaluation_Report_20090618_FINAL.pdf.*

The files on the ESI *SharePoint* contain: utility account plans and other utility data and agreements; project pipeline information and project completion data (some of which is extracted from *TrakSmart* and PTR); and program savings goals by program component.

We discovered quality program reports and tools developed from the files on the ESI *SharePoint*. Furthermore, high quality program reporting is reflected in the thoroughness of external program publications.[47] Table 29 describes the thoroughness of program reports, given the reporting criteria described in this section. These reports describe: how well the program is performing, through reporting that compares program goals to actual savings; the level of activity in the program's delivery channels, through reporting on utility engagement and ESIPs assigned to those utility territories; and assesses how and when the program will achieve its goals, through projections indicated by pre-project activities and project values.

Table 29: Quality of ESI Internal Reports

REPORT QUALITY CRITERIA	REPORT	
	Utility Engagement with ESI Components	Energy Management Project Summary
Number of utilities participating in the program	✓	
Number of utilities enrolled in each program component	✓	
ESIP associated with each utility	✓	
Summary of savings for each utility	✓	
Pre-project activities: proposals, agreements, and aborted projects		✓
Project Value: scoping studies, baseline usage, and savings estimates		✓
Program component savings goals compared against achievements		✓

Data Quality

To assess the quality of project data, we analyzed files provided to them by the implementation contractor. These files were exported from supplemental databases on the *SharePoint* server. These files tracked small industrial, Enhanced Lighting, and Energy Management Pilot projects. We adapted the data quality criteria used to assess the files from the program's pre-evaluation report.[48] Table 30 summarizes our assessment of the data quality of supplemental databases

[47] An example of the quality of external ESI reporting is: J. Eskil, December 2011. *Industrial Energy Management Assistance*. This report describes pre-project activities, including targets for scoping studies and savings, and achieved savings on a monthly basis by program component.

[48] The Cadmus Group, Inc. 2010. *BPA Energy Smart Industrial Program: Early Evaluation Report: 7 www.test.bpa.gov/energy/n/reports/evaluation/pdf/ESI_Early_Evaluation_Report_20090618_FINAL.pdf.*

Complete data sets are often critical for internal reporting and future program evaluations. The ability to track program penetration by business sector is important for estimating program performance across sectors. Data sources containing small industrial and Enhanced Lighting projects did not capture SIC codes used to infer participants' business sectors.

Use of standardized data elements across multiple data sources is fundamental for monitoring program progress in the aggregate. The Energy Management Pilot file lacked consistent and standardized utility names for Energy Management Pilot projects tracked in this file. The evaluation team had a difficult time evaluating program progress within each utility service territory because project records in the Energy Management Pilot file lacked standardized utility names. Additionally, Excel's cell color function was used to indicate project status in the Energy Management Pilot file. Cell color is not recognized as a common data portable data element with consistent portability or transferability across data platforms. The evaluation team's analysis of program data was performed through the use of an Access database, the color information of the Energy Management Pilot file did not transfer into the Access database.

The program's logic model[49] indicates that tracking reasons why projects are canceled may be important to understanding potential project barriers that lead to project cancelation. Both the small industrial and Energy Management Pilot data files record reasons for project cancelation. The lighting component data source does not track reason for project cancelation; however, lighting projects are trade ally driven and generally enter program tracking systems following project completion.

Table 30: Data Quality of Supplemental Databases

DATA QUALITY CRITERIA	DATA ISSUES		
	Small Industrial	Lighting	Energy Management Pilot
Data completeness: *Is necessary data tracked?*	No SIC Codes	No SIC Codes	Files do not contain information concerning reasons for canceled projects
Data consistency: *Are specific data conventions are used?*	Yes	Yes	Utility and end user names are not standardized
Data portability: *Are data structured to work across applications and platforms?*	Yes	Yes	Project status tracked using *Excel's* cell colors – function is not portable
Canceled and withdrawn projects tracked	Yes	No	Yes

[49] The Cadmus Group, Inc. 2010. *BPA Energy Smart Industrial Program: Early Evaluation Report: 7 www.test.bpa.gov/energy/n/reports/evaluation/pdf/ESI_Early_Evaluation_Report_20090618_FINAL.pdf*

OVERSIGHT

BPA requested that we assess the effectiveness of its oversight of program implementation, determined by the quality of information it reviews and the types of corrective decisions program administrators make. The quality of administrative information reviewed is described in the *Situational Awareness* section of this report. We identified four types of corrective actions the program's administrators should be pursuing to ensure the quality of the program and BPA's control over its implementation:

Program design maintenance – revising the program's design in response to issues with implementation

Oversight of implementation contractors – correcting issues with the quality of contractors' program activities

Maintenance of BPA's program ownership – administering the program so BPA might contract in the future with other firms for the implementation contractor role

Budgetary oversight – scaling program activities and finances to program budgets

Program Design Maintenance

Typically, program administrators face design issues following the initial phases of a program's implementation. We documented several incremental and major design changes ESI administrators made in response to issues and challenges posed by the program's implementation.[50] These decisions indicate the program administration is monitoring program progress and goals, and making necessary corrective actions to program processes.

Oversight of Implementation Contractors

Administrator oversight of implementation contractors' actions is critical to the quality and consistency program implementation. BPA requested that we include a section in the evaluation report focusing on the effectiveness of its oversight of implementation contractors. BPA is particularly interested in understanding its level of oversight because ESI is its first industrial program delivered through the use of implementation contractors.

The effectiveness of ESI administrators' oversight of ICs is determined by: 1) the ability to clearly identify responsible program roles when issues arise – corrective actions must be linked to responsible program roles; 2) access to and review of key information detailing implementation contractor activities; and 3) contacting the appropriate implementation

[50] See the *Comparison with Logic Model* section of Chapter 2 of this report.

contractor management in order to effect corrective actions where necessary. Table 31 describes the key findings we discovered to these three challenges.

Findings were elicited from interviews with BPA staff and implementation contractors. The evaluation team found that program administrators effectively oversee the program's implementation contractor by: identifying specific contractors for specific program responsibilities; employing direct and indirect methods to review implementation contractors' program activities; and communicating corrective actions, concerning implementation contractors' activities, through clearly defined organizational structures.

Table 31: BPA's Oversight and Management of Implementation Contractor

OVERSIGHT CHALLENGES	IMPORTANCE OF OVERCOMING CHALLENGE	FINDINGS
Ability to identify correct program roles / staff to specific program & project issues	Identified issues must be linked to responsible staff so corrective actions are focused on accountable roles	Program administrators identify responsible program staff to issues because roles and responsibilities are clearly defined **Projects**: ESIPs are responsible for all project issues in each utility service territory (*see Defining Program Roles and Responsibilities*) **Program**: The implementation contractor's management is responsible for program reporting and management issues (Table 28)
Reviewing key information concerning implementation contractor activities	Timeliness of administrative corrective decisions is determined by the comprehensive quality of information reviewed	Program administrators evaluate the quality of contractor activities through direct and indirect sources of information (see *Situational Awareness*) BPA's staff evaluations of this information include: • **Indirect information:** BPA staff communicate with utility customers to learn of program and project issues • **Direct**: Reviewing program communications, and performing walk-throughs at end user sites; however, site visits are not performed at HPEM facilities
Communicating corrective actions through appropriate channels	Program manager communicates corrective actions to the implementation contractor operations director – this role has the highest level of authority over day-to-day program operations	Program manager issues corrective actions to the implementation contractor operations director during weekly meetings (see *Communication, Meetings, and Reporting*). Implementation contractor operations director informs program staff of program-wide corrective actions, during weekly joint meetings; corrective actions concerning specific staff are communicated through the implementation contractor's ESIP manager

BPA's Program Ownership

BPA is charting new ground for the organization in its use of an implementation contractor for the delivery of sector-wide energy efficiency services. BPA requested that we include a section in the report focusing on its ability to solicit future bids for the role of the implementation contractor without a significant drop in the quality of the program's delivery. A program that

relies heavily on an implementation contractor for program delivery is at risk of requiring the same implementation contractor for the future delivery.

In this section, we assesses the following challenges BPA faces with maintaining its independence from implementation contractors, program responses to those challenges, and estimates of the long-term status of the challenges:

- **Potential marketplace confusion over contractors' and ESI's brand identity**: BPA's brand management strategy concerns minimizing marketplace associations with the implementation contractor, and increasing associations the market has with their utilities, the ESI Program, and BPA.
- **Potential interruption in the program's relationships with the marketplace**: The program's core strategy focuses on building trusted relationships between the implementation contractor and the marketplace. Changing the implementation contractor will likely result in new program partners managing these relationships.
- **Potential reduction in the program's access to market intelligence**: Implementation contractors generate specific knowledge about market demand in the service territories they work in. A new implementation contractor firm would likely lack this knowledge.
- **Potential discontinuity of project management with projects in the project pipeline**: The ESIPs employed by the implementation contractor manage projects in the pipeline. ESIPs have are familiar with end user contacts, project details, and project status. A change in the implementation contractor would result in new ESIPs responsible for managing projects in the pipeline.
- **Potential loss of institutional knowledge**: Institutional knowledge reflects all the informal knowledge implementation contractors learn about the marketplace and the program following program implementation. The program may lose some institutional knowledge as a result from a change in the implementation contractor.

Table 32 describes the challenges BPA administrators face in maintaining the transferability of their program between implementation contractors, the current situation of the program in addressing these challenges, and likely outcomes as a result of transferring the program's contract to a new implementation contractor.

The evaluation team found few challenges to the continued delivery of the program if BPA transferred the program's delivery contract to a new implementation contractor. Consistent program branding and project tracking and prioritization tools should support new implementation contractors' activities to seamlessly promote the program and manage projects in the project pipeline.

However, the new contractor may experience challenges in trying to develop relationships with end-users, and restructuring subcontractor lead program components. Program data reviewed by

the evaluation team did not include contact information for executives at end user firms that the program has worked with. This information is important to new implementation contractors trying to leverage existing relationships with end users. Additionally, the program may not have captured important institutional knowledge—undocumented or informal program processes, and market intelligence associated with subcontractor lead program components. These information are typically captured by the program through meetings between the ESI program manager and the program component manager, or through walk-throughs at participant sites. These meetings and walk-throughs have not been performed with subcontractor lead program components.

Table 32: BPA's Response to Challenges of Maintaining Program Ownership

CHALLENGE	SITUATION	OUTCOME
Confusion over brand identity: *Will end users and utilities recognize new implementation contractor as continuous with ESI's prior program delivery?*	Program is enforcing clear protocols preventing implementation contractor contractors from using their own brand. Enforcement activities include: • Reviewing implementation contractor communications / emails for compliance with communication protocols • Appropriate branding on all marketing collateral and implementation contractor business cards	Little to no brand confusion with change in implementation contractor
Interruption with program's marketplace relationships: *Will a new implementation contractor be able to continue marketplace relationships developed by the prior implementation contractor?* • *Is new implementation contractor capable of identifying key relationships?* • *Is marketplace willing to continue relationships with new implementation contractor?*	**Utility relationships:** Key utility contacts are identified in utility organizational charts, contracts with BPA, and ESI account plans Relationship between utilities and implementation contractor should continue without interruption because utility is interested in technical and administrative support delivered by implementation contractor	Relationships with utilities continues with new implementation contractor
	End user relationships: Potential for new implementation contractor having difficulty identifying key relationships with executive and operations contacts at end user firms if these contacts are not captured in program databases Use of TSPs should continue key relationships associated with technically complex; however, implementation contractor management of TSP services may interrupt TSP and end user relationship Wastewater sector specialists developed program relationships with consulting engineers that may not be captured in program database	Possible minor relationship interruption between end users and new implementation contractor
Reduction in access to market intelligence	The program administration has demonstrated active engagement with field operations, and the program manager captures market intelligence through meetings with the implementation contractor The program manager does not gain market intelligence directly from implementation subcontractor management.	Potential for loss of market intelligence with program components managed by subcontractors

Continued…

CHALLENGE	SITUATION	OUTCOME
Developing projects in the project pipeline: *How effectively will a new implementation contractor be able to develop existing project leads?*	The new implementation contractor will be capable of allocating appropriate resources to projects through the use of the *I-score* (see Chapter 4 Developing the Market) tool. Existing Project leads should have an I-Score description and should be located on SharePoint server	Little to no discontinuity of management for projects in pipeline
Loss of institutional knowledge: *What essential knowledge about running the program exists outside of the Program Delivery Manual?*	The ESI Core Team likely retains a significant amount of institutional knowledge by monitoring implementation contractor staffs' field activities The Core Team documents process challenges, and performs walk-throughs at end user facilities – no HPEM walk-throughs are performed at end user facilities	Little to no loss of institutional knowledge if ESI Core Team educates new implementation contractor with institutional knowledge; some HPEM institutional knowledge may be lost.

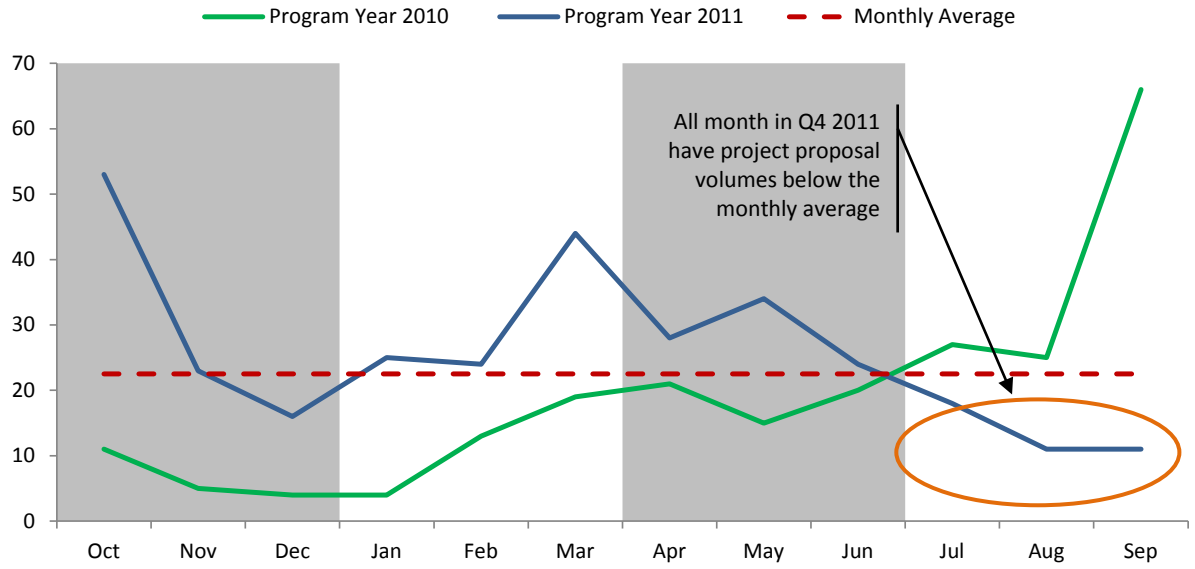
Budgetary Oversight

ESI management reported an inability to scale resource acquisition to efficiency budgets due to a number of factors relating to BPA's organizational structure: its divisions between program implementation, utility contract management, and the EEMT; data tracking limitations among the latter groups; and limitations on the information those latter groups shared with the program manager. To adjust to this situation, early in the program cycle the ESI Core Team instructed the implementation contractor to proactively engage with the utilities, especially on projects that were large relative to the utility size, to ensure the utilities had sufficient budget for their projects. According to implementation contractor contacts, ESIPs experienced the COTR budgetary actions as untimely; consequently, the ESIPs would work *early* in the project development process to encourage the utilities to be in contact with their COTRs to ensure availability of funds.

Some utilities responded to their uncertainty over the 2012-2013 efficiency budget levels by halting all custom proposals during the final quarter of the 2010-2011 program cycle. Some utility contacts noted they stopped submitting project proposals to BPA in the last quarter of the 2010-2011 program because they were concerned these projects would be completed under the new funding model.

Figure 17 describes the trend in monthly custom project proposals submitted by utilities to BPA. The program averaged 22.5 proposals per month during the 2010-2011 program. Proposals volumes in the fourth quarter (July, August, and September) of 2011 are 50% to 75% lower than the proposal volumes for the same months in the 2010 program year, and significantly lower than proposal volumes in the third quarter of program year 2011. These data support the utility survey findings indicating the program developed fewer project proposals in some utility service territories during the last quarter of the 2011 program year.

Figure 17: ESI Custom Project Proposals for 2010-2011 Program



Source: Data are custom project proposals submitted from utilities to BPA's PTR database. The program averaged 22.5 proposals per month during the 2010-2011 program.

After 2012, overall utility incentive budgets from BPA will be fixed to utilities' proportion of BPA energy sales. In the 2012-2013 budget, overall levels will be lower (sometimes 40-50% lower) than in 2010-2011, which is likely to lead to a reduction in activity in ESI. Contacts anticipate that the reduced budgets and variability in incentive levels introduced with the 2011-2013 program cycle are likely to reduce market participation among utilities, end users, technical service providers, and trade allies. According to one implementation contact, "I think that is one of utilities' biggest fears – that we will create expectations in the marketplace that we cannot follow through with."

In addition, contacts noted that lack of standardized incentive levels and documentation requirements will increase the complexity of program-marketing. Furthermore, the variation in incentive levels and documentation requirements will likely increase the complexity of project level technical services, thus increasing their cost. According to BPA's Comprehensive internal Review report, standardized incentives and program documents help to avoided challenges from:

- **End user confusion over reimbursement levels** caused when some end users—who own facilities in multiple utility service territories, are forced to deal with varied incentive reimbursement levels between service territories
- **TSP project administrative costs will likely rise** as these service providers are forced to deal with complexities caused by variations in documents and incentives between utility service territories

- **Market actors will likely experience difficulty promoting the program,** because variation in incentive levels may cause risks for market actors who promote the program through marketing collateral which must accommodate incentive variations between service territories

6 CONCLUSIONS AND RECOMMENDATIONS

Prior to development of the ESI program, BPA Energy Efficiency identified several program barriers internal to BPA [51], these barriers were further specified in the program's logic model[52] which indicated a need for more: technically qualified program partners to help develop projects and perform outreach activities, program incentives to overcome end users resource constraints, and program elements designed to increase the market place's focus on energy efficiency. Findings from both research activities recommended overcoming barriers internal to BPA and the marketplace in order to engage the industrial sector effectively and capture increased industrial savings targets included in the Northwest Power and Conservation Council's Sixth Power Plan. ESI overcame those barriers by: increasing technical staff working in industrial markets; improving project pipeline management; increasing the consistency of program documentation requirements; and increasing and standardizing incentives.

Additionally, the program design addressed key market barriers by: offering project management staffing and increased incentives to overcome resource constraints; improving access to technical services to reduce risks from projects; employing implementation contractors with industry recognized talents to improve market trust in the program; and developing energy management components to increase the industrial focus on energy. During the 2010-2011 program cycle, the ESI program exceeded its energy savings targets, likely owing to successfully addressing identified barriers.

The scope of this evaluation primarily addresses the effectiveness of administrative processes and program delivery activities to help overcome the barriers internal to BPA and market barriers through the program as delivered. Therefore, the evaluation documents the strengths and challenges faced by program administrators and implementers in managing the delivered program, and the effectiveness of the delivered program to meet its targeted goals.

The following discussion organizes our conclusions and recommendations by topic area –design effectiveness, implementation effectiveness, and administrative effectiveness. Tables at the end of this chapter summarize the discussion.

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51 See: *www.bpa.gov/energy/n/industrial/pdf/ESI_Program_FAQ_101909.*

52 The Cadmus Group, Inc. 2010. *BPA Energy Smart Industrial Program: Early Evaluation Report: 7 www.test.bpa.gov/energy/n/reports/evaluation/pdf/ESI_Early_Evaluation_Report_20090618_FINAL.pdf; pg. 22-31.*

DESIGN EFFECTIVENESS

➡ ***Conclusions:*** **This evaluation documented several key strengths with the program's resource and energy management pilots responsible for driving high levels of utility program participation and end user satisfaction**. Utilities and end users had high levels of satisfaction for the program's custom project and small industrial components, driven by expanded project support from their ESIPs. Some utilities expressed concern that project incentive levels were set too high for the program to sustain consistent incentive levels over time.

Recommendation: **The program should involve utility input on project incentive levels.**

➡ ***Conclusion:*** **The energy management pilot was very successful at both delivering savings and increasing end user organizations' energy focus**. Most program participants intend to continue energy management practices after program support ends; and most participants reported the following changes at their companies as a result of their participation in the Energy Management Pilot component: organization-wide increase in employee awareness of and focus on energy management; and plans to add energy management activities at their organization, even after program resources and incentives are discontinued for their projects. However, High Performance Energy Management's design limited participation in this component to utility service territories with enough large end-users to form training cohorts.

Recommendation: **To increase participation in High Performance Energy Management, BPA should investigate ways to scale the program to smaller savings opportunities.** Program staff might consider delivering HPEM through web-based cohorts, reducing participant travel and labor costs.

IMPLEMENTATION EFFECTIVENESS

This evaluation documented key activities performed by program staff to deliver ESI. Implementation contractors are responsible for: developing the market for increased program participation; supporting projects by delivering technical staffing services to utilities and end users; and documenting program activities in BPA's project approval and reporting systems.

Developing the Market

➡ ***Conclusion:*** **The program was effective at developing the market for increased program participation**, achieved through: well defined relationships with large utilities through the use of utility account plans; and the deepening of relationships with end users, driven by ESIPs' work with end users' operations and business management, as well as facilities management. However, the program may have challenges developing markets in smaller utilities and service territories in eastern region. The program does not

develop account plans with smaller utilities and some BPA field engineers are worried this may lead to miscommunication between ESIPs and utilities. Additionally the eastern region's low industrial concentration likely contributes to relatively reduced access to local technical resources and may have led to lower (neutral/slightly positive) end user survey scores concerning their perception of program representatives' industry reputation.

Recommendation: **The program should improve its ability to develop the eastern region market by monitoring the project pipeline to predict when ESIP and TSP resources will be needed for this region, and develop account plans with smaller utilities**. The program might conduct an assessment of the eastern region's technical and market potential for industrial efficiency to guide the allocation of ESIP time.

Program Delivery

➡ ***Conclusion:*** **Expanded program staffing through the ESIP role was a key success factor for the program's delivery**. Utilities and end users valued the additional project management and technical services provided by their ESIPs. Although the design of the small industrial component envisioned that such projects would be more cost-effectively met through the use of calculator tools, in practice, most projects received custom M&V; thus, this program component was not appreciably distinct from the custom component.

Recommendation: **The small industrial component should develop or work with regional partners to acquire additional calculators**, the use of which is likely to reduce the cost to serve this sector.

Document Activities

➡ ***Conclusion:*** **The program developed special procedures to help support the speed and accuracy by which program documents move through BPA's project approval and reporting systems**. The implementation contractor's Quality Control Team supports the COTRs with project recommendations and documents project rejection reasons to help the program improve its quality of project proposals and reports. Also, the program consistently follows rigorous M&V procedures. End users targeted for High Performance Energy Management appear to need additional information about MT&R (monitoring, tracking, and reporting) processes. A few end users questioned the reliability of MT&R plans and CUSUM reporting.

Recommendation: **BPA may improve its MT&R reporting communication by requiring Energy Performance Tracking Team staff to contact HPEM end users and discuss their expectations about MT&R, and CUSUM reporting.**

➡ ***Conclusion:*** **ESI M&V activities conform to industry standards; project documentation appears it will support an impact evaluation.**

***Recommendation:* BPA should proceed with an impact evaluation of ESI.**

ADMINISTRATIVE EFFECTIVENESS

This evaluation documented several key processes supporting BPA staff in their roles to effectively organize and oversee the program. BPA's ESI Core Team is responsible for organizing the way program resources are to be delivered and overseeing the implementation's quality.

Program Organization

➡ ***Conclusion:* The program is organized around sound strategic planning** evidenced by: the program components and contracts are tied to well-defined program goals; program activities are carried out by distinct program roles and coordinated through regularly scheduled meetings; and BPA staff monitor program progress and planned outcomes through detailed program activity reports. However, the program's reporting systems – PTR (Planning, Tracking and Reporting), *TrakSmart*® , and other project tracking files, are not integrated around consistent data handling conventions which may lead to issues with production of summary reports. Data issues include: project cancelations are not consistently tracked, nor reason for cancelation recorded; and nonstandard utility and end user names are used between project data sources. Additionally *TrakSmart* was weakly supported and lack full functionality during the evaluation period, leading to a loss of key reports for a couple of months.

***Recommendation:* BPA should require implementers to use standardized utility and end users' naming conventions when they enter project data in other project tracking systems, and improve tracking of project cancelations.**

***Recommendation: BPA should* ensure sustained support of program reporting databases**.

➡ ***Conclusion:* The program manager has collaborated with regional stakeholders and contributed program knowledge and experiences to the national industrial energy efficiency community,** activities valued by the regional stakeholders and national community.

Program Oversight

➡ ***Conclusion:* The ESI Core Team is actively monitoring the quality of program implementation and taking corrective actions when necessary**. The Core Team's program oversight effectively held implementation contractors' program activities to acceptable standards by reviewing contractors' program communications and emails, and issuing corrective actions through clearly defined chains-of-command. Oversight practices have also ensured BPA's ability to select a new program contractor without

significant loss of program delivery quality. Key oversight practices include: adequate enforcement of program branding; documentation of program relationships with large utilities; use of clearly defined standards for prioritizing the project pipeline.

***Recommendation:* BPA should consider the following activities to improve its ability to select a new program contractor, should it desire to do so at some future date.** The program manager should hold quarterly meetings with all subcontractors managing program components to document market intelligence and institutional knowledge concerning these components.

➡ ***Conclusion:* Some TSPs are concerned with perceived conflicts of interested caused by the implementation contractor assigning projects to TSPs.**

➡ ***Conclusion:* The industrial market, which often requires multi-year implementation schedules for efficiency projects, may view the 2012 revision to ESI's incentive structures (a revision consistent with those affecting all sectors) as an element of financial risk.** In the 2012-2013 budget, overall levels will be lower (sometimes 40-50% lower) than in 2010-2011, which is likely to lead to a reduction in ESI activity.

***Recommendation*: *Recommendation*: Create a process to support BPA COTRs coordination with utilities aimed at ensuring ESI incentives are planned in the utility's overall EEI funding**.

LOOKING FORWARD

ESI's design and implementation, which represents a significant change from BPA's prior industrial sector approach, appear responsible for the program's successes in the 2010-2011 program cycle.

Looking forward, our findings suggest that a planned reduction in the number of the program's ESIPs, a possible increase in requests for TSP support among nonstandard-agreement utilities, a shift from standardized incentives to variable project incentives set by each utility, and utilities' perceptions of risk due to budget caps, may impact the ability of the program to achieve its targeted savings in the 2012-2013 program cycle.

TABULAR SUMMARY

The following tables provide a summary of the program strengths and ongoing issues as identified in the body of the report and our recommendations to address identified issues. Table 33 through Table 35 discuss administrative effectiveness, implementation effectiveness, and design effectiveness.

Table 33: Administrative Effectiveness

AREA	KEY STRENGTHS	ISSUES	SUGGESTIONS
	PROGRAM ORGANIZATION		
Strategic Planning	• Program goals clearly stated • Implementation contracts tied to goals • Program logic sound, captured in logic model, informed implementation • Standardized incentives / documentation requirements improve market actors' efficiency	No issues noted	
Roles & Responsibilities	• Roles clearly defined and documented • Utilities and end users contact their ESIP on all project matters	• Program branding confused some utilities about difference between contractors and BPA staff	• Elevate BPA's brand identity over ESI's in all communications with utilities
Internal Communication	• Program manager holds regular policy meetings with BPA's EEMT • ESI Core Team hold weekly meetings • Regular meetings between ESI Core Team and implementation contractor	• No meetings between implementation subcontractors and program manager; BPA may be missing market intelligence and improvement opportunities	• Conduct quarterly meetings with implementation subcontractors
Coordination with Regional & National Stakeholders	• Collaboration with regional stakeholders during the ESI design • Program documentation clear and available to stakeholders • Contributing key program knowledge and experiences to national industrial energy efficiency community	No issues noted	
Project Data and Reporting	• Project data kept on secure BPA servers • Industry recognized metrics used in reporting program progress	• Data quality issues from use of non-standardized utility and end user names, and use of software-specific data formatting • TrakSmart database weakly supported during evaluation period; lead to issues pulling reports	• Use standard codes for utility and end user names; use only formatting consistent with CSV data standards • Ensure continual support of TrakSmart

Continued…

AREA	KEY STRENGTHS	ISSUES	SUGGESTIONS
	PROGRAM OVERSIGHT		
Program Design Maintenance	• Actively updating design to meet market conditions	No issues noted	
Oversight of Implementation Contractor	• Corrective actions enforced through clearly defined program roles • Administrator reviews program partners communications and activities	No issues noted	
Maintaining Program Ownership	• Program partners are following branding and marketing protocols • Program relationships with utilities documented in utility account plans • Well documented project pipeline reduces risks from new contractor management	• Erosion of TSP firm confidence in TSP management may lead to consolidation of end user relationships with implementation contractor's TSPs • No direct meetings between sub-contractors & program manager; potential loss of market intelligence with change in program's sub-contractors	• Ensure implementation contractor follows all guidelines of *Program Implementation Manual* regarding continuation of TSP services for projects identified by those firms • Conduct quarterly meetings with implementation subcontractors
Budgetary Oversight		• BPA oversight of its overall energy efficiency incentive budgets failed to moderate incentive obligations through all of its energy efficiency programs	• Create a process to support BPA COTRs coordination with utilities aimed at ensuring ESI incentives are planned in the utility's overall EEI funding.

Table 34: Implementation Effectiveness

AREA	KEY STRENGTHS	ISSUES	SUGGESTIONS
		MARKET DEVELOPMENT	
Developing Utility Relationships	• High proportion of utility program participation; 72% offer at least one program component • Account plans structure relationship between ESIP and top 30 utilities by industrial load • Utilities report high levels of satisfaction with ESIPs communicating project progress	• Smaller utilities do not have account plans; BPA field engineer worried may lead to miscommunication between ESIPs and utilities	• Program should use streamlined account plans with utilities where lower program activities are expected
Marketing and Outreach	• Program engaging market actors to help drive program participation • Deepening of programs' relationship with end users' operations / business management • Early success building relationships and driving projects in wastewater sector • Program is influencing projects prior to project planning or in early stages of project planning	• Program's technical resources spread thin in eastern regions where TSP service are more scarce • Eastern region end users are less confident (neutral/slightly positive) in program representatives' industry reputation	• Monitor project pipeline to better predict projects where technical availability will be challenging • Conduct technical and market potential of eastern region to guide allocation of ESIP time
		PROGRAM DELIVERY	
Internal Communication	• Weekly meeting to address program updates and prioritize projects and program activities	No issues noted	
	•		Continued…

AREA	KEY STRENGTHS	ISSUES	SUGGESTIONS
Program Tools	• I-score project scoring tool reduces program costs by providing decisions support for additional project studies • CUSUM Report well-liked by Energy Management Pilot participants for internal energy reporting • Corrective Action Report, QA reporting tool; helps ESIPs improve their CPPs	• Calculator development significantly slowed by project volumes; missed opportunity to reduce costs and time spent on SI projects	• Require calculator development in implementation contractor contract or work with regional partners to acquire additional calculators
TSP Management	• TSPs' contract tied to quality of service; more precise project estimates reduces utilities' risks on large projects	• A few TSP firms concerned about implementation contractor management of TSP pool; may lead to contraction of TSP firms in market	• Establish a process and BPA role to address TSP concerns over implementation contractor's management of TSP pool; BPA should give initial reply to all TSP concerns within 3 business days
Effectiveness of ESIP Role	• Utilities value ESIPs' frequent reporting on program activities in their territory • Many utilities rely on ESIPs' technical services and project management	• Some utilities would like more support from ESIPs on Energy Management Pilot strategies and marketing	• Train ESIPs how to discuss with utilities how they can target end users for energy management projects and how utilities can market these program components
	DOCUMENT ACTIVITIES		
Quality Control	• QC Team recommendations on CPP and completion reports likely reduce time COTRs spend on project approvals • QC Team likely reduces project proposal errors by tracking project outcomes and reporting trends to ESIPs • Do they improve quality?	No issues noted	
	•		Continued…

AREA	KEY STRENGTHS	ISSUES	SUGGESTIONS
M&V / MT&R Procedures	• Program consistently followed rigorous M&V procedures; assessment anticipates an impact evaluation will support M&V'ed realization rates	• Some end users question reliability of MT&R plans for HPEM projects; no BPA walk throughs of end user facilities with HPEM projects	• EPT should contact all end user HPEM project managers and discuss their expectations about MT&R reliability • Impact assessment should be conducted.

Table 35: Design Effectiveness

AREA	KEY STRENGTHS	ISSUES	SUGGESTIONS
	UTILITIES' OVERALL PROGRAM EXPERIENCE		
Market Interest in Program	• Overall, high utility participation in the program • Most utilities view program offers to be comprehensive	• A few larger utilities concerned they are left out of programs' design • Some smaller utilities believe they do not have enough industrial end users to participate	• Consider developing separate collections of program features for larger and smaller utilities
Program Support for Utility Program Administration	• Most utilities believe program's administrative burdens are reasonable • Utilities appreciate expanded technical support offered to their customers through program	No issues noted	
	RESOURCE COMPONENTS		
Custom Projects (CP)	• End users have high levels of satisfaction for custom project, and program representatives • Program identifying and working with end users early in their project planning • CP resonates with end users' commitment to continuous improvement	• Slow approval process / confusion over COTR viewed by some utilities as financial risk factors for end user; some utilities reconsidering their participation in CP • Some utilities concerned over perceived high incentive levels / sustainability of incentive rate	• Provide market actors with clear instructions on how to navigate project approval processes • Involve utility input with setting incentive levels
Small Industrial (SI)	• High utility satisfaction driven by quality of program-provided technical support and additional savings delivered • Very high levels of end user satisfaction	• Most SI projects processed through regular CP route; some utilities insisting on standardized savings calculations	• Set goals in implementation contractor's contract for development of calculators

Continued…

AREA	KEY STRENGTHS	ISSUES	SUGGESTIONS
Enhanced Lighting	• Leveraging work from 20-30 trade allies • Trade ally training, sales, and technical support offered through Northwest Trade Ally Network	• Rural areas lack trade allies with specific lighting focus; cost prohibitive for program to travel to rural areas • Nearly half of projects involving lighting specialist input are in one service territory	• Expand ESIP role in rural areas to include focus on identifying lighting opportunities and working with TAs
ENERGY MANAGEMENT (EM) PILOT COMPONENTS			
Overview	• Participation leads to long-term EM focus; three quarters of participants plan to add EM activities after program support ends • 21 of 22 EM participants reported plans to continue EM activities once program support ends • Participation leads to greater employee awareness of energy efficiency throughout facilities	No issues noted	
Energy Project Manager	• Utilities view program to be highly effective at increasing project volumes • Early results indicate custom project volumes doubling at participating facilities	• Challenges relate to slowed CPP approval times	
Track and Tune	• Participants acting on high percentage (average 85%) of recommended action items • Some participants beginning to use sub-metered data in their custom reports	• Low utility participation from concern over long 3 and 5 year project incentive periods • Sub-metering, invoicing procedures, and verification costs prohibitive for smaller opportunities	• Test utility and end user reaction to one year incentive period • Consider calculating incentives using a “straight energy savings” process eliminating variable inputs

Continued

AREA	KEY STRENGTHS	ISSUES	SUGGESTIONS
High Performance Energy Management	• Cohort meetings help some participants verify effectiveness of potential projects; cohort successes become success models shared across multiple firms • CUSUM report effective tool for explaining energy use across multiple organizational departments	• Varied technical sophistication of cohort participants is challenging to the development of shared curriculum and staging project timing goals • HPEM participation too costly for smaller opportunities • Some territories do not have enough large end users to create a cohort	• Modify HPEM training to support end user identification and implementation of energy savings projects earlier in the training • Assess less expensive options for HPEM training delivery, such as training via webinars

APPENDICES

A ENHANCED LIGHTING COMPONENT

LIGHTING PROJECTS

ESI's Enhanced Lighting program is an industrial lighting program driven by trade allies who receive support from the Northwest Trade Ally Network (Network). The Network supports electricians and lighting contractors with training, provides technical assistance, and explains program incentive structures (Figure 18). Trade allies enter the market through a mix of cold calls, referrals, and pre-existing relationships with end users. The Network has been operating for four years and was involved with BPA's energy efficiency programs prior to the Energy Smart Industrial program.

In this section, we describe findings from an interview with the management of the Network concerning program processes, summarize end user and utility program experiences from surveys with those segments, and assess the geographic coverage of the program from lighting project data.

Figure 18: Summary Model of NW Trade Ally Network's Electrical Contractor Support

Enhanced Lighting Program Processes

The Northwest Trade Ally Network is a function of Evergreen Consulting Group LLC. Evergreen manages commercial and industrial lighting programs for utilities and organizations outside BPA territory, including adjacent areas such as Energy Trust of Oregon. Evergreen is able to leverage their work with trade allies in Energy Trust territory because trade allies operating in there might also work in BPA utility territories.

Leveraging these relationships is a key aspect of the lighting component of the ESI program. A key informant reported that approximately two lighting specialist FTE are committed to the entire BPA region, yet 20 to 30 trade allies try to sell a lighting project each day to end users. Therefore, the program is designed so those two FTE can leverage their relationships with trade allies to drive industrial lighting savings projects.

The Network serves as a support mechanism offering a third party endorsement of the lighting project to interested end users. One key informant stated the Northwest Trade Ally Network "is able to endorse TA work in front of a customer so we are like a third party validation for customers [end users] and we help generate business for trade allies."

During initial site visits at end user facilities, trade allies conduct walk-through studies to identify opportunities and, in some cases, install test fixtures to demonstrate savings opportunities. Additionally, the trade ally network employs lighting specialists who can assist trade allies with technical or administrative support on specific industrial projects.

Our survey of end users reinforces that the program is operating as designed. For example, lighting project participants reported working with their lighting contractor (trade ally) on projects more so than any other potential party (Table 36). The only project phase where end users primarily worked with a party other than the lighting contractor was the project management phase. In that phase, end users worked with utilities to identify how and when incentives would be paid.

Table 36: Who End Users Worked With (n=6)

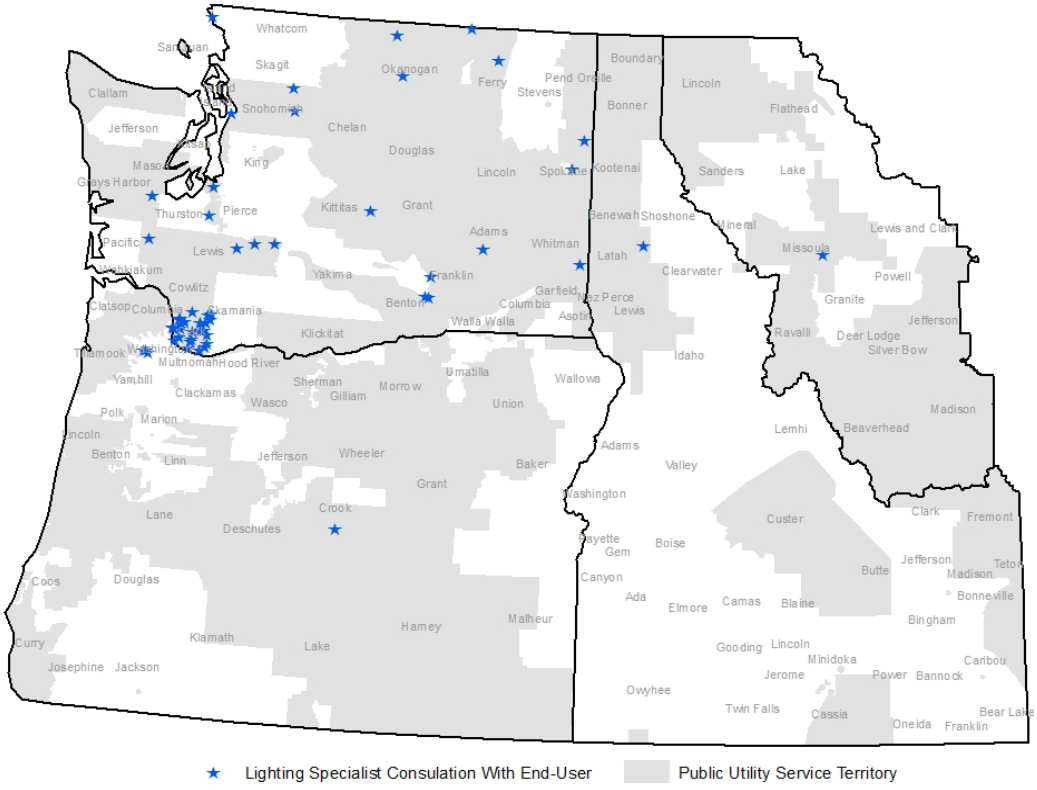
PROJECT PHASE	LIGHTING CONTRACTOR	PROPERTY OWNER	UTILITY	ESIP	DON'T KNOW
Audit Scoping	*4*	*1*	*0*	*1*	*0*
Project Management	2	1	3	0	0
Technical Support	4	1	0	1	0
Project Completion	3	1	1	0	1

All end users were satisfied with their experience with program representatives, the access to technical expertise, and the post inspection process. Five respondents were satisfied and one respondent reported a neutral score when asked if they were satisfied with the time it took to approve the project. Therefore, participants appear satisfied with the current program design.

Industrial Lighting Opportunities in Rural Areas

While the lighting program is meeting its savings goals, there appears to be lighting opportunities in rural areas yet to be addressed. For example, we identified end user locations in the region where a lighting specialist conducted an on-site consultation. The consultations are heavily concentrated in Clark County, Washington, a county with more urban population centers. Almost half of all projects with lighting specialist consultations were isolated to Clark County (see Figure 19). According to one key informant, the rural areas of the region receive far fewer consultations, based primarily on the travel time needed to reach these sites. "It is not worth driving three hours one-way for a small project." Therefore, industrial end users in rural areas may receive less program attention than that is offered to end users in urban territories.

Figure 19: End Users that Received On-Site Consultation from Lighting Specialist



Urban areas also have trade allies that specialize in lighting; whereas rural areas have "electricians that may or may not get enamored about lighting," according to one key informant. These electricians in rural areas respond to customer service orders, rather than actively soliciting work and driving program participation through a sales approach to the market.

A BPA informant reinforced the idea that rural end users may not be getting the same program service for lighting as their urban counterparts. This informant stated there are savings opportunities in rural areas that may be going untapped with the current program design. He proposed assigning ESIPs to rural areas to identify opportunities, perform audits, estimate project costs, estimate incentives, and relieve administrative burdens away from the end user.

End User Program Experiences

The program developed project proposal forms that standardize project savings estimates. The proposal forms are used by all the trade allies and help end users to select trade allies based upon comparable project metrics. All six end user respondents reported seeing a lighting project proposal that had an ESI or BPA logo on it. One of these respondents said the proposal "showed us the payback over so many years." Another respondent stated the proposal "shows a project cost summary, lighting proposal, and a spreadsheet with proposed savings."

End user respondents generally described a positive experience when asked to describe their interaction with various aspects of the ESI program. Respondents agreed that energy estimates were reliable and easily understood, and program representatives were responsive (see Table 37).

Table 37: Project Activities

END USER EXPERIENCE	DISAGREE	NEUTRAL	AGREED	TOTAL (N)
I trusted the energy savings estimates because they were approved by my utility or BPA	—	—	6	**6**
The energy savings estimates were clear and easily understood	—	—	6	**6**
Incentive amounts were easy to understand	—	—	6	**6**
The program representatives were responsive to my organization's communications	—	—	6	**6**
I would do another lighting project through this program	—	1	5	**6**
We had been informed about possible disruptions resulting from the installation process[53]	—	—	4	**4**
The energy savings calculations enabled me to compare lighting contractors easily[54]	—	—	3	**3**

However, one respondent suggested he might not do another lighting project because he "has not seen enough evidence of savings yet."

Five of the six end user respondents had no prior experience with efficiency programs. One respondent received assistance from his utility in 2010 when he replaced welding equipment. That experience resulted in the respondent also learning about lighting incentives and ultimately led to his lighting project. Furthermore, at the time of the interview, this respondent was in the process of upgrading additional welding equipment.

Respondents appeared to be new to conducting efficiency projects. Prior to their experience with the ESI program, three respondents had no plans to pursue efficiency, two had general plans to pursue efficiency, and one was in preliminary stages of doing an efficiency project.

[53] Two respondents stated this question was not applicable to them, hence the n=4.

[54] Only respondents that received multiple bids for a lighting project were asked this question.

Utilities Participation in the Lighting Program

Of utility respondents that participated in the ESI program, about two-thirds agreed that industrial lighting projects increased because of ESI, over 80% agreed that M&V methods were appropriate, and almost 75% stated technical support was effective. Six utility respondents expounded on their participation in the lighting program and one of these respondents provided specific details about their participation.

In describing their experience with the program respondents reported that:

- Their utility had no new lighting projects in their service territory during the program cycle
- Their utility could manage lighting projects without ESI support
- Most of their lighting projects are customer driven
- Their utility uses a commercial lighting contractor for industrial projects as well
- Lighting tended to be driven by other program components, rather than trade allies

B UTILITY SURVEY

Q2 Please indicate the extent to which ESI supports the following industrial programs at your utility.

	My utility does not conduct work in this area	My utility conducts all work in this area without ESI support	My utility conducts all work in this area with some ESI support	My utility relies on ESI to conduct nearly all aspects of these projects	Total
Industrial Custom Projects	8	3	9	28	48
Small Industrial Projects	11	5	14	18	48
Industrial Lighting	9	11	17	11	48
Energy Management Programs (Track & Tune, High Performance Energy Management., Energy Project Manager)	21	0	12	15	48

Q6 If any, what ESI marketing or outreach to industrial firms was conducted in your territory?

	Not answered	No	Yes	Total
My utility conducted outreach/marketing of the ESI program offerings	1	22	18	41
ESI program conducted outreach/marketing of ESI program offerings	1	23	17	41
No ESI-related outreach/marketing program offerings were conducted	1	26	14	41

Q7 Please indicate how ESI activities were branded in your service territory.

	Count
ESI activities were branded as "The ESI program", or "BPA's program"	8
Activities were co-branded between ESI and the utility	16
All ESI activities were utility branded	7
Other, please describe:	10
Total	**41**

Q9 Please rate each ESIP activity, using a one-to-seven scale: Where 1 = Strongly Disagree,… 4 = Neither Agree Nor Disagree,… and 7 = Strongly Agree. If the statement does not apply to your utility's experience, please select "Not Applicable."

	1 - Strongly Disagree	2	3	4	5	6
My ESIP helped to identify new program participants.	2	0	2	4	4	9
My utility was sufficiently informed about ESI program activities.	0	0	2	1	2	14
My ESIP provided adequate technical support when needed.	0	0	0	1	1	9
My ESIP accurately explained project incentives to customers, when necessary.	0	0	0	0	1	9
My ESIP helped drive projects to completion.	0	0	2	1	3	9
My ESIP helped reduce the industrial project administrative burden on my utility.	0	0	2	1	1	5

Continued…

	7 - Strongly Agree	Not Applicable	Don't Know	Not answered	Total
My ESIP helped to identify new program participants.	13	6	1	0	41
My utility was sufficiently informed about ESI program activities.	20	0	2	0	41
My ESIP provided adequate technical support when needed.	26	2	2	0	41
My ESIP accurately explained project incentives to customers, when necessary.	22	3	4	2	41
My ESIP helped drive projects to completion.	23	3	0	0	41
My ESIP helped reduce the industrial project administrative burden on my utility.	29	3	0	0	41

Q11 We would like to understand your opinions of the ESI's industrial outreach, administrative processes, and working with BPA program staff. To begin, we have a few items concerning the way ESI works with the industrial marketplace. Again, using the one-to-seven scale, please rate how strongly you agree with the following statements. If the statement does not apply to your utility's experience, please select "Not Applicable."

	1 - Strongly Disagree	2	3	4	5	6
ESI helped increase industrial firms' awareness of energy efficiency opportunities and incentives in my utility's service territory.	0	1	1	3	6	7
Due to participation in ESI, my utility was able to complete more industrial projects than in prior years.	1	2	0	1	4	10
ESI increased my utility's ability to provide technical support to end users.	0	0	0	1	2	7
We would like to understand your opinions of ESI's industrial outreach, administrative processes, an...-ESI was a comprehensive portfolio--covering all types of industrial savings opportunities.	0	0	0	4	1	12

Continued…

	7 - Strongly Agree	Not Applicable	Don't Know	Not answered	Total
ESI helped increase industrial firms' awareness of energy efficiency opportunities and incentives in my utility's service territory.	16	4	2	1	41
Due to participation in ESI, my utility was able to complete more industrial projects than in prior years.	16	5	1	1	41
ESI increased my utility's ability to provide technical support to end users.	27	1	2	1	41
ESI was a comprehensive portfolio--covering all types of industrial savings opportunities.	14	6	3	1	41
We would like to understand your opinions of ESI's industrial outreach, administrative processes, an...-ESI was a comprehensive portfolio--covering all types of industrial savings opportunities.	0	0	0	0	17

Q13 Here are a few statements concerning your utility's experiences with ESI's processes and reporting. Again, using the one-to-seven scale, please rate how strongly you agree with the following statements. If the statement does not apply to your utility's experience, please select "Not Applicable."

	1 - Strongly Disagree	2	3	4	5	6
The administrative burden on my utility for ESI was reasonable.	0	0	0	3	4	12
My utility retained an appropriate level of control over communications with customers.	1	0	0	0	6	9
My utility retained an appropriate level of control over the way the program was implemented in my utility's service territory.	1	0	2	2	3	9
ESI provided my utility with timely reports on project progress.	1	1	1	2	5	9
The ESI QC process helped to improve the quality of my utility's proposals.	0	0	0	2	5	8

Continued…

	7 - Strongly Agree	Not Applicable	Don't know	Not answered	Total
The administrative burden on my utility for ESI was reasonable.	18	1	2	1	41
My utility retained an appropriate level of control over communications with customers.	22	2	0	1	41
My utility retained an appropriate level of control over the way the program was implemented in my utility's service territory.	21	2	0	1	41
ESI provided my utility with timely reports on project progress.	17	2	2	1	41
The ESI QC process helped to improve the quality of my utility's proposals.	13	8	4	1	41

Q15 Here are a few statements concerning your utility's experiences working with BPA Staff. Again, using the one-to-seven scale, please rate how strongly you agree with the following statements. If the statement does not apply to your utility's experience, please select "Not Applicable."

	1 - Strongly Disagree	2	3	4	5	6
BPA staff and Cascade Energy staff roles were clear and distinct, without overlap or confusion.	3	2	0	4	6	8
BPA staff were timely in their response to my requests for information and input on project matters.	1	1	4	5	5	6
When I had a question or concern, BPA staff gave clear responses.	2	4	0	5	3	6

Continued…

	7 - Strongly Agree	Not Applicable	Don't know	Not answered	Total
BPA staff and Cascade Energy staff roles were clear and distinct, without overlap or confusion.	14	2	2	0	41
BPA staff were timely in their response to my requests for information and input on project matters.	13	4	2	0	41
When I had a question or concern, BPA staff gave clear responses.	15	3	2	1	41

Q17 Please use the one-to-seven scale to indicate how strongly you agree with the following statements about non-lighting custom projects. If the statement does not apply to your utility's experience, please select "Not Applicable."

	1 - Strongly Disagree	2	3	4	5	6	7 - Strongly Agree
ESI reduced the amount of work the utility was responsible for with each custom project.	0	0	0	0	0	7	23
ESI reduced the amount of work industrial customers were responsible for with each custom project.	1	0	0	0	2	8	14
Technical support provided by ESI for custom projects was effective.	0	0	0	0	1	12	20
The M&V methods used for measuring custom project energy savings were appropriate.	0	0	1	2	1	12	15
The M&V methods for custom projects are not onerous for my utility or for industrial customers.	2	0	1	2	6	7	10
ESI's Quality Assurance and Quality Control processes help shorten the length of time to approve projects.	1	0	1	2	6	6	10
More industrial custom projects were completed through my utility because of ESI's support.	0	1	0	1	2	5	19
The incentives for custom projects were just about right, neither too high nor too low.	1	2	1	1	5	6	12

Continued…

	NOT APPLICABLE	DON'T KNOW	NOT ANSWERED	TOTAL
ESI reduced the amount of work the utility was responsible for with each custom project.	4	2	1	37
ESI reduced the amount of work industrial customers were responsible for with each custom project.	6	6	0	37
Technical support provided by ESI for custom projects was effective.	3	1	0	37
The M&V methods used for measuring custom project energy savings were appropriate.	4	2	0	37
The M&V methods for custom projects are not onerous for my utility or for industrial customers.	5	4	0	37
ESI's Quality Assurance and Quality Control processes help shorten the length of time to approve projects.	4	7	0	37
More industrial custom projects were completed through my utility because of ESI's support.	5	2	2	37
The incentives for custom projects were just about right, neither too high nor too low.	5	4	0	37

Q21 Please use the one-to-seven scale indicate how strongly you agree / disagree with the following statements about small industrial projects. If the statement does not apply to your utility's experience, please select "Not Applicable."

	1 - STRONGLY DISAGREE	2	3	4	5	6
Technical support provided by ESI for Small Industrial projects was effective.	0	0	1	1	1	10
The M&V methods used for measuring Small Industrial project energy savings were appropriate.	0	0	1	1	1	9
More small industrial projects were completed through my utility because of ESI Small Industrial.	0	0	0	2	4	5

Continued..

	7 - Strongly Agree	Not Applicable	Don't know	Not answered	Total
Technical support provided by ESI for Small Industrial projects was effective.	12	3	2	2	32
The M&V methods used for measuring Small Industrial project energy savings were appropriate.	12	4	4	0	32
More small industrial projects were completed through my utility because of ESI Small Industrial.	11	5	3	2	32

Q25 Please use the one-to-seven scale to indicate how strongly you agree / disagree with the following statements about lighting projects. If the statement does not apply to your utility's experience, please select "Not Applicable."

	1 - Strongly Disagree	2	3	4	5	6
Technical support provided by ESI for lighting projects was effective.	0	0	0	2	3	8
The M&V methods used for measuring lighting project energy savings are appropriate	0	0	0	1	2	10
More industrial lighting projects were completed by my utility because of ESI lighting support.	0	0	2	1	3	5

Continued…

	7 - Strongly Agree	Not Applicable	Don't know	Not answered	Total
Technical support provided by ESI for lighting projects was effective.	5	5	3	2	28
The M&V methods used for measuring lighting project energy savings are appropriate	4	6	3	2	28
More industrial lighting projects were completed by my utility because of ESI lighting support.	6	5	4	2	28

Q29 Now I would like to ask you some questions about your utility's activity with the Energy Management (Energy Project Manager, Track and Tune, High Performance Energy Management) portions of ESI. Select which Energy Management programs your utility was active with?

	Not enrolled in this program	Active (Completed Project in 2010-2011)	Active (Did not complete project in 2010-2011)	Total
Energy Project Manager (EPM)	7	12	8	27
Track and Tune	15	4	8	27
High Performance Energy Management (HPEM)	16	6	5	27

Q30 Please use the one-to-seven scale indicate how strongly you agree / disagree with the following statements about Energy Project Managers (EPM)funded through ESI. If the statement does not apply to your utility's experience, please select "Not Applicable."

	1 - Strongly Disagree	2	3	4	5	6
The EPM program was well suited to key industrial customers in my utility's service territory.	0	0	0	0	0	9
EPM was an effective approach to help firms overcome barriers to energy management and energy efficiency projects	0	0	0	1	1	8
	1 - Strongly Disagree	**2**	**3**	**4**	**5**	**6**
Energy Project Managers have increased projects and savings at their facilities.	0	0	0	2	2	3
The incentives for Energy Project Manager were just about right, neither too high nor too low.	0	0	0	0	2	3

Continued…

	7 - Strongly Agree	Not Applicable	Don't know	Not answered	Total
	Count	Count	Count	Count	Count
The EPM program was well suited to key industrial customers in my utility's service territory.	5	18	9	0	41
EPM was an effective approach to help firms overcome barriers to energy management and energy efficiency projects	4	19	8	0	41
Energy Project Managers have increased projects and savings at their facilities.	4	0	1	29	41
The incentives for Energy Project Manager were just about right, neither too high nor too low.	3	0	3	30	41

Q33 Why was your utility inactive with the Energy Project Manager (EPM) program?

	Count
No customers in my service territory qualify for EPM	8
Customers not interested in EPM	5
My utility already had a program similar to EPM	1

Q36 Please use the one-to-seven scale to indicate how strongly you agree / disagree with the following statements about Track and Tune Projects. If the statement does not apply to your utility's experience, please select "Not Applicable."

	1 - STRONGLY DISAGREE	2	3	4	5	6
Next, please rate your utility's experience with ESI's Track and Tune component, using the one-to-se...-The Track and Tune program was well suited to key industrial customers in my utility's service territory.	1	1	0	2	2	5
Track and Tune was an effective approach to generate operational and maintenance changes	1	0	0	0	2	4
The structure of the Track and Tune incentives was appropriate for the types of savings the program produces.	2	0	0	2	1	3
Technical support provided by ESI for Track and Tune projects was effective.	1	0	0	0	2	0
The Track and Tune program was well suited to key industrial customers in my utility's service territory.	1	0	0	0	1	0
The M&V methods used for measuring Track and Tune were appropriate.	1	0	0	0	1	0
The incentives for Track and Tune projects were just about right, neither too high nor too low.	1	0	0	1	0	0

Continued…

	7 - Strongly Agree	Not Applicable	Don't know	Not answered	Total
The Track and Tune program was well suited to key industrial customers in my utility's service territory.	2	18	10	0	41
Track and Tune was an effective approach to generate operational and maintenance changes	4	20	10	0	41
The structure of the Track and Tune incentives was appropriate for the types of savings the program produces.	2	17	13	1	41
Technical support provided by ESI for Track and Tune projects was effective.	1	0	0	37	41
The Track and Tune program was well suited to key industrial customers in my utility's service territory.	1	1	0	37	41
The M&V methods used for measuring Track and Tune were appropriate.	0	0	1	38	41
The incentives for Track and Tune projects were just about right, neither too high nor too low.	1	1	0	37	41

Q39 Why is your utility inactive with the Track and Tune program?

	Yes
No customers in my service territory qualify for Track and Tune	9
Customers not interested in Track and Tune	10
My utility already had a program similar to Track and Tune	0

Q42 Please use the one-to-seven scale indicate how strongly you agree / disagree with the following statements about High Performance Energy Management trainings. If the statement does not apply to your utility's experience, please select "Not Applicable."

	1 - STRONGLY DISAGREE	2	3	4	5	6
The High Performance Energy Management program was well suited to key industrial customers in my service territory.	1	1	1	2	2	2
High Performance Energy Management was an effective approach to generate operational and maintenance changes.	1	0	0	1	2	4
High Performance Energy Management has significantly increased energy efficiency projects at participant sites.	1	1	0	0	0	2
The incentives for High Performance Energy Management projects were just about right, neither too high nor too low.	0	0	0	1	1	2
The structure of the High Performance Energy management incentives was appropriate for the types of savings the program produces.	0	0	0	0	0	3

Continued…

	7 - Strongly Agree	Not Applicable	Don't know	Not answered	Total
The High Performance Energy Management program was well suited to key industrial customers in my service territory.	2	20	10	0	41
High Performance Energy Management was an effective approach to generate operational and maintenance changes.	0	19	13	1	41
High Performance Energy Management has significantly increased energy efficiency projects at participant sites.	0	0	2	35	41
The incentives for High Performance Energy Management projects were just about right, neither too high nor too low.	1	1	0	35	41
The structure of the High Performance Energy management incentives was appropriate for the types of savings the program produces.	2	1	0	35	41

Q45 Why is your utility inactive with the High Performance Energy Management program?.

	Yes
No customers in my service territory qualify for HPEM	9
Customers not interested in HPEM	12
My utility already had a program similar to HPEM	1
Customers have expressed concern about protecting industrial secrets	1

Q48 We would like to understand the level of satisfaction your utility has with various ESI program elements. Please indicate your utility's satisfaction with the following items using a one-to-seven scale: Where 1 = "Very Dissatisfied",…4 = "Neither Satisfied /Dissatisfied", and 7 = "Very Satisfied." If the statement does not apply to your utility's experience, please select "Not Applicable." How satisfied are you with....

	1 - Very Dissatisfied	2	3	4	5	6
Your ESIP's performance	0	0	1	0	2	9
Your experience working with BPA staff	2	0	2	5	3	10
The ESI Custom Projects Program	1	0	0	0	3	9
The ESI Small Industrial Program	0	1	1	0	3	8
The ESI Lighting Program	0	0	0	1	4	7
The Energy Project Manager Program	1	0	0	1	3	3
The Track and Tune Program	1	0	0	1	2	0
The High Performance Energy Program	1	0	1	0	0	4

Continued…

	7 - Very Satisfied	Not Applicable	Don't know	Not answered	Total
Your ESIP's performance	25	1	3	0	41
Your experience working with BPA staff	16	1	2	0	41
The ESI Custom Projects Program	16	3	3	6	41
The ESI Small Industrial Program	12	3	2	11	41
The ESI Lighting Program	7	4	3	15	41
The Energy Project Manager Program	6	3	3	21	41
The Track and Tune Program	3	3	2	29	41
The High Performance Energy Program	1	2	2	30	41

C END USER SURVEY

RESOURCE COMPONENT SURVEY

Q3. Now, I'd like to ask which of these people you worked with for some specific project activities. Please let me know who you worked with outside your company for each.

	ESIP	TSP	UTILITY	TOTAL
Applying to the program	22	1	18	41
Audit, scoping, and identification of efficient opportunities	17	3	8	28
Technical support	16	6	10	32
Development of the project proposal	16	1	10	27
Keeping the project on track [outside of end user organization]	23	4	12	39
Measurement and verification	19	5	8	32
Project completion reporting and getting incentive payment	23	3	18	44

Q5. Please rate the overall effectiveness of your ESI program representatives' performance for each of the following activities.

	NOT EFFECTIVE	2	3	4	5	6	VERY EFFECTIVE	NOT APPLICABLE
Identified energy savings opportunities at your facility	0	0	0	1	5	9	11	4
Explained energy efficiency incentives and rebate	0	0	0	1	4	6	18	1
Provided needed technical support	0	0	0	1	4	6	15	4
Helped drive projects to complete	0	0	1	0	8	6	11	4
Significantly reduced project administrative burden on your organization	0	0	0	2	4	5	16	3

Continued…

	Not Effective	2	3	4	5	6	Very Effective	Not Applicable
Brought needed industry knowledge to your project	0	0	0	0	6	6	9	9
Communicated project progress to y	0	0	0	2	3	11	9	5
Responded to your organization's requests in a timely manner	0	0	0	1	1	10	18	0
Total	**0**	**0**	**1**	**8**	**35**	**59**	**107**	**30**

Q6. For the following items, please represent your organizations level of satisfaction by using a seven-point scale.

	Very Dissatisfied	2	3	4	5	6	Very Satisfied	Don't Know	Not Applicable
Your experience working with program representatives	0	0	0	1	3	8	20	0	0
Access to technical expertise the program provided	0	0	0	0	10	6	12	3	1
The time it took to approve the project	0	1	1	2	8	8	12	0	0
The measurement and verification process	0	1	0	0	4	11	15	0	1
The services provided by the program representatives	0	0	0	0	7	11	14	0	0
Overall satisfaction with program	0	0	1	1	3	9	18	0	0
Total	**0**	**2**	**2**	**4**	**35**	**53**	**91**	**3**	**2**

Q9. Please tell me which of the following factors were relevant to your organization's decision to pursue the project.

	YES	NO	DON'T KNOW	NOT APPLICABLE
Meeting codes or regulations	10	15	0	7
Improving product quality	13	10	0	9
Increasing production	16	10	0	6
Implementing a recommendation from a technical study	18	13	1	0
Replacing failed equipment	11	18	0	3
Decreasing rejection or scrap rates	6	13	0	13
Organizational commitment to continuous improvement	31	1	0	
Organizational commitment to reduced environmental impact	25	5	0	2
Reducing energy costs	32	0	0	0
Incentives offered through the program	30	2	0	0

Q10. Please tell me how supportive the program's technical support and incentives were in achieving each of the factors you identified.

	VERY	SOMEWHAT	NEUTRAL/ NOT RELEVANT
Supportive-Meeting codes or regulations	5	4	1
Supportive-Improving product quality	8	3	2
Supportive-Increasing production	9	2	5
Supportive-Implementing a recommendation from a technical study	14	2	2
Supportive-Replacing failed equipment	8	1	2
Supportive-Decreasing rejection or scrap rates	3	2	1
Supportive-Organizational commitment to continuous improvement	24	5	2
Supportive-Organizational commitment to reduced environmental impact	21	3	1
Supportive-Reducing energy costs	31	1	0

Q12. Prior to this project, had your company received any other incentives from your utility for installing energy saving equipment?

	FREQUENCY
Yes	18
No	14
Total	**32**

Q13. About how long ago was that? [If multiple times, take most recent]-Years

Q14. BEFORE your organization connected with its program representatives, which best describes your organization's status with respect to energy management or efficiency activities. Would you say…

	FREQUENCY
No plans, program staff identified the project	3
General plans to pursue energy efficiency	10
Begun to gather information on efficiency, such as consulting technical experts	2
Created a preliminary plan for efficiency, perhaps with a cost estimate	16
Final plan for efficiency upgrade or upgrades, with an approved budget	1
Total	**32**

Q15. Does your organization have specific energy efficiency goals?

	FREQUENCY
Yes	18
No	14
Total	**32**

Q16. If yes to Q15, does your organization have strategies to meet these goals?

Q17. Do your strategies include:

	FREQUENCY	
	YES	NO
Capital improvements	15	1
Operations and maintenance improvements	16	0

Q18. Does your organization track and monitor energy use?

	FREQUENCY
Yes	29
No	3
Total	**32**

Q19. If yes to Q18, does your company report on energy use internally?

	FREQUENCY
Yes	23
No	5
Don't Know	1
Total	**29**

Q20. Does your organization conduct any other energy efficiency activities at your location?

	FREQUENCY
Yes	27
No	5
Total	**32**

ENERGY MANAGEMENT PILOT SURVEY

Q1. Hello _____, my name is _____. My company is working with Bonneville Power Administration to evaluate their Energy Smart Industrial (ESI) program, which supports initiatives like High Performance Energy Management (HPEM), Track and Tune (T&T), Energy Performance Management (EPM).

		HPEM	TRACK AND TUNE	EPM	TOTAL
HPEM-Respondent can answer	**-99**	0	5	7	12
	1	7	0	4	11
Track and Tune-Respondent can answer	**-99**	7	0	9	16
	1	0	5	2	7
Energy Project Manager-Respondent can answer	**-99**	3	3	0	6
	1	4	2	11	17
HPEM-Someone else can answer	**-99**	7	5	10	22
	1	0	0	1	1
Track and Tune-Someone else can answer	**-99**	7	5	10	22
	1	0	0	1	1
Energy Project Manager-Someone else can answer	**-99**	**7**	**5**	**11**	**23**

Q3. How did your organization learn about the program?

	HPEM	TRACK AND TUNE	EPM	TOTAL
ESIP	4	2	6	12
TSP	1	1	1	3
Utility	2	1	3	6
BPA Engineer	0	0	0	0
BPA EER	0	0	0	0
Other	0	4	4	8
Total	**7**	**8**	**14**	**29**

Q3_text. How did your organization learn about the program? Other

Q5/Q7/Q9. Please tell me how supportive the _____ program's technical support and incentives were in achieving each of the factors you identified.

		HPEM	TRACK AND TUNE	EPM	TOTAL
Improving product quality	**Very**	0	0	0	0
	Somewhat	0	0	4	4
	Neutral/Not relevant	0	0	0	0
Increasing production	**Very**	3	0	5	8
	Somewhat	1	1	0	2
	Neutral/Not relevant	0	0	0	0
Implementing a recommendation from a technical study	**Very**	2	2	7	11
	Somewhat	2	0	2	4
	Neutral/Not relevant	0	0	0	0
Decreasing rejection or scrap rates	**Very**	1	0	0	1
	Somewhat	0	0	0	0
	Neutral/Not relevant	2	1	1	4
Organizational commitment to continuous improvement	**Very**	5	4	9	18
	Somewhat	2	0	1	3
	Neutral/Not relevant	0	0	0	0
Organizational commitment to reduced environmental impact	**Very**	3	3	1	7
	Somewhat	0	1	1	2
	Neutral/Not relevant	2	0	0	2
Reducing energy costs	**Very**	7	5	2	14
	Somewhat	0	0	0	0
	Neutral/Not relevant	0	0	0	0
Replacing failed equipment	**Very**	0	0	0	0
	Somewhat	0	0	0	0
	Neutral/Not relevant	0	0	0	0

Q10. When your organization was deciding to participate in the _____, were any of the following topics considered as a possible reason to not participate in _____?

	HPEM	TRACK AND TUNE	EPM	TOTAL
Propriety processes / intellectual property	2	4	5	11
Staff's level of knowledge with your industry	0	0	0	0
Stability / dependability of program incentives	4	2	6	12
Staff's technical capabilities	1	0	0	1
Your organization's lack of familiarity with program staff	5	0	1	6
Accuracy of technique used to measure energy savings	2	0	0	2
Prior negative experiences with energy incentive programs.	2	0	0	2

Q11. Is there anything about the HPEM cohort meetings that could be improved? [How]

Q12. Is there anything about the HPEM cohort meetings that could be improved? [How]

Q13. HPEM has a process for recognizing energy savings achievements with management and staff at your organization. How, if at all, has recognizing energy savings contributed to sustained energy management at your organization?

Q14. At the end of the program, there is a reassessment process where management reviews the strengths and weaknesses of the HPEM efforts and sets new goals. How would you characterize the outcomes of your organizations reassessment process in terms of sustaining goals for the organization?

Q15. I have a set of questions for you about the Track and Tune program. What proportion of the recommended Track and Tune action items does your organization currently have plans to act on, and or have completed?

		FREQUENCY
75.00		3
80.00		1
90.00		1
100.00		2
	Total	**7**

Q16. What proportion of savings opportunities identified in your action plan does your organization have plans to act on?

	FREQUENCY
75.00	2
80.00	1
90.00	1
100.00	2
Total	**7**

Q17. What are some reasons why your organization has not included some action items from Track and Tune in its current plans?

Q18. Was any equipment installed as part of your organizations Track and Tune action items?

	FREQUENCY
Yes [Can you briefly describe the equipment?]	6
No	1
Total	**7**

Q19. Has any of that equipment been removed or is no longer in use?

	FREQUENCY
No	6
System	17
Total	**23**

Q21. Has your organization discontinued any of the tune-up activities?

	FREQUENCY
No	7
System	16
Total	**23**

Q22. Are you continuing to review the sub-metered data?

	FREQUENCY
Yes. [How does the sub-metered data inform your operations or decision-making?]	7
System	16
Total	**23**

Q23_1. Does anyone from your organization gather sub-metered data? Or, is the data only gathered by program...-Organization has employee gather data [Who--title, collects data?]

Q23_2. Does anyone from your organization gather sub-metered data? Or, is the data only gathered by program...-The organization relies on program representatives to gather data

Q24_1. We understand the program generates reports from the sub-metered data. Does your organization generate its own reports from sub-metered data [Who receives the reports? How are the reports used?]

Q25. Now I have a set of questions for you about the EPM program. What has the EPM position enabled your organization to do that it was not previously doing?

Q26. How effective has the EPM role been at identifying energy savings opportunities at your organization?

Q27. How effective has the EPM role been at supporting projects to help bring them to completion?

Q28. Do you feel your organization has been acting on the opportunities identified by the EPM?

Q32a. HPEM EM Approaches

Q32b. T&T EM Approaches

Q32c. EPM EM Approaches

Q33a. What aspects of HPEM are most critical to continuous process improvement at your organization?

Q33c. What aspects of EPM are most critical to continuous process improvement at your organization?

Q34a. How are the HPEM energy savings reporting coming along? [Probe for difficulties, disagreements]

Q34c. How are the EPM energy savings reporting coming along?

Q36. What aspects of Track Tune are most critical to continuous process improvement at your organization?

Q37. What aspects of EPM are most critical to continuous process improvement at your organization?

Q38. How are the HPEM energy savings reporting coming along? [Probe for difficulties, disagreements]

Q39. How are the Track and Tune energy savings reporting coming along?

Q40. How are the EPM energy savings reporting coming along?

Q41. How successful has your organization been in integrating energy management into your processes and pursuing energy efficiency?

	HPEM	TRACK AND TUNE	EPM	TOTAL
Not Successful	0	0	0	0
Somewhat Successful	2	1	3	6
Successful	1	1	2	4
Very Successful	4	3	5	12
Don't Know	0	0	1	1

Q46. Has your organization's participation in ___ helped to increase employee awareness of energy management and efficiency at your organization?

	HPEM	TRACK AND TUNE	EPM	TOTAL
Yes	7	5	10	22
No	0	0	0	0
Not Sure	0	0	1	1

Q48. What are some possible changes to _____ that would lead participating organizations such as yours to greater awareness of and action on energy management and efficiency?

Q49_1. _____ provides support to your organization for a specific period of time. After this support ends, what do you expect will happen to energy management and efficiency activities at your company?: Current Activities

	HPEM	TRACK AND TUNE	EPM	TOTAL
Activities will continue	4	4	8	16
Continue at slower pace or lower intensity	3	1	1	5
Continue at same level prior to program participation	0	0	1	1

Q49_2. _____ provides support to your organization for a specific period of time. After this support ends, what do you expect will happen to energy management and efficiency activities at your company?: Future Activities

	HPEM	TRACK AND TUNE	EPM	TOTAL
New activities added at the same rate as under the program	2	2	1	5
New activities added at slower rate	5	1	7	13
New activities will likely not be added	0	2	2	4

Q50. Once program support ends for _____, what do you expect will happen to the level of savings your organization is experiencing from energy management activities?

	HPEM	Track and Tune	EPM	Total
Additional savings will be achieved over time	3	2	5	10
Savings will continue, but will plateau	4	3	5	12
Savings will continue, but at a reduced level	0	0	0	0
Savings will revert back to levels prior to participation	0	0	0	0

Q54. What costs has your organization incurred for the energy management program and your activities due to the program?

Q55. We would like to understand your organization s satisfaction with various aspects of ...

		HPEM	Track and Tune	EPM	Total
Your experience working with program representatives	**1=Very Dissatisfied**	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	2	0	0	2
	5	1	0	0	1
	6	1	2	4	7
	7=Very Satisfied	3	3	7	13
	NA	0	0	0	0
	DK	0	0	0	0
Access to technical expertise	**1=Very Dissatisfied**	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0
	5	3	1	0	4
	6	4	1	10	15
	7=Very Satisfied	0	3	1	4
	NA	0	0	0	0
	DK	0	0	0	0

Continued…

		HPEM	TRACK AND TUNE	EPM	TOTAL
The time it took to approve the project	1=Very Dissatisfied	0	0	0	0
	2	0	0	0	0
	3	0	0	1	1
	4	1	0	1	2
	5	0	0	3	3
	6	1	2	2	5
	7=Very Satisfied	0	0	0	0
	NA	5	3	4	12
	DK	0	0	0	0
The measurement and verification process	1=Very Dissatisfied	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	1	0	0	1
	5	1	0	0	1
	6	1	2	4	7
	7=Very Satisfied	4	3	7	14
	NA	0	0	0	0
	DK	0	0	0	0
The services provided by the program representatives	1=Very Dissatisfied	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	2	0	0	2
	5	1	0	0	1
	6	0	0	4	4
	7=Very Satisfied	4	5	6	15
	NA	0	0	0	0
	DK	0	0	1	1

Q60. Prior to this project, had your company received any other incentives from your utility for installing energy saving equipment?

	HPEM	TRACK AND TUNE	EPM	TOTAL
Yes	6	3	7	16
No	1	1	1	3
Don't know	0	1	3	4
Total	**7**	**5**	**11**	**23**

Q62. BEFORE your organization connected with its program representatives, what best describes your organization?

	HPEM	TRACK AND TUNE	EPM	TOTAL
No plans, program staff identified the project	0	0	1	1
General plans to pursue energy efficiency	2	1	3	6
Created a preliminary plan for efficiency, perhaps with a cost estimate	0	0	1	1
Not sure	0	0	1	1
Other	5	4	5	14
Total	**7**	**5**	**11**	**23**

Q63. Does your organization have specific energy efficiency goals?

	HPEM	TRACK AND TUNE	EPM	TOTAL
Yes	5	5	9	19
No	2	0	2	4
Total	7	5	11	23

Q64. Does your organization track and monitor energy use?

	HPEM	TRACK AND TUNE	EPM	TOTAL
Yes	7	5	11	23
Total	7	5	11	23

Q65. Do your strategies include…

	HPEM	TRACK AND TUNE	EPM	TOTAL
Do your strategies include:-Capital improvements	5	5	9	19
Do your strategies include:-Operations and maintenance improvements	5	5	9	19

Q66. Does your organization track and monitor energy use?

	HPEM	TRACK AND TUNE	EPM	TOTAL
Yes	7	5	11	23
No	0	0	0	0
Don't know	0	0	0	0

Q67. Does your company report on energy use internally?

	HPEM	TRACK AND TUNE	EPM	TOTAL
Yes	7	5	11	23
Total	7	5	11	23

Q68 Does your organization conduct any other energy efficiency activities at your location?

	HPEM	TRACK AND TUNE	EPM	TOTAL
Yes, specify:	6	3	7	16
No	1	0	3	4
Don't know	0	2	1	3
Total	7	5	11	23

D INTERVIEW GUIDES

BPA STAFF INTERVIEW GUIDE

Research Into Action will interview four Bonneville Power Administration (BPA) staff associated with the Energy Smart Industrial (ESI) program. Interviews will include the following respondents:

Questions for BPA Staff September 2011

My firm, Research Into Action, is working with BPA to evaluate the ESI Program. I would like to talk with you today for about an hour concerning your experiences with the program.

Program Organization and Respondent Role

First, I would like to talk about how the delivery of the program is organized and your role in the Program.

1. Tell me about the activities that occupy the majority of your time, and roughly how much time you spend on each activity.

2. We understand you hold weekly ESI Core Team meetings. What topics are generally covered in these meetings?
    a. What types of documents and information are reviewed in these meetings?
        i. Specifically:
            1. Implantation staff emails and communication
            2. Summary program reports and metrics
    b. What types of decisions are made in these meetings?
    c. Do you feel the Core Team has enough information for the types of decisions that need to be made, such as:?
        i. Oversight of implementation firms
        ii. Project approval
        iii. M&V
    d. How effective are Core Team meetings for producing actionable plans?

3. We are interested in understanding your interactions with implementation staff. Please tell me:

   a. Who you are in contact with these firms

   b. How frequently you communicate

   c. What topics are typically discussed

4. Do you shape program or project level activities through these interactions? What activities are you influencing?

5. Do you feel the communication between you and these implementation firms is smooth and effective? (Probe for reasons to opinions.)

6. Do program policies and communication strategies between BPA and Cascade Energy (CE) facilitate keeping the roles of ESIPs and Energy Engineers distinct, minimizing duplicative efforts?

   a. [IF NO] If any, what changes to program policies and communication strategies might support better communication/reduced redundancy?

Program Design

Let's talk next about your activities with the design of the program.

7. Please discuss the program design's strategies to meet the 6th Northwest Power Plan's saving goals (which represented a near doubling of achieved savings from the prior year) and the plan's emphasis on industrial behavioral change?

   Probe:

   Incentive levels were changed from $.17-$20/kWh to $.25/kWh

   Energy Management Pilot = multiple yr effort, multiple incentive payments

8. You were involved with utility focus groups; what were the key findings from these focus groups, and how did they inform the program design?

9. We are learning that marketplace trust in the program depends on: 1) The program's ability to deliver expert technical services through respected program staff; and 2) Stable incentive programs with few changes between program cycles. Could you describe how well the program is achieving marketplace trust in these ways and how the program could be improved to ensure marketplace trust in these ways?

Working with the Market: Utilities

Let's talk next about how you work with the market. I think the place to start is how you work with utilities.

10. The ESI program is designed to be a downstream program offered through the utilities. How well does the ESI program achieve a program delivery model through the utilities?

11. During the program design and implementation, BPA elicited concerns and ideas from utilities regarding the program. What were the key concerns you learned about?

12. What utility or market concerns and ideas heavily shaped the way the program was designed?

13. Are there any utility concerns that the program was not able to address?

14. Who is typically involved in interactions with utilities, and what topics are discussed (Probe: Are the EERs involved)?

    a. Probes [include who is involved in the activity]:

        i. Program outreach / marketing activities

        ii. Developing program features

        iii. Gathering feedback from utilities

15. Typically, what problems come up in working with the utilities, and how are these resolved, if it makes sense to generalize about outcomes?

16. Have any problems arisen regarding decision-making authority and communication concerning utility ESI activities?

    a. [IF YES] Describe.

    b. How were these resolved?

17. We understand the primary activities to enroll utilities in the program came from outreach performed by Jennifer Eskil and Marcus Wilcox. Can you tell us what you learned from the utilities during enrollment and whether subsequent utility response met your expectations?

18. In your view, what types of activities should utilities be involved with to strengthen the program? Can you describe what might be an "ideal" scenario for utility involvement? Explain.

    a. [IF UNCLEAR, probe to understand the extent to which these are not happening.]

19. It is our understanding that the program emphasizes the development of one-on-one, long-term relationships with utilities, helping end users identify ways to use the ESI incentive to gain energy efficiency in the projects they pursue. How well is this process working?

20. What might be done to strengthen ESI's relationships with utilities and industrial decision makers?

21. We understand that large projects tend to generate savings with favorable benefit to cost ratios because of economies of scale. However, utilities may perceive these projects as risky because it is difficult to predict which calendar year the savings will be counted toward their savings goals. It can also be difficult to predict what actual savings, and therefore incentive obligations, will be -- especially savings larger than initially estimated, due to conservative estimation. How might the program help utilities deal with these risks?

Working with the Market: Industrial Firms

22. Before we discuss one-on-one outreach to industrial firms, what, if any, broad-based marketing or outreach occurs to make industrial firms become aware of ESI and its opportunities?

23. How effective do you think these activities are?

24. What process does BPA have for approving implementation firm's marketing activities? And, how well is this process working?

25. BPA has a geographically broad customer base. Are ESI implementation firms' resources meeting all industrial efficiency needs throughout its customers' service territory?

26. How well would you say the developed and emerging sectors have been identified? Probe:

    a. What are the difficulties in identifying these populations?

    b. We understand the program is placing less emphasis on datacenters than was initially planned. What are some of the reasons for this change, and will the program make changes to suit this subsector in the future?

27. Whom do ESIPs contact at end-user facilities (facility staff, management, executives, corporate sustainability staff)?

28. What are the advantages and disadvantages of promoting the program to these different groups?

29. Are BPA staff involved with strategizing about individual customers?

30. One goal of the ESI program is to encourage the industrial sector to trust that the ESI program is capable of dealing with their complex technical and business needs. To what extent, if any, has this been a challenge for the program?

31. From your interactions with industrial customers, how do they view the ESI program? Do they view it as a BPA program, a Cascade Energy program, a utility program, or simply 'The ESI Program?'

Project Management

Let's talk about how industrial projects come about. Let's start with traditional custom projects. I'll let you know when to transition to discussing the other program components.

Project Management: Custom Projects

32. Can you give us a brief overview of custom project development activities, typical problems with custom projects, and problem resolution? (We are asking others more detailed questions in this area, but want an overview from your perspective.)

33. What reports do you receive on custom project activity?

    a. Probes: Projects by stage (including committed), projects by industry sector, projects by utility

34. What is your involvement with custom projects?

35. What are typical problems that come up in custom projects?

36. How are these resolved in terms of typical outcomes…?

37. Approximately what proportion of projects in the PTR are sent back to the utility because of quality control issues with the project information?

    a. What is an acceptable rate of returned projects?

    b. Do you have an estimate of what the prior rate of returned custom projects was, before ESI, or a sense of how the ESI rate compares to the prior rate?

    c. Are there ways this project approval process could be streamlined or speed up?

38. How well do subcontractors resolve project problems?

39. Does BPA become involved with any of these issues?

40. Please describe the roles of the Technical Service Providers (TSPs) in custom projects.

41. Do you think there are any gaps in the program's ability to provide specialized technical support to any key industries? [IF YES, explain.]

42. We understand that BPA has involvement in projects over one MWh. What types of activities does BPA perform on these projects?

43. Do you feel BPA staff are given timely notice of these projects helping them to effectively perform their roles?

44. What ongoing feedback or training occurs as a result of problems found in the QA process for custom projects?

45. Generally speaking, there is a tension between savings and project administrative costs. What does the program currently address administrative costs for smaller projects? Are there other processes that would help reduce these costs for small projects?

Project Management: Energy Management Pilot Projects

I want to cover similar questions for the Energy Management Pilot. If I ask questions that have the same answer as for custom projects, just say so. I don't want you to repeat.

46. Can you give us a brief overview of Energy Management Pilot project development activities, typical problems with custom projects, and problem resolution? (We are asking others more detailed questions in this area, but want an overview from your perspective.)

47. What is your involvement with these projects [distinguish by Energy Management Pilot subcomponent]?

48. In general, how well are the Energy Management Pilot programs performing?

49. Do you think there are any technical gaps in the program's ability to implement Energy Manager projects?

50. Briefly, what are the steps for assuring energy savings from Energy Management Pilot projects?

    a. Probe to discuss savings from all three Energy Management Pilot components here and in the subsequent questions.

51. Who reviews the Energy Management Pilot projects?

52. What role does BPA play?

53. What review process or criteria are used?

54. Does this very by project size?

55. How can the program be updated to make T&T and HPEM feasible for small industrial customers?

Technical Service Providers

56. To what extent have the TSPs met your expectations in terms of activities undertaken and effectiveness of those activities?

    a. Explore if differences by program subcomponents.

Trade Ally Driven

57. Are there performance measures for the NW TAN?

58. Is the NW TAN performing as expected, considering these measures?

59. Overall, how satisfied are you with the performance of NW TAN?

Data Tracking

60. How well does the TrakSmart database support your activities?

61. What other types of program and project datasets do you use to support your activities?

62. What challenges are associated with accessing data in the multiple databases?

63. How might the databases work better together?

64. Are you aware of any opportunities to improve the structure or use of TrakSmart?

Program Management

Now let's discuss the ESI program as a whole and program management activities.

65. To what extent have you experienced that it is clear to all parties – including various staff within CE, staff within SEG and EC, and BPA ESI staff – who has the responsibility and authority for what decisions? [Elaborate.]

66. Is there a written process or decision tree for determining what BPA needs to know versus what your staff can handle without BPA approval?

67. How has the process evolved over time [regardless of whether written or informal]?

Interactions with Other Regional Players

68. What feedback have you heard from end users concerning the expectations and requirements of the ESI program, in comparison to the industrial programs offered by the regional partners?

69. Considering the other industrial efficiency programs in the region, how well do these programs collectively work with ESI? Can all these industrial programs work together more cooperatively?

70. How have you collaborated with regional partners (NWFPA, ETO, NEEA, and others) regarding the ESI program?

71. Probes: What topics are discussed? What problems addressed?

Upcoming Changes

We would like to get your understanding of how changes to some of BPA's policies that are beginning in October will affect the ESI program.

72. Track and Tune moved to minimum three-year end user commitment from five-year.

73. How do you believe utilities and end users will respond to the pending funding changes where utilities' incentive allocations are fixed to their proportion of BPA energy sales, and incentive levels to the end users will be reduced by 40-50% of current levels per kWh?

74. What solutions does the program have planned for these new funding and incentive challenges? And, how many utilities are likely to take advantage of each? [Probe:

    a. 0% loan for large projects

    b. Allowing utilities to cap savings incentives (so actual savings can't exceed predicted savings by too much)

    c. Utilities can pool incentive budgets

    d. Use of an unassigned budget to cover large projects in smaller utilities

Strengths and Challenges

75. What about the Program has been working well?

76. Are there potential industrial energy savings opportunities that currently are not covered by ESI?

    a. IF YES: Why are these opportunities not covered by ESI? Are these opportunities specific to specific sectors?

77. What opportunities do you see to improve the program?

78. Do you see any ways to streamline Program processes?

79. What are the greatest challenges now facing the Program, and how do you believe they can they be addressed?

80. Any questions you would like for us to explore with the utilities and end users we will be talking with as part of this research?

81. Did you access any evaluation research reports in designing the program? IF YES, what were they, and how did you use them?

82. Implementation staffs are interested in these following questions for utility interviews. We would like your thoughts on including these questions:

    a. Utilities' / End-users' satisfaction with implementation staff:

        i. Responsiveness

        ii. Customer service / professionalism

        iii. Quality / expertise

    b. Energy Management Pilot

        i. Do participants view program participation worth their time / investment?

        ii. Are nonparticipants aware of Energy Management Pilot? Why are they not signing up?

        iii. Do utilities know how to set T&T length to three years rather than five years? Would utilities like assistance with this option from implementer?

        iv. Would utilities consider measuring small scale T&T with "pay for performance," ($0.025 / kWh saved) measured through the sub meter?

83. Any final comments?

Thank you for your time.

IMPLEMENTER MANAGERS INTERVIEW GUIDE

Research Into Action will interview will interview ten implementation firm staff. Interviews will include respondents from the following companies or roles, with anticipated sample sizes:

- ➡ Management Staff
  - Cascade Energy (4 respondents)

– Eric and Josh, Upper Management

  - Strategic Energy Group (1 respondent)
  - Evergreen Consulting (1 respondent)

- ➡ ESIP (4 respondents)

Program Organization and Respondent Role

First, I would like to talk about how the delivery of the program is organized and your role in the Program.

1. What functions does your firm provide for the program?

   Anything else?

2. How many FTE are assigned to Energy Smart Industrial (ESI)?

   How many FTE are involved in each function by firm?

3. What is your role with the ESI program?

4. What are the points of communication between your firm and the other [two] firms?

5. Tell me about the activities that occupy the majority of your time and roughly how much time you spend on each activity.

6. We know the ESIPs are assigned specific utilities; how is this working out in practice?

7. Does it make sense to characterize your role as a key account manager for the utilities assigned to you?

8. How about as a key account manager for specific end-use customers?

9. How do the ESIPs work with the Bonneville Power Administration (BPA) Energy Engineers?

10. Do program policies and communication strategies between BPA and Cascade Energy (CE) facilitate keeping the roles of ESIPs and Energy Engineers distinct, minimizing duplicative efforts?

    [IF NO] IF any, what changes to program policies and communication strategies might support better communication/reduced redundancy?

11. What are the points of communication between your firm and the other [two] firms?

12. Do you work with the BPA Energy Engineers?

13. Please describe what is meant by the ESIP being a 'single point of contact' for the program and how this is working in practice?

14. What are some challenges you have as the ESI contact as it pertains to trade ally, Technical Service Provider (TSP), and specialists activities?

15. Do program policies and communication strategies between BPA and CE facilitate keeping the roles of ESIPs and Energy Engineers distinct, minimizing duplicative efforts?

    [IF NO] IF any, what changes to program policies and communication strategies might support better communication/reduced redundancy?

Working with the Market: Utilities

Let's talk next about how you work with the market. I think the place to start is how you work with utilities.

16. What outreach did you do with utilities to get their participation?

17. Do you still engage in what you would call utility outreach or marketing in a way that's distinguished from your ongoing working relationships with the utilities?

18. Walk me through the process of how a utility becomes a participant. I understand an Account Plan is developed.

19. Who is typically involved in this process, and what topics are discussed (Probe: Are the EERs, BPA engineers involved)?

20. How are utilities assigned to you?

21. How are the Account Plans used, and when are they referenced?

22. Are the plans ever revised?

23. What kinds of utility reporting is your firm involved with?

    Does any of the reporting concern account plan objectives?

24. How do you organize your ongoing interactions with the utilities? Specifically, what are the roles and responsibilities of the people – including your subs – who have direct interactions with the utilities?

25. What authority do these people have in working with the utilities, such as what decisions can they make and who needs to be cc'ed on emails?

26. What direct interactions do you have with the utilities…?

27. …In terms of who is involved in resolving problems?

28. What are typical problems that come up in working with the utilities?

29. How are these resolved in terms of typical outcomes?

30. Have any problems arisen in coordinating the roles and responsibilities of different staff that have utility involvement?

    [IF YES] Describe.

    How were these resolved?

31. Have any problems arisen regarding decision-making authority and communication concerning utility ESI activities?

    [IF YES] Describe.

    How were these resolved?

32. We are interested in the utilities' involvement in the program. Please describe the ways utilities are typically involved in program delivery.

33. The ESI implementation manual specifies that the utilities are authorized to "select their level of involvement in marketing and communications with their customers." On what basis do the utilities typically set their level of involvement in the program?

34. What activities are utilities involved in (Probe: Marketing and outreach, on site visits with customers, targeting prospects)?

35. What are some reasons why certain kinds of utilities choose to be involved in different activities?

36. How does the level of utility involvement affect program outcomes?

37. In your view, what types of activities should utilities be involved with to strengthen the program? Why?

    [IF UNCLEAR, probe to understand the extent to which these are not happening.]

38. It is our understanding that the program emphasizes the development of one-on-one, long-term relationships with utilities, helping end users to identify ways to use the ESI incentive to gain energy efficiency in the projects they pursue. How does this process work?

39. How effective is this approach, and what might be done to strengthen relationships with utilities and industrial decision makers?

40. Are there any differences in the way I-937 utilities interact with the program?

    Do these programs have any energy efficiency needs distinct from other utilities?

    [IF YES] Are these needs being met by the program?

41. Are there any differences in the way East and West utilities interact with the program?

    Are there regional differences shaping the way utilities participate in the program?

42. Please describe the SI Measures Team outreach to utilities.

    Are there any other marketing and outreach activities to utilities?

43. Do you believe SI is well understood by utilities?

    [IF NO] What might be done to increase the extent to which SI is understood by utilities?

44. Do you believe that SI is well understood by BPA?

[IF NO] What might be done to improve BPA's understanding of SI?

45. What is the process for enrolling utilities in the SI program?

Who is involved?

a. Utility?

b. SI?

c. BPA?

46. Is the ESI account plan involved in the enrollment process?

[IF YES] Walk me through the process of the development of an Account Plan as it pertains to SI projects.

47. What are typical characteristics of utilities with large numbers of SI projects?

Why?

48. What direct interactions do you have with the utilities…?

Coordinating: ESIPs, Trade ally activities…

49. Generally, what kinds of activities and decisions are utilities involved with in the SI program?

a. Shaping ESIP and trade ally activities

b. Targeting customers

c. Guiding marketing activities

50. What is contained in your reports on SI measure activity to the utility and ESIP?

How are these reports used by the utilities?

Are you aware of any opportunities to improve the relative effectiveness of your quarterly reporting to the utilities and ESIPs?

51. What authority do the SI Measures Team and the ESIPs have in working with the utilities, such as what decisions can they make and who needs to be cc'ed on emails?

52. …In terms of who is involved in resolving problems?

53. What are typical problems that come up in working with the utilities?

54. How are these resolved in terms of typical outcomes?

55. Have any problems arisen in coordinating the roles and responsibilities of different staff that have utility involvement?

    [IF YES] Describe.

    How were these resolved?

56. Have any problems arisen regarding decision-making authority and communication concerning utility ESI activities?

    [IF YES] Describe.

    How were these resolved?

57. In your view, what types of activities should utilities be involved with to strengthen the program?

    Why?

    [IF UNCLEAR, probe to understand the extent to which these are not happening.]

58. Are there any differences in the way I-937 utilities interact with the SI program?

    With regards to SI, do these programs have any energy efficiency needs distinct from other utilities?

    [IF YES] Are these needs being met by the program?

59. With regards to SI, are there any differences in the way East and West utilities interact with the SI program?

    Are there regional differences shaping the way utilities participate in the program?

Working with the Market: Industrial Firms

60. Before we discuss one-on-one outreach to industrial firms, what, if any, broad-based marketing or outreach occurs to make industrial firms become aware of ESI and its opportunities?

61. How effective do you think these activities were?

62. Walk me through the process of how it happens that program staff begin working directly with an industrial firm.

63. Is there any sort of action plan prepared for, or agreement reach with, industrial firms, beyond individual project activity?

64. How do you organize your ongoing interactions with the industrial firms? Specifically, what are the roles and responsibilities of the people – including ESIPs, your subs, the TSPs, BPA engineers, utility staff, etc. – who have direct interactions with the industrial firms?

65. How does the program develop its lists of industrial customers to target?

66. How well would you say the developed and emerging sectors have been identified?

    [Probe to get both developed and emerging sectors.]

67. What are the difficulties in identifying these populations?

68. What information is maintained on target customers?

69. What information is maintained on contacted customers?

70. Are any BPA staff involved in your strategizing about individual customers?

71. How do staff use the targeted customer lists?

72. Are the lists maintained in a program database?

    [IF YES] Which one?

    Does BPA have access to this?

73. When promoting projects to end users, with whom are you frequently discussing the program? Specifically, are they:

    Facility staff (maintenance managers and plant engineers)?

    Corporate staff (conservation mangers, executives, corporate staff)?

74. What are the advantages and disadvantages of promoting the program to these different groups?

75. We understand you can assign TSPs, specialists, trade allies, and other subcontractors as needed on a per project basis. How is this process working for you?

76. In the interest of improving the program, can you recall project opportunities were you wanted to assign some of these resources, but there may not have been the right kind of technical expertise available?

77. One goal of the ESI program is to encourage the industrial sector to trust that the ESI program is capable of dealing with their complex technical and business needs. How is this accomplished, and to what extent, if any, has this been a challenge for the program?

78. From your interactions with industrial customers, how do they view the ESI program? Do they view it as a BPA program, a CE program, or a program offered by their utility?

79. How have utilities' and industrial end-users' perceptions of ESI program staff changed since CE is managing the program rather than the BPA?

    Specifically, has trust in the overall competence of program staff changed?

Project Management

Let's talk about how industrial projects come about, starting with traditional custom projects. I'll let you know when to transition to discussing the other program components.

Project Management: Custom Projects

80. Please walk me through the process of how custom projects come about.

81. What are various program staff roles and responsibilities for these projects?

82. What is your involvement with these projects?

83. What are typical problems that come up in custom projects?

84. How are these resolved in terms of typical outcomes…?

85. …In terms of who is involved in resolving problems?

86. What services and types of technical support are provided by the sector specialists?

87. Please describe the roles of the TSPs.

88. Do you think there are any gaps in the program's ability to provide specialized technical support to any key industries? [IF YES, explain.]

89. Briefly, what are the steps for assuring energy savings from custom projects?

90. Who reviews the projects at each stage of the process?

91. What role does BPA play?

92. What review process or criteria are used?

93. Does this vary by project size?

94. The ESIP can submit a Technical Work Request to the BPA to have a TSP perform a scoping assessment and technical development for custom projects. What are some reasons why you would have a TSP perform these activities for custom projects?

95. What proportion of custom projects have technical development work performed by TSPs?

96. What back-and-forth occurs between the ESIP and other staff working at the custom project level and the QA staff?

97. What ongoing feedback or training occurs as a result of problems found in the QA process for custom projects?

Project Management: Energy Management Pilot Projects

I want to cover similar questions for the Energy Management Pilot (EMP). If I ask questions that have the same answer as for custom projects, just say so. I don't want you to repeat.

98. I'd like to better understand the three components of the Energy Management Pilot from the end user's perspective. There is Energy Project Manager, Track and Tune, and High Performance Energy Management. What is the industrial customer doing when it participates in each one of these?

99. What commitment, if any, does the end-use customer make under each of these?

100. Please explain, for each of these, the various roles of program staff and TSPs.

What services and types of technical support are provided by the sector specialists?

We understand ESIPs can recommend Energy Management Pilot projects through initial scoping and reporting work at end-user facilities.

101. Please describe the activities of utilities and program staff around Energy Management Pilot scoping and report recommendations for proposed projects that become Energy Management Pilot projects and those that do not become projects.

102. Typically, what are some reasons why Energy Management Pilot projects you recommended do not become Energy Management Pilot projects? Can you provide some examples?

103. Ultimately, who is responsible for deciding whether a project is accepted into Energy Management Pilot?

104. Do you have any suggestions for increasing the number of Energy Management Pilot projects?

105. Please walk me through the process of how projects in each of the Energy Management Pilot areas (Energy Project Manager, Track and Tune, and High Performance Energy Management) come about.

106. What is your involvement with these projects? [Distinguish by Energy Management Pilot subcomponent.]

107. Do you think there are any technical gaps in the program's ability to implement Energy Manager projects?

108. Briefly, what are the steps for assuring energy savings from Energy Management Pilot projects? Please include details about who estimates savings and if MT&R is used for each of the three programs.

109. Who reviews the Energy Management Pilot projects at each stage of the process?

How does this differ between…

a. T&T?

b. HPEM?

c. Energy Management Pilot ?

110. What role does BPA play?

111. What review process or criteria are used?

112. Does this vary by project size?

113. What back-and-forth occurs between the ESIP and other staff working at the Energy Management Pilot project level and the QA staff?

114. What ongoing feedback or training occurs as a result of problems found in the QA process for Energy Management Pilot projects?

115. What is your perspective on the structure and levels of incentives for Energy Management components?

Please tell us how well each of the pilot programs are working.

116. Energy Project Manager performance

a. Are EP Managers generating the number of projects expected at each site?

b. Is awareness of energy efficiency increasing at Energy Project Manager sites?

c. Do all T&T and HPEM sites have Energy Project Managers?

117. Track and Tune performance

Are the numbers of trainings meeting expectation?

Are firms implementing all the opportunities identified in the scoping statement?

[IF NOT] What is getting in the way?

Do program incentives cover enough of project costs identified in the project scoping?

We understand the number of T&T projects has been relatively low (~2-4 completion reports for 2011). Was this expected? Do you think it will change?

118. High Performance Energy Management performance

What are the elements of HPEM with each firm?

What have you learned from participant feedback in one-on-one trainings?

How has HPEM impacted the number of energy efficient projects (capital and T&T) at participant sites?

Are incentives being used by participant companies to implement energy management strategy in day-to-day operations?

119. To what extent do the sub-components of Energy Management Pilot generate SI projects?

How could these subcomponents work better with the SI program?

Technical Service Providers

120. How are TSPs assigned to projects?

121. How do you decide, and how frequently do you use, internal staff versus TSP subcontractors?

122. Who directs and supervises TSP's work?

123. Are there enough TSPs for the amount of work the program was generating at its peak this past year?

Explore differences by program subcomponents:

124. To what extent have the TSPs met your expectations in terms of activities undertaken and effectiveness of those activities?

Explore if differences by program subcomponents:

125. Please address whether you've noted any problems with TSP work with respect to … [Explore if differences by program subcomponents]

…Quality

…Timeliness

…Responsiveness

…Accuracy

Trade Ally Driven

126. What activities is the NW Trade Ally Network (NW TAN) performing?

127. Are there performance measures for the NW TAN?

128. Is the NW TAN performing as expected considering these measures?

129. Overall, how satisfied are you with the performance of NW TAN?

130. What specific challenges do trade allies face in their day-to-day work?

131. Given your experiences with the program, what suggestions do you have for improving the program?

132. What activities is the NW TAN performing?

133. How are the Trade Allies organized, and what key Trade Allies do you regularly interact with?

134. How does the SI Measure Team interact with and support Trade Allies?

a. Motivating trade allies to market the program

b. Promote tax credit and utility incentives

c. Training

d. Identifying and driving projects to completion

e. Updating program changes

f. Using calculators

g. QA and project reporting

Data Tracking

135. Which databases and spreadsheets are used by program staff and Trade Allies?

136. How easy is it to use these data systems to report on and track projects?

137. Are there data you require to market the program or track projects that are not in these data systems?

[IF YES] How do you / others work around this problem? Who has access to the files?

138. How do Trade Allies and program staff access customer data?

What files?

How long are the data stored?

139. Do you have any suggestions on how to improve SI data systems?

140. Is our understanding correct that program and project information is kept in different databases including PTR, TrakSmart, and the TSP portal?

141. How well does the TrakSmart database support your activities?

142. What other types of program and project datasets do you use to support your activities?

143. Who else has familiarity with these files?

144. What challenges are associated with accessing data in the multiple databases?

145. How might the databases work better together?

146. How adequately is TrakSmart capturing:

Customer information, such as SIC Code or type of facility?

Complete contact information for facility and facility personnel?

Participants' electric providers?

Project information (e.g. savings, measure description)?

Any other elements you would like to discuss?

147. Are you aware of any opportunities to improve the structure or use of TrakSmart?

148. How is CE protecting customer data?

149. Please walk me through the process of how custom SI projects come about.

150. What are various program staff roles and responsibilities for these projects?

a. Trade allies

b. ESIPs

c. SI Measure Team

151. What is your involvement with these projects?

152. It is our understanding that ESIPs do not play as close of an oversight role in SI projects as in large projects. What are the pros/cons of this approach?

What are typical problems that come up in custom projects?

How are these resolved in terms of typical outcomes?

…In terms of who is involved in resolving problems?

153. Please describe the steps involved in more complex projects and who are involved?

154. Do you think there are any gaps in the program's ability to provide specialized technical support to any key industries? [IF YES, explain.]

155. Briefly, what are the steps for assuring energy savings from custom SI projects?

156. What are typical characteristics of end users with large numbers of SI projects? Why?

157. What information is maintained on contacted customers?

Format the data is kept in….

Who has access to the data and how is it shared?

How long is the data kept?

158. From your interactions with industrial customers, how do they view the SI program? Do they view it as a BPA program, a program offered by the TAN, or a program offered by their utility?

Specifically, has trust in the overall competence of program staff changed?

Program Management

Now let's discuss the ESI program as a whole and program management activities.

159. To what extent have you experienced that it is clear to all parties – including various staff within CE, staff within Strategic Energy Group (SEG) and Evergreen Consulting (EC), and BPA ESI staff – who has the responsibility and authority for what decisions? [Elaborate.]

160. Is there a written process or decision tree for determining what BPA needs to know about versus what your staff can handle without BPA approval?

161. How has the process evolved over time [regardless of whether written or informal]?

162. When you think about the ways BPA monitors your firm's activities, do you feel they are asking for the right kinds of information – and interpreting that information correctly – so as to achieve the right level of oversight over the program?

163. Can you recall any times when an opportunity was at risk because your firm had to wait for BPA approval on project activities or proposed ESI program changes?

164. Do you feel the communication process between BPA and your company support or detract from making quick changes?

165. Would you like to see any changes in the frequency or types of communication you have with BPA?

166. Would you like to see any changes in BPA's decision-making or decision-making processes regarding ESI?

167. We understand ESI contractors are provided performance bonus incentives. Who receives these bonuses, and what do you feel are reasonable incentives for these contractors?

168. How does the SI program compare in terms of administrative costs, to other SI programs?

169. What are some strategies this program has taken to reduce administrative cost on a per-project basis.

M&V, calculator?

Reporting?

170. What measures are covered by the program, and are there additional measures you think should be included in the program?

171. How well are the processes for developing measures and calculators working?

172. When you think about the ways BPA monitors your firm's activities, do you feel they are asking for the right kinds of information – and interpreting that information correctly – so as to achieve the right level of oversight over the program?

173. Can you recall any times when an opportunity was at risk because your firm had to wait for BPA approval on project activities or proposed ESI program changes?

174. Would you like to see any changes in the frequency or types of communication you have with BPA?

Interactions with Other Regional Players

175. What feedback have you heard from end users concerning the expectations and requirements of the ESI program, in comparison to the industrial programs offered by the regional partners?

176. Considering the other industrial efficiency programs in the region, how well do these programs collectively work with ESI? Can all these industrial programs work together more cooperatively?

177. How have you collaborated with regional partners (NWFPA, ETO, NEEA, and others) regarding the ESI program?

178. Probes: What topics are discussed? What problems addressed?

Upcoming Changes

We would like to get your understanding of how changes to some of BPA's policies beginning in October will affect the ESI program.

179. Please discuss the planned changes to the reimbursement level and pass-through rate?

    What kinds of feedback have you heard from the (Probe: utilities, end-users, ESIP)?

    Has this changed the way utilities and end users perceive BPA?

    It is our understanding that the incentives nearly doubled (from ¢12-15 to ¢25); has this lead to an uptake in projects?

180. We understand Track and Tune will have a minimum 3-year end user commitment from a 5-year. How will this affect the program?

Strengths and Weaknesses

181. What about the Program has been working well?

182. Are there potential industrial energy savings opportunities that currently are not covered by ESI?

    [IF YES:] Why are these opportunities not covered by ESI? Are these opportunities specific to specific sectors?

183. Do you think the program itself - its requirements and processes - make it difficult to interest end-use customers to participate and undertake efficiency actions?

    [IF YES] What?

    Do the issues vary by industrial sector?

    How might the program change to address this?

184. What opportunities do you see to improve the program?

185. Do you see any ways to streamline Program processes?

186. What are the greatest challenges now facing the Program, and how do you believe they can they be addressed?

187. Any questions you would like for us to explore with the utilities and end users we will be talking with as part of this research?

188. Any final comment(s)?

Thank you for your time. We are conducting a second round of interviews this Fall, so you can expect to hear from us again then.

MEASUREMENT &VERIFICATION (M&V) INTERVIEW GUIDE

1. Please describe, for each project type (custom project, SI, Lighting, EPM, T&T, HPEM):
    a. How an M&V plan gets developed and approved (including who conducts what activities):
        i. Are there any variations in this process, such as by NSA/Option 2 utility or project size?
            1. Are 100% of projects M&V'ed?
            2. IF NOT, how are projects selected for M&V? How is the selection documented? How are the results extrapolated to non-M&V'ed projects?
            3. Are there any projects booked as industrial savings that Energy Smart Industrial (ESI) doesn't touch, including not touching the M&V?
        ii. [IF NOT EVIDENT from document review:] What must the plans incorporate, at a minimum?
            1. [IF NOT EVIDENT:] How is rationale of M&V method documented?
    b. How QA is conducted on the M&V:
        i. Does the M&V Plan clearly states the reference of an M&V protocol (or does the QA process need to interpret)?
        ii. Do the contacts refer to and indicate use of the policy and procedures documents we acquired in advance of the interviews?
        iii. What happens if the QA review identifies shortcomings?
            1. [IF NOT EVIDENT:] Does QA review ever challenge the M&V method selected?
        iv. How is this documented (that a plan exists, has been reviewed, any shortcomings corrected and re-reviewed)?
    c. How an M&V plan gets executed (analogous probes)?
    d. How an M&V final report gets developed and approved (analogous probes)?
    e. Is there ongoing training or feedback from the QA process to the field staff conducting M&V, disseminating findings on shortcomings encountered and how to address?

2. Are there other QA procedures – not relating directly to M&V – that are taken to assure project quality and performance?

   a. [IF YES: Explore as above.] What activities for what project types, conducted by whom, reviewed by whom, corrective actions reviewed and disseminated, documented how?

3. May I see your M&V [and QA, as relevant] electronic tracking system?

   a. [Looking for organization of project files (likely PDFs of plans and reports; look also for archiving of raw data) and for Excel or other tracking system that records status across projects]

   b. How are project M&V data files and reports transferred and stored outside of PTR/EE Central?

   c. How do all parties access these files?

TECHNICAL SERVICE PROVIDER INTERVIEW GUIDE

Thank you for talking with me today about Technical Service Provider (TSP) services in support of the Energy Smart Industrial (ESI) program. We are concerned about the first two years of the program: FY2010 and 2011. I will also ask a few questions about your firm's TSP activities prior to the ESI program. I will endeavor to be clear in my questioning and would appreciate it if you likewise make it clear when you are talking about the ESI program and when you are talking about prior experiences.

Background with BPA Projects

1. How long has your firm provided TSP services in support of Bonneville Power Administration's programs?

2. What types of customers or projects do you specialize in?

3. Have your areas of specialization changed or expanded over time?

   a. [IF YES] Describe, noting change and timeframe.

Scoping Studies

1. Can you describe the process by which ESI scoping studies are assigned to you?

   a. How does that compare with the process prior to ESI?

2. [IF PROVIDED TSP SERVICES PRIOR TO ESI, ask:] How do the types of projects and number of scoping studies compare with your experiences prior to ESI?

   a. [Ask all:] How do the types and numbers of studies compare with your expectations based on the size and nature of the ESI program?

3. You described the process for assigning projects. In what ways does the process work well, and in what ways do you think it doesn't work well? Please address this from the perspectives of both your firm and that of the program as a whole.

4. [IF QUALITY SCORING SYSTEM NOT ADDRESSED:]

   a. How is the quality scoring system used?

   b. How well do you think the quality scoring system serves the interests of industrial customers in influencing TSP assignments?

5. I would like to know your experiences on projects where ESIPs coordinated activities at end user sites.

   a. When needed, have ESIPs provided you with sufficient information about the utility, ESI programs, and other information?

   b. When possible, do you feel ESIPs helped coordinate activities and information at end users sites that helped your project go more smoothly?

6. Do you have any suggestions for how the process for assigning scoping studies might be improved?

Subsequent to Scoping Study

7. Now let's talk about what happens after scoping projects are assigned to you. Please describe what you do and what happens after you do your work, such as review of your work.

8. What works well and not so well about this process, from the perspectives of both your firm and the program as a whole?

9. Do you have any suggestions for how the process subsequent to the assignment of scoping projects might be improved?

Project Assessment Studies and Track and Tune

10. The program implementation manual describes project assessment studies, in addition to scoping studies. How do project assessment studies differ from scoping studies?

    a. How do the processes concerning assessment studies – such as assignment of studies, review and acceptance of studies, quality scoring system – differ from those of scoping studies?

11. [IF DIFFERENT] What works well and not so well about this process, from the perspectives of both your firm and the program as a whole?

    a. How might these processes be improved?

12. Has your firm worked on any Track and Tune projects?

    a. [IF YES] Please describe what's involved in your Track and Tune work.

    b. What has been your firm's experiences with these projects?

c. How do the processes of assignments, review, and so forth differ, if at all, from what we've already discussed?

d. What works well and not so well, from the perspectives of your firm and of the program as a whole?

e. What might be improved to better meet the needs of the industrial customers you serve?

Project Completion Studies

13. I understand that in addition to scoping studies you conduct project completion studies. Is that correct?

    a. Do you discuss any other type of study that I haven't mentioned?

14. About what proportion of your work is in each of the following study type:

    a. Scoping studies

    b. Project assessment studies

    c. Track and tune projects

    d. Project completion studies

    e. [As identified in 12a:] Other

15. Please describe the process by which project completion studies are assigned to you, you complete them, they are reviewed, and accepted – to the extent this process differs from that of scoping studies.

16. [IF DIFFERENCES FROM SCOPING STUDIES] What works well and not so well about this process, from the perspectives of your firm and of the program as a whole?

    a. Any suggestions for improvement?

    b. [IF NOT ADDRESSED] How well do you think the quality scoring system serves the interests industrial customers in its use for rewarding or penalizing TSPs?

ESI Overall

I'd like your feedback on the ESI program overall. Let me break it out into some topics I'd like your thoughts on. To the extent you have opinions, let me know what you think is working well, not so well, and what suggestions you have for improvement.

17. Outreach to industrial customers

18. Role of the ESIP

19. Quality assurance and M&V

20. Working with utilities

21. Energy management pilot components

22. Anything else?

Thank you for your time.

NORTHWEST TRADE ALLY NETWORK INTERVIEW GUIDE

Program Organization and Respondent Role

First, I would like to talk about Evergreen Consulting's role in the Energy Smart Industrial (ESI) Program.

Regarding Evergreen Consulting Role in ESI:

1. What functions does your firm provide for the ESI program?

   Anything else?

2. What activities is the NW Trade Ally Network (NW TAN) performing?

3. The NW TAN has been around before ESI. How has being involved with ESI affected the NW TAN?

4. What is your specific role with the ESI program, what activities occupy the majority of your time, and roughly how much time do you spend on each of those activities?

5. How many people work on ESI activities at your organization, and in what capacities?

KAM Questions

6. Please provide an overview of what a KAM does?

7. How many KAMs are there?

8. Do KAMs work with ESIPs? If so, how?

9. Do KAMs ever identify other projects that could happen in a plant when they are doing their visits? Do you have an example?

10. Do KAMs have trouble completing small projects? I noticed in the delivery manual that KAMs prioritize projects based on the magnitude of the project.

11. Do KAMs use TrakSmart? If so, has TrakSmart been a useful tool for the KAMs? How so?

Trade Ally Projects

12. Before we discuss one-on-one outreach to industrial firms, what if any broad-based marketing or outreach occurs to make industrial firms become aware of ESI and opportunities, such as lighting incentives?

    a. How effective do you think these activities were?

13. Walk me through the process of how a trade ally works directly with an industrial firm.

14. Please describe the ways utilities are typically involved in a project conducted by a NW TAN member.

15. Do trade allies always work through an ESIP to do ESI projects?

16. How do the ESIPs work with the NW TAN?

17. And, what are the trade allies' relationships with the other program players – that is, the ESIPs, your team, the Technical Service Providers (TSPs), Bonneville Power Administration (BPA) engineers, utility staff, etc.?

18. How do trade allies develop lists of industrial customers to target?

19. Is there any sort of action plan prepared for or agreement reached with industrial firms, beyond individual project activity?

20. How frequently are there ongoing interactions with the industrial firms, and how might these be organized?

21. What specific challenges do trade allies face in their day-to-day work?

Accomplishments

22. Overall, how satisfied are you with the number and quality of NW TAN projects that are part of ESI?

23. I understand ESI exceeded its goals in terms of lighting projects coming through the program. Is that correct? To what do you attribute that success?

24. How have trade allies' perceptions of BPA's industrial efforts changed, if at all, with the advent of ESI?

    [Probe for "why?"]

25. One goal of the ESI program is to encourage the industrial sector to trust that the ESI program is capable of dealing with their complex technical and business needs. How successful do you think ESI has been in this regard?

    a. To what extent, if any, has this been a challenge for the program?

26. When the trade allies consider the program, do they tend to think of it as a BPA program, utility program, Cascade Energy program, or just simply ESI?

Working with the Market: Utilities

Let's talk next about how you work with the market. I think the place to start is how you work with the 106 utilities that offer lighting incentives.

27. How has the NW TAN affected utility participation in the ESI, if at all?

28. Are there any differences in the way I-937 utilities interact with the program?

    Do these programs have any energy efficiency needs distinct from other utilities?

    [IF YES] Are these needs being met by the program?

29. Are there any regional differences shaping the way utilities interact with the program?

Interactions with Other Regional Players

30. What feedback have you heard from end users concerning the expectations and requirements of the ESI program, in comparison to the industrial lighting programs offered by others (Energy Trust)?

31. Considering the other industrial efficiency programs in the region, how well do these programs collectively work with ESI? Can all these industrial programs work together more cooperatively?

32. How have you collaborated with regional partners (NWFPA, Energy Trust of Oregon, NEEA, and others) regarding the ESI program?

    a. Probes: What topics are discussed? What problems addressed?

Program Management

Now let's discuss the ESI program as a whole and program management activities.

33. What are the points of communication between your firm and Cascade Energy Engineering, and Strategic Energy Group?

    a. Does the NW TAN have any direct interactions with Cascade Energy? If so, how?

34. What are the points of communication between your firm and BPA, if any?

35. When you think about the ways BPA monitors the program's activities, do you feel they are asking for the right kinds of information – and interpreting that information correctly – so as to achieve the right level of oversight over the program?

36. Can you recall any times when an opportunity was at risk because of a need to wait for BPA approval on project activities or proposed ESI program changes? (Explain.)

37. Do you feel the communication process between BPA and the ESI team support or detract from making quick changes?

38. Would you like to see any changes in the frequency or types of communication the ESI team has with BPA?

Strengths and Weaknesses

39. Are there potential industrial energy savings opportunities that currently are not covered by ESI?

    [IF YES:] Why are these opportunities not covered by ESI? Are these opportunities specific to specific sectors?

40. What about the Program has been working well?

41. What opportunities do you see to improve the program?

42. Do you see any ways to streamline program processes?

43. Any questions you would like for us to explore with the utilities and end users we will be talking with as part of this research?

44. Any final comment(s)?

Thank you for your time. We are conducting a second round of interviews this Fall, so you can expect to hear from us again then.