INDUSTRIAL ENERGY IMPROVEMENT

Cohort 2, Year 1 Report

Prepared for:
Energy Trust of Oregon

Navigant Consulting, Inc.
One Market Street
Spear Street Tower, Suite 1200
San Francisco, CA 94105

415-399-2116
www.navigantconsulting.com

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Introduction

Energy Trust of Oregon (Energy Trust) is operating an Industrial Energy Improvement (IEI) pilot program within its Production Efficiency (PE) Program. The IEI is being implemented by Strategic Energy Group (SEG) under Energy Trust oversight. The IEI seeks to reduce participant site energy intensity and production costs by applying continuous improvement practices. Under the IEI, energy is treated as a variable and manageable (as opposed to fixed) cost for industry. It is assumed that energy intensity can be reduced by five to ten percent with little capital investment and that continuous improvement practices applied to energy can have other benefits for productivity, safety and environmental impact.

The IEI assists participant firms by putting in place a structured energy program which includes establishing accountability for tracking energy and engaging employees to reduce energy use through the "Plan, Do, Check, Act" cycle. The IEI services are delivered to participants in a group environment. Monthly trainings are held over the course of a year in various formats, consisting of six, day-long in person workshops, four, two-hour Webinars, and two individual, on site meetings. The workshops are held at the Energy Trust offices and IEI participant firm locations on a rotating basis.

Energy savings is determined by comparing energy intensity, as a function of production and normalized for other factors such as weather, as appropriate, between the IEI year and the prior year using a regression model (Monitoring, Tracking and Reporting, MT&R). At the conclusion of the IEI, Energy Trust pays an incentive for the energy savings documented in the final MT&R.

The first cohort of the IEI was run as a pilot from March of 2009 to March of 2010. The second cohort ran from November of 2009 to September of 2010 as a regular offering under the PE program. This report addresses the second cohort of the IEI.

Program Goals and Objectives

The goal of the IEI program is to put into operation at each participant facility a process of continuous energy management improvements which enables energy savings and reductions in energy intensity. Energy savings come from operational and maintenance improvements, incremental increases in capital energy efficiency projects (i.e., more lighting efficiency), additional capital projects that would not otherwise have been considered (i.e., process changes, consideration of energy efficiency in all

capital efforts), and improved persistence for operations and maintenance (O&M) and capital projects.

Evaluation Objectives and Approach

Navigant Consulting was selected to conduct an evaluation of the IEI program to gain feedback from participants on their IEI participation. The evaluation objectives for the IEI pilot are to:

- Determine what motivated the firms to participate;
- Determine what expectations the firms had from the initiative and what goals they hoped to achieve;
- Assess how the initiative can be improved;
- Determine what elements of the IEI program the firms found the most valuable;
- Determine whether there are differences in the types of the organizations participating;
- Determine whether there are industry or organizational differences that drive success;
- Determine what classifications of individual participated from each organization; and
- Determine whether IEI has the data collection processes in place to provide the basis to assess if the initiative is progressing towards and reaching its goals.

To accomplish the evaluation objectives, Navigant Consulting conducted and interviews with pilot participants. Navigant Consulting analyzed the results of pilot review and participant interviews and prepared this report on the findings.

Participant Interviews

Navigant Consulting conducted interviews with an individual from each of the nine IEI Cohort 2 participant firms. The interviews were conducted approximately one month after the participants received their final MT&R report (one month interview) in order to capture their recollections about the IEI experience within the context of their energy intensity reductions. The IEI Energy Champion was typically the primary interviewee, though at one firm, two individuals were interviewed, including the Energy Champion. All participant interviews were conducted via telephone.

Cohort one completed their final IEI meeting on September 8, 2010. The participants completed any remaining activities during October 2010. Measurement for the final MT&R also went through October; SEG prepared the MT&Rs during November and

December. Incentive checks were issued by Energy Trust and delivered by the Program Delivery Consultants in January and February of 2011. Navigant began scheduling interviews in late February 2011; the final interview was completed on April 19, 2011.

The objectives of the **one month interview** were to:

- Receive feedback on training
- Assess the applicability of training content
- Assess the mentoring and support provided by the IEI through SEG
- Determine anticipated near-term and long-term project induced actions
- Understand participant challenges in achieving goals
- Assess the pilot strengths and weaknesses
- Solicit participant recommendations for changes/augmentation
- Establish economic and production baselines

A second interview will be conducted with the Cohort 1 participants approximately one year after completing the IEI cycle (one year interview). The objectives of the **one year interview** will be to assess the near-term and long-term outcomes of the IEI, including:

- Challenges encountered and progress made by the participants
- Determine whether savings expectations are being met
- Inquire about long term energy efficiency plans/strategies/outlook
- Follow up on the status of the energy teams
- Understand facility economic and production status
- Determine a good time to check back on the facilities progress in the future

Cohort 1, one year interviews will be conducted in March of 2012 and a report of the findings delivered in May 2012.

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Findings

This section summarizes the findings from the participant interviews for each of the key research areas. Key conclusions and recommendations from Navigant Consulting are in the next section, "Conclusions and Recommendations".

Overview

Nine firms participated in Cohort 2 of the IEI. Navigant Consulting was able to complete interviews with each of these firms.

How heard about the IEI

Participants initially heard about the IEI through three different sources:

- Three participants had some relationship with a cohort 1 participant:
  - One firm had an engineer that previously worked for a cohort 1 firm;
  - An energy champion of one participant previously worked at a cohort 1 firm; and
  - A third participant was talking with a cohort 1 participant when the IEI was discussed.
- Four participants were referred through their utility representative:
  - Three through PGE and one through PacifiCorp.
- Two through Energy Trust:
  - One participant heard a presentation on the IEI by Energy Trust representatives at a 2-day energy management training course.

What motivated the firms to participate

Although cost savings was the ultimate objective for all participant firms, most indicated that they were motivated to participate in the IEI for non-financial reasons:

- Two participants wanted to use the IEI to jump start existing sustainability efforts that couldn't get traction otherwise;
- Engineering staff at two of the participants formerly worked at IEI cohort 1 firms and had had a positive experience;
- Another pair of participants indicated that the IEI was a natural fit for their firms because of formalized sustainability initiatives or a culture of conservation;

- Two participants expressed a general desire to strengthen energy management at their firms generally; one of whom was training his staff in conservation in anticipation of his retirement; and
- The final participant joined in the IEI out of desperation – their wood products firm had been negatively impacted by the harsh economic climate and they were eager to find cost savings through O&M.

What expectations the firms had from the initiative and what goals they hoped to achieve

In addition to the energy savings and support for corporate sustainability efforts, eight of the nine firms set numeric energy savings goals for their IEI efforts. These targets and the respondents' indication of the achievement of the targets are summarized in Table 1 below.

Table 1. IEI Cohort 1 Summary of Participant's Energy Savings Targets

Site #	*Business Type*	*Goal (%)*	*Actual (%)*
1	Light manufacturing	10%	5.30%
2	Light manufacturing	5%	5%
3	Steel Foundry	10%	10.20%
4	Wood products manufacturer	3-5%	11.60%
5	Light manufacturing	5%	19%
6	Water utility	Didn't set a goal	17%
7	Electronics manufacturing	5%	Not initially, but mavbe reached 5%
8	Wood products manufacturer	10%	12%
9	Food processing	4%	2%

The majority of the participants exceeded the savings targets set at the start of the IEI, some by a very large margin. Surprisingly, the highest percentage rate of savings was achieved by the only firm that did not set a numeric target.

Other benefits realized

Some participants reported realizing unexpected benefits through the IEI. Participants were often surprised by the sources of the best energy saving. The energy team from one participating firm brainstormed opportunities prior to beginning the IEI. Their assumption was that specialized manufacturing equipment presented the greatest potential for savings, but realized through the IEI that facility-wide systems, such as compressed air and lighting, generated the most savings. The magnitude of savings achievable surprised some participants.

An increase in energy awareness by employees throughout the organization was unexpected by two firms, one of which described the surprising cooperation by a distribution engineer. Demonstrating the energy savings from O&M changes secured participation from a normally risk-averse employee.

Challenges

The most often cited challenge was the lack of resources available to conduct the IEI functions. Energy team members were participating in addition to their regular roles in the organization. Competing initiatives within the organization was a challenge for one energy champion who was reluctant to push team members to work on the IEI because of the other demands on their time. Lack of corporate goals around sustainability exacerbated this problem for another firm.

> *"It's nobody's job"*

However, participants were quick to volunteer that the program helped to overcome this challenge by making external resources available to them.

Management buy-in and support was mentioned by some as a challenge and by others as a benefit. Participants whose upper management was engaged in the IEI found that it was easier to get employees to take time away from their other responsibilities for the IEI. Another firm that lost its management sponsor halfway through the IEI indicated that securing resources became a major struggle. One way that management teams supported the IEI was to require the team to regularly report on their progress. Participants that didn't have good management support were generally less successful than those that did.

Creating the MT&R and other analysis was a challenge for some. Some participants found that the data needed to support the changes they were proposing was scattered across their organization but that once they identified the sources and the reporting was set up, it was a smooth process. Another confessed that he wasn't good with software tools and data analysis and that this made it difficult to create the reports and presentations needed to demonstrate success and secure resources.

One participant reported that their team struggled when they ran out of projects to work on. Their meetings had also gotten boring when they ran out of new ideas. However, the IEI was helpful in this area because SEG came out to their next meeting with more information and new ideas, which renewed their efforts.

Lastly, it was difficult for many of the participants to be away from their work sites for an entire day to take part in the workshops.

> *"It's hard to be gone for a whole day."*

What elements the firms found the most valuable

The one-on-one work SEG conducted with each participant at their facility was very valuable, so much so that one participant indicated that this feature should not be changed about the offering. This participant would like to continue to have access to SEG for follow up consultations for further assistance with the MT&R and to continue to "ingrain" to IEI techniques into the staff way of thinking. They urge that this follow up support occur soon so the momentum generated in the IEI is not lost.[1]

Understanding the energy use and sources of potential savings through sub-metering or logging was cited as several participants as being very valuable. In addition to realizing the actual energy use of equipment and end uses, this process helped the energy teams to identify the most productive projects or changes to pursue.

Working in a team environment was valuable to participants for a number of reasons. Participants now have industry contacts that they can reach out to and discuss issues and practices in a common language. The workshop environment allowed for sharing of information and the team learned from each other's successes and failures and had a forum for brainstorming ideas.

[1] Since the time of this interview, Energy Trust has added an IEI Maintenance offering.

What elements the firms found the least valuable

Participants identified specific sections of content that were not as valuable to them as other areas:

- Management assessment was not helpful for participants that were operating under a large corporate umbrella with little visibility to the corporate suite. Another participant expressed frustration over this effort because there was no follow up on the assessment.
- Similar to the management assessment, the energy management plan was frustrating to one because they developed the plan but never came back to it in subsequent work. Another participant felt it would be more appropriate for a corporate team with influence on policy to develop an energy management plan, not the facility energy team. They felt that the team should focus on what they have control over.
- The energy mapping wasn't valuable to several of the participants. One specifically mentioned that their plant was too large and complex to map in a single session.
- Too much time was spent on the review and rewards section because some companies have their own rewards system.
- One firm that already had a good energy monitoring and tracking system in place IEI indicated that the IEI wasn't as valuable to them in this aspect.

Participants generally identified content that didn't relate to a particular participant as lacking value. For instance, facilities heavy on manufacturing don't have much HVAC in their facility so these sessions are not meaningful. Another example is the sessions on manufacturing-related processes, which didn't apply to the water bureau. One smaller firm felt that some project or techniques that are cost effective for large plants weren't for their smaller facility.

Positive Aspects

Participation in the IEI provided a number of positive benefits to its participants:

- Having access to people that spend their day managing energy.
- The awareness gained about the facility energy use through participation and tracking energy use through the MT&R.
- Participation gave focus to the participant's energy teams. Specifically, it gave them the language they needed to talk about energy. One participant admitted that their energy efforts would be a lot farther behind without the IEI.

- Participants felt that they were learning best practices through information sharing with the other firms. Learning what other firms were doing helped some them to develop new best practices and in other cases gave confidence that they were doing the right things.
- New industry contacts were gained through networking with the other participants.
- Lastly, the fact that the IEI was held as a year long process instead of a single workshop allowed the participants to go back to their facilities and apply what they learned.

Negative Aspects

Although the participants were very positive about the IEI they did mention three negative aspects:

- Participation in the day-long sessions took time away from their other work responsibilities.
- There was a lot of paperwork if the process was followed exactly. However, some participants indicated that they'd only undertake the activities that related to them or they'd begin all exercises but only completed those they found valuable.
- One participant felt like the amount of information requested was overwhelming and that the same information was sometimes requested in different formats. For instance, for one activity they needed to report on consumption broken out by various departments, and in the next activity they needed to provide it in a slightly different format.

Differences in the types of the organizations participating

Table 1 indicates the types of business of each of the Cohort 2 participant firms. Most are involved in manufacturing of some type. The most unique participant in terms of business type was a water utility.

Another difference in organizations observed in the interviews was organizational structure. One participant commented that their plant operated under a broader corporate umbrella whereas other participant firms were independent with upper management located at the same location, which provided better access to decision makers. The water utility operates under the oversight of a water board, so seek their approval is a formal process.

Applicability to Industry

Given the different industry types represented in Cohort 2, participants were asked to estimate the percentage of content covered in the IEI that was applicable to their industry. The results are presented in Table 2.

The lowest percent reported was from site seven, an electronics manufacturer. Their facility was one large manufacturing plant with some office space. The main reason for the low score was a lack of large motors at their plant. Site number nine was reluctant to estimate a percent but indicated that even if the topic wasn't directly related to them, they still gained knowledge from the topic.

Table 2. IEI Content Applicable to Participant Industry

Site #	*Business Type*	*Percent of IEI content applicable to industry*
1	Light manufacturing	60-70%
2	Light manufacturing	Most
3	Steel Foundry	95-100%
4	Wood products manufacturer	75%
5	Light manufacturing	70-80%
6	Water utility	75%
7	Electronics manufacturing	60%
8	Wood products manufacturer	100%
9	Food processing	Principles good

Classifications of individual participating from each organization

The job title and responsibilities, as described during the interview, of each Cohort 2 energy champion is indicated in Table 3.

Table 3. Job Classifications of Energy Champions

Site #	*Energy Manager Title*	*Business Type*
1	Property Manager*	Light manufacturing
2	Environmental Engineer	Light manufacturing
3	Project Engineer	Steel Foundry
4	Maintenance Manager	Wood products manufacturer

5	Senior Engineer	Light manufacturing
6	Strategic Planning Coordinator	Water utility
7	Maintenance Manager	Electronics manufacturing
8	Plant Manager	Wood products manufacturer
9	Senior Manager of Manufacturing	Food processing

IEI activities undertaken

Participants reported taking a wide variety of different activities that included capital and O&M projects, as well as initiatives to engage facility employees.

Capital projects

Three participants reported undertaking lighting upgrades that included:

- Re-lamping their facility from 350 watt lamps to 200 watt lamps (they were able to maintain the same lumen output) and adding occupancy sensors that take the power to 120 watts.
- Changed out their existing T8 system with higher efficiency ballasts and new lamps that produced less light (they were over lit before); and
- Adding motion sensors throughout facility to turn off lights when not in use.

One participant bought a new air compressor and another added a VFD to their existing compressor.

One participant considered doing a renewable energy project (PV) but found that the payback was very high and the money was better used for conservation.

O&M

O&M projects with compressed air systems were most popular, with every participant except one undertaking activities that addressed this system. Leak tag programs were popular with most participants. All involved employee engagement and demonstrating energy use before and after the leaks were patched. One participant who named their effort the "air raid" reported fixing about 700 air leaks, regularly requests at their company meetings that employees report leaks through their work order process.

Other compressed air-related activities included:

- One participant was able to completely eliminate air compressors by fixing air leaks and then turning them off when not needed. Now they are able to operate with one 300 HP instead of three.
- One participant also added a timer so the system was shut off at night and two others added a shut off switch to their systems. One of these facilities has seven large compressors that previously ran 24/7 before the controls were added. Another participant programmed their valves to turn off the compressor when the operator logs off of the assembly machines.
- One participant realized that their compressed air shut off switches weren't getting used so they added to the SOP that the equipment is to be shut off at the end of the swing shift.
- Two changed the sequencing of their compressors so that the most efficient compressor was engaged first.
- One participant reported a comprehensive air compressor coordination project that included adding a controls system and VFD to only producing the air they need to use by throttling compressors back or shutting them down completely.

One team recognized significant savings by redefining their plant cleaning strategy:

- They would routinely leave machines running during the cleaning up period; and
- Used to use a 500 HP blower for blowing down machines; now they use a leaf blower. They also do all of the cleaning at once so they only run the leaf blower once.

One participant added timers to their conveyor system so it turned on for a minute and off for 10 instead of running continuously. Another was able to eliminate 300 HP of hydraulic systems by consolidating several pieces of manufacturing equipment onto a single hydraulic unit, though they did have to re-plum some of the equipment to be able to do this

The water agency was able to change the sequencing of their pump in one area to route through only two pump stations instead of five. This reduced the amount of pumping these three stations require and reduced the need to lift the water through a hilly terrain. They were also able to reduce their HVAC use by reviewing schedules and changing start times. They also staggered the start times of different units because they didn't need to come on all at once.

Several participants, including the water utility, used the information they gained through data logging or PGE E-manager to understand equipment usage patterns and, as a result, were able to change equipment on and off times and reduce idle time. One participant reported updating their standard operating procedures to turn equipment off when production ceased, instead of at the end of the day.

Another participant realized natural gas savings by turned down the temperature on their heat treating equipment. They audited how they use equipment and found that some of their product would combust or burn off at a lower temperature and that turning off the equipment when not in use was more efficient than maintaining a constant temperature. They also upgraded the door seals.

One participant successfully leveraged the tools they learned in the IEI to overcome management opposition to a major operation schedule change. Prior to the economic downturn, this facility operated 24/7 but had shifted operations to run only two production lines four to five days per week. The "up front" equipment can power multiple production lines using the same amount of energy required to operate only one line. The energy team proposed to schedule both production lines to run simultaneously instead of in two shifts, but they encountered strong resistance from management. What ultimately convinced them that the change was a good idea was training the team received in the IEI around MT&R modeling. They documented the energy use when they ran the lines one and two lines, demonstrating the energy benefits from running them together. Prior to the IEI, the team knew the benefits but didn't have the tools to show management.

Other

Participants reported undertaking activities other than capital or O&M projects:

- One team created a SharePoint site for reporting on the progress of initiatives and posting energy-related resources for the employees;
- Another produces a Green Team newsletter that is published throughout their plant;
- Green Observation Cards were made available for employee suggestions or other feedback on good energy practices that were witnessed. This initiative awards a $100 prize monthly.
- Several participants ran awareness campaigns to make energy use and the energy team initiatives more visible to employees. Many also make announcements or presentations on current initiatives at monthly or quarterly company meetings.

How the initiative can be improved

Several participants mentioned that different progress or capabilities of the participants could be addressed to improve the IEI. Because not all of the material is applicable to every participant, some customization might be beneficial. For instance, one participant was a single plant under a larger corporate umbrella and felt that the session on creating an energy management plan would be better suited to corporate team that had more influence on company policy. However, in this case, the solution may be to limit participation to smaller organizations with a more compact business structure, or coordinate different cohorts for independently owned firms and plants operating under larger corporate umbrellas.

When scheduling breakout session topics, there should be a topic that applies to all participants. One participant reported sitting through a session on HVAC that didn't apply to them.

Participants that were behind on conducting their activities did not contribute to the IEI as much as those who kept pace. The sharing of progress and ideas was often mentioned as a positive aspect of IEI participation but these conversations in any one session were limited to the firms who completed the activities and learning could be deepened by broader participation. One important milestone is data logging. Requiring that participants complete this activity prior to advancing through the IEI would improve the group dynamic.

Other suggestions for improvement were:

- Provide a more structured outline for the report outs or only allow report outs from participants who conducted significant activities prior to the meeting in question. Participants reported that hearing how activities were conducted and what the results were was a tremendous value. However, participants who did not conducted any activities felt obligated to participate in some fashion and talked about activities they were planning to do in the future. These were viewed as wasted time.
- Include more opportunities for participants to demonstrate actions they took and the results. Hearing about the activity from a participant, seeing what they recorded along with the results on a graph is more effective than a theoretical class room discussion.

- Set an expectation at the beginning of the IEI that participants should leverage the IEI tools to fit the needs and structure of their organization because not all of the content will be applicable to everyone.
- Reduce the amount of information the participants have to provide and determine a general format that can be used across several activities. One participant felt like they were asked to provide the same information several times in a slightly different format.

Suggestions for Future IEI Participants

Some participants offered advice to firms about to embark on the IEI. Their suggestions were to:

- Be sure that you have executive support that holds the team accountable for performance. Upper management approval is typically necessary to participate in the IEI, send staff to the workshops, and work on projects in between sessions. However, the best support comes from executive sponsors who are engaged throughout the IEI process by requiring regular updates from the energy team and hold them responsible for meeting milestones.
- Don't just "go with your gut feeling" but instead gather the information necessary to make decisions about what activities deliver savings and which do not. Preliminary plans by one team focused on individual pieces of manufacturing equipment; however once the team conducted data logging throughout the facility, they realized that centralized systems, such as lighting, compressed air, and HVAC used far more energy and had much more potential for energy savings than the individual machines. Sub-metering was a very enlightening activity for most participants.
- Involve staff to participate and share their input. The energy team must engage broader support from the organization if the IEI initiatives are to be successful. It's especially important to gain support from equipment operators by demonstrating how operational changes translate to energy savings and other benefits.

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Conclusions and Recommendations

Conclusions

Participants initially heard about the IEI through three different sources: a relationship with a cohort 1 participant; through their utility representative; and through Energy Trust.

Although cost savings was the ultimate objective for all participant firms, most indicated that they were motivated to participate in the IEI for non-financial reasons, including:

- To jump start existing sustainability efforts;
- A positive experience with Cohort 1; and
- A sense of desperation brought on by the harsh economic climate and the desire to find cost savings through O&M.

The majority of the participants exceeded the savings targets set at the start of the IEI, the highest percentage rate of savings being achieved by the only firm that did not set a numeric target.

Some challenges faced by the participants over the course of the IEI were:

- The lack of resources available to conduct the IEI functions. However, participants were quick to volunteer that the program helped to overcome this challenge by making external resources available to them;
- Lack of management buy-in and support;
- Creating the MT&R and other analysis;
- Energy teams struggled when they ran out of projects to work on, however, the IEI was helpful in this area by providing information and new ideas to renew their efforts.
- It was difficult for many of the participants to be away from their work sites for an entire day to take part in the workshops.

The most valuable aspects of the IEI were:

- The one-on-one work SEG conducted with each participant at their facility;
- Understanding the energy use and sources of potential savings through sub-metering or logging; and

- Learning from the other participants and sharing of ideas through the team environment.

Certain IEI activities were less valuable to some participants:

- The management assessment was not helpful for participants that were operating under a large corporate umbrella with little visibility to the corporate suite;
- The energy management plan was frustrating to one because they developed the plan but never came back to it in subsequent work;
- The energy mapping wasn't valuable to several participants whose plants were too large and complex to map in a single session; and
- The review and rewards section was not valuable to companies who have their own rewards system.

Participants indicated that the most positive aspects of the IEI were:

- Having access to people that spend their day managing energy;
- The awareness gained about their facility;
- It gave focus to the participant's energy teams;
- Learning best practices through information sharing with the other firms;
- The new industry contacts gained through networking; and
- Participating in a year long process allowed the participants to go back to their facilities and apply what they learned.

However, three negative aspects were also reported:

- The day-long sessions took time away from participants other work responsibilities;
- The amount of paperwork required if the process is strictly followed; and
- The amount of information requested seemed overwhelming and the same information was sometimes requested in different formats

Though participants reported that some of the content was not applicable to them, overall they found that 60 to 100 percent of the content applied to their industry.

Recommendations

Program literature or presentations should emphasize the importance of executive support, including requiring the team to regularly report on their progress or providing staff with a budget and charge code for IEI activities.

The one-on-one work SEG conducted with each participant at their facility was very valuable and should be maintained.

Because not all of the material is applicable to every participant, some customization might be beneficial. One alternative may be to create separate cohorts for smaller, independently-owned firms and plants operating under larger corporate umbrellas. It may also be beneficial to explain to the participants at the start of the IEI that some of the content may not apply to them and that they should prioritize their homework appropriately. However, participants should be encouraged to attend all of the sessions because their job responsibilities may shift over time, making new topics relevant.

Provide two or three different options for breakout session activities, within the subject area being covered, so that participants for whom the topic may not be directly applicable can still make productive use of the breakout session time.

Establish certain milestones that participants must reach to continue participation. Since participants report that it is important to pick and choose to prioritize their efforts, be sure that the milestones are reasonable, widely applicable, and few. One important milestone is data logging. Requiring that participants complete this activity prior to advancing through the IEI would improve the group dynamic.

Consider prioritizing the workshop content so that the sessions can be shortened slightly to allow a later start or early dismissal to allow time for participants to check in at their workplace before or after the workshop. Alternately, include several breaks throughout the day so that participants can check their e-mails and phone calls and response to urgent issues.

Provide a more structured outline for the report outs or only allow report outs from participants who conducted significant activities prior to the meeting in question.

Include more opportunities for participants to present the different actions they took and present the results.

Create a master data requirement standard that can be used across several activities.

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Appendix 1: Cohort 1, Year 1 Interview Guide

Energy Trust of Oregon Industrial Energy Improvement Pilot Evaluation

Cohort 2: One Month Interview Guide

Project #:

Organization Name:

Call/Email Attempts

	Date	Time	Result			Comments
1						
2						
3						
4						
5						
6						
7						

Num of Calls _____Num of Contacts: _____

*Comments:*_____

_____

_____

_____

_____

Notes to interviewers

This topic guide is designed to help you to complete an approximately 30- to 40-minute in-depth interview (IDI). As you know, the qualitative research process is about discovery, not coverage. As such, we expect you to cover all areas of investigation, but, if necessary, to focus on those questions that seem most relevant to each respondent or those that develop new and/or useful information. Additionally, you are not required to ask questions in the order they are given herein; based on your experience in qualitative interviewing, allow the flow of the conversation to dictate the order in which you ask them.

Background

Navigant Consulting is evaluating the Industrial Energy Improvement (IEI). The IEI is a service under the Production Efficiency Program, which promotes energy efficiency at industrial customer sites. Strategic Energy Group runs the IEI pilot for the Energy Trust.

The IEI seeks to reduce participant site energy intensity and production costs by applying continuous improvement practices, the premise being that energy is a variable and manageable (as opposed to fixed) cost for industry. The IEI assists participant firms by putting in place a structured energy program which includes establishing accountability for tracking energy and engaging employees to reduce energy use through the "Plan, Do, Check, Act" cycle. The IEI services are delivered to participants in a group environment. Monthly trainings are held over the course of a year in various formats, consisting of six, day-long in person workshops, four, two-hour Webinars, and two individual, on site meetings. The workshops are often held at IEI participant firm locations on a rotating basis.

This interview is being held approximately one month after the last IEI meeting/training. If it is difficult to schedule the interviews, Strategic Energy Group can send an e-mail to the participant to let them know to expect your call.

Interview Preparation

The interview notes should detail the responses. "Yes" or "no" responses are not sufficient and should be probed for "why".

Interview Recording

If you record the interview, you must obtain explicit permission from the respondent.

Confidentiality

If respondents ask, tell them yes, their answers will remain confidential.

Introduction

Hello, my name is _____ and I work for Navigant Consulting. I am calling on behalf of Energy Trust of Oregon; they are interested in getting your feedback on several aspects of the IEI. As one of only ten participants in the Industrial Energy Improvement (IEI), your feedback is critical to Energy Trust as they determine how to expand the offering and make it more effective and compelling for future participants. I anticipate that the interview will take approximately 45 minutes. This interview is for research purposes; your feedback will only be reported to Energy Trust anonymously and will not affect the status of any Energy Trust project(s) you are involved with.

NOTE: IF RESPONDENT QUESTIONS THE LEGITIMACY OF THE SURVEY, YOU MAY GIVE THEM THE EVALUATION MANAGER'S CONTACT INFORATION:

Phil Degens
Evaluation Manager
Energy Trust of Oregon
Phil.degens@energytrust.org
503-445-7620

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Interview

Background

For each interviewee:

What is your title?

What is your role within your organization?

How long have you been with your organization?

What was your involvement with the IEI project?

Who else from your firm participated? What is their level within your organization?

Motivation to Participate

How did your firm originally hear about the IEI pilot? What originally motivated you to participate?

What specific goals or results did you hope to achieve from your participation when you first began?

Have any of these goals been realized so far?

Have you realized any unexpected benefits?

IEI Activities

What actions did you take during the IEI? How influential was the IEI in making these changes?

What challenges did you encounter in undertaking the various activities and how were these overcome?

Do you plan to take any additional actions as a result of the IEI? How influential was the IEI in undertaking thee changes?

Besides those activities just discussed, are there other ways that your firm changed the way they manage energy since beginning the IEI?

What production variables are you tracking in the MT&R? Was MT&R hard to generate? Will you continue to use the MT&R in the future?

Do you still have your energy team in place? Do you foresee maintaining the team on an ongoing basis?

Pilot Assessment

Please rate your overall satisfaction with the program on a scale of 1 to 5, with 5 being "very satisfied," and 1 being "very dissatisfied."

Very Dissatisfied				Very Satisfied
1	2	Neutral 3	4	5

What activities did you find the least valuable? Why?

Are there any activities that you did not complete? Why?

Overall, what were the most positive aspects of the IEI?

Were there any negative aspects? What were they?

What suggestions do you have for improvement to the IEI?

Were the IEI training materials clear and useful? Any suggestions for improvement to the training materials?

What about the format of the training sessions? Do you have any suggestions for improvement?
Probe for:

- Web, versus in person, versus onsite at participant facilities
- the length of both of the individual sessions and number of sessions in the entire series
- the location of the sessions, especially the distance required to travel
- the composition of the participating firms (were the industries well related?)

How would you rate the content of training? On a scale of 1 to 5, with 5 being "very satisfied," and 1 being "very dissatisfied."

Very Dissatisfied				Very Satisfied
1	2	Neutral 3	4	5

Probe for too much detail, too little detail, not focused enough on my industry.

Please rate the quality of the trainers on a scale of 1 to 5, with 5 being "very satisfied," and 1 being "very dissatisfied."

Very Dissatisfied				Very Satisfied
1	2	3	4	5

Do you have any specific feedback on the trainers?

Please rate your overall satisfaction with the support you received from SEG on a scale of 1 to 5, with 5 being "very satisfied," and 1 being "very dissatisfied."

Very Dissatisfied				Very Satisfied
1	2	3	4	5

What aspects of SEG's support did you find most valuable?

Is there any other support you would have liked to receive?

Was percent of the content was applicable to your industry and organization? Yes/No. Describe.

Participation in the IEI represented a large investment of time and resources by your firm. How were you able to make the time to participate and conduct the various activities?

Would you recommend the IEI to other firms in your industry? To sister plants within your organization?

What advice do you have for other firms beginning the IEI process?

Capital Projects

Are you planning any capital projects?

If yes, ask:
Are you working with Energy Trust on the project?

If yes, ask:
How is it going? How did you connect with your PDC.
If no, ask:

Are you planning to contact Energy Trust?
How is working with your PDC going?
Is there any assistance Energy Trust can offer on the project?

Closing
Thank you very much for your time today. If I have a clarification question as I'm reviewing my notes, is it all right to call you back or email you? Yes/No

Thanks again, and have a great day.

NAVIGANT CONSULTING

Appendix 2: Cohort 2 Workshop Schedule

Energy Trust of Oregon
Production Efficiency
Industrial Energy Improvement Schedule

Date	Title	Meeting/Webinar	Time	Host Volunteers
Friday November 6, 2009	Kick Off / Overview of IE	Meeting	7:30 AM - 4:00 PM	Energy Trust
Tuesday November 17, 2009	Energy Team	Webinar	9:00 AM - 11:00 AM	
To Be Scheduled	Management Assessment	With Individual Organizations	~ 2.5 hours	
Tuesday January 12 2010	Monitoring, Targeting, and Reporting	Meeting	7:30 AM - 4:00 PM	
Tuesday February,9 2010	Data Analysis Opportunities Register, (Energy Mapping)	Meeting	7:30 AM - 4:00 PM	
Tuesday March 9, 2010	Develop & Document Energy Opportunities	Meeting	7:30 AM - 4:00 PM	
Tuesday April 6, 2010	Employee Engagement	Webinar	9:00 AM - 11:00 AM	
To Be Scheduled	Monitoring, Targeting, and Reporting Review	With Individual Organizations	TBD	
Tuesday June 8, 2010	Energy Management Plan	Meeting	7:30 AM - 4:00 PM	
Wednesday July 7, 2010	Review and Reward Training Assessment	Webinar	9:00 AM - 11:00 AM	

Tuesday, August 10, 2010	Third Party Involvement	Webinar	9:00 AM - 11:00 AM	
Wednesday September 8, 2010	Report Out Successes and Challenges Sustaining Program	Meeting	7:30 AM - 4:00 PM	