Boots on the Ground:
Overcoming Staff Shortages to Work with Utilities and Industries

Jennifer Eskil and Jennifer Wood, Bonneville Power Administration
Marcus Wilcox, Cascade Energy Engineering

ABSTRACT

In 2005 Bonneville Power Administration (BPA) began to ramp up its industrial sector activities to meet increasing annual energy conservation goals (resource acquisition). Over the next three years, it became obvious that barriers existed to acquiring the resource and assisting industries. BPA then pursued a Best Practices study, which identified various barriers at the distribution utility, industrial facility and within its own organization.

The one key barrier BPA staff worked to remove was the lack of dedicated, focused engineers to work exclusively with industrial facilities. BPA engineers were a shared commodity among these sectors: industrial, commercial, agriculture, and federal. BPA also had a cap on hiring internal staff; therefore, BPA decided to hire a prime contractor with industrial experience to work collaboratively on the design and implementation of a new program model.

During that four-month collaboration, we saw the importance of having program staff with skills such as: technical experience, sector experience (e.g., utility or industry), relationship and communication skills. Within its first year, the Energy Smart Industrial (ESI) program has been able to ramp up the third-party (contracted) to 27 FTE[1]. BPA contracted and pays for the third-party directly. The utility pays for the reimbursement incentives with the industry. BPA, through its program partner, was able to hire talented staff from other industrial market segments and quickly educate and train them on energy efficiency approaches and practices.

Introduction

In accordance with the mandates of the Northwest Power Act of 1980, the Northwest Power and Conservation Council (the Council) prepares a regional power supply plan (Power Plan) every five years. Because BPA supplies much of the region's wholesale public power, BPA has the responsibility to assure that the public power portion of the conservations targets in the Council's Power Plan are achieved. Public utilities in the Pacific Northwest have more than 2,400 MW of industrial load. Over the past four years, BPA had been implementing an Industrial Program Strategy to try to successfully capture an increased level of energy efficiency savings; however the effort did not bring forth the desired results - to achieve the aMW targets (see Figure 1).

The primary purpose of this third-party model was to increase the delivery of savings with the condition that it also has to meet the regionally accepted cost-effectiveness criteria. The most cost-effective program would have little or no support staff. Clearly this is not a reasonably acceptable model.

[1] FTE = Full Time Equivalent

Figure 1: Historic Industrial Savings Targets and Achievement

Fiscal Year*	aMW** Target	aMW Achieved
2007	10 aMW	~7 aMW
2008	10 aMW	7 aMW
2009	13 aMW	9.6 aMW
2010	13 aMW	14.3 aMW
2011	15 aMW	
2012	15 aMW	
2013	15.5 aMW	
2014	15.5 aMW	

**Fiscal Year: October 1st to September 30th*
***aMW: Average megawatt = 8,760,000 kWh*

With the additional pressure on BPA to achieve higher aMW targets, there was a need for a significant, prolonged increase in industrial energy savings. In January of 2008, BPA's Energy Efficiency (EE) management believed it was time to take a comprehensive, structured review of its industrial approach. The review process took an inventory of the existing program and summarized the conclusions and results. The team conducted Best Practice interviews with other national industrial programs.

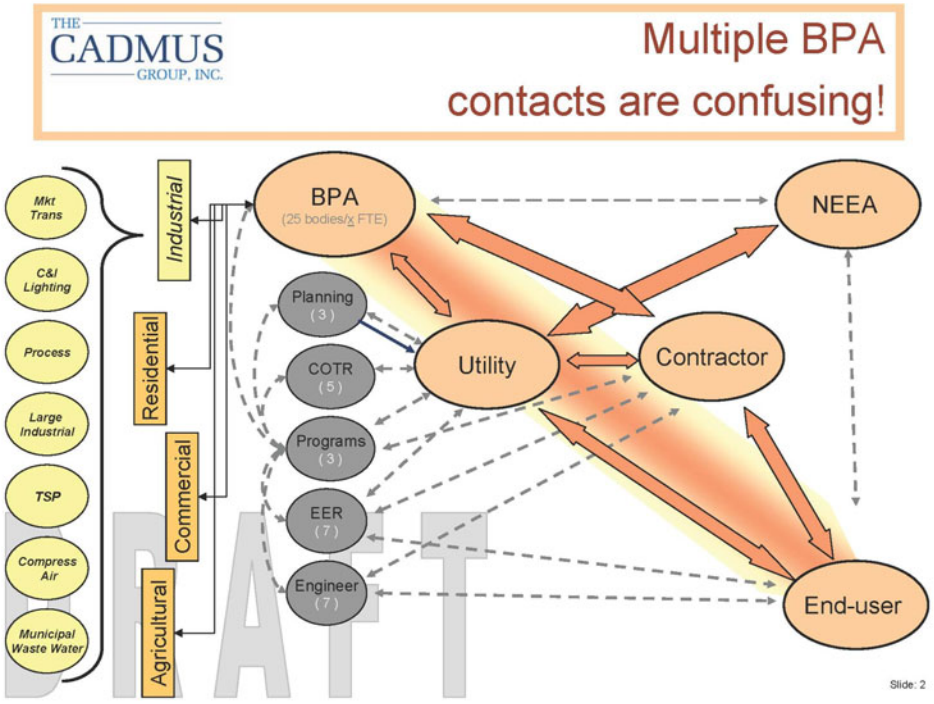
A market characterization study was also conducted; where BPA hired a consulting firm, the Cadmus Group Inc., to review the Industrial program and perform multiple interviews of technical consultants, utility managers, BPA staff and industrial plant staff. The consulting firm documented three key barriers within: (a) the industry (b) the utility, and (c) BPA. The outcome of the study and review was a report that shared advice and guidance on how best to improve the industrial program.

Review Outcome

The review identified BPA EE industrial staffing (FTE) was inadequate. Pipeline management, moving projects from development to completion needed to be improved. There were too many BPA players engaged with utilities, industries, and other regional players (e.g., the Northwest Energy Efficiency Alliance and Technical Service Providers) in the market (see Figure 2); accordingly, roles and accountability were confusing. Developing a unified BPA team around a common goal (e.g., acquiring the resource target - aMW) was recommended. The marketing and standardization of systems and processes needed to be improved. Since the industrial sector is highly technical and relationship based, engineers are critical to the success of working with industries to complete projects. Within BPA's EE organization, engineers were shared amongst multiple sectors. An engineer would have to provide technical coverage for all sectors: commercial, industrial, agricultural, federal and on occasion residential. BPA engineers

were unable to provide 100% focus and ownership/accountability to complete custom projects. BPA engineers are highly respected for their knowledge and expertise; however, BPA did not have enough of them to go after the industrial aMW targets.

Figure 2: Review of Original Program Parties, Roles & Communications



Source: The Cadmus Group, June 2008

Review of outcome decisions. One improvement that BPA could make was the barrier of limited BPA staff, not having enough FTE or "boots on the ground." BPA management made the decision to outsource to a "program partner" (third-party contractor) to work together with BPA industrial sector staff to design (again, in only four months time) the new industrial program and then to implement it in the region. It is difficult to make a comparison of the prior program model with the existing model. The new model has several program components (Energy Management Pilot) that have never been offered before. The trade ally approach to industrial lighting had never been offered, nor a focused approach to small industrial measures and projects. The hiring of the program partner was funded through BPA's capital program. BPA management approved the restructured industrial program and targeted the launch to begin at the start of FY 2010 (October 1, 2009).

This program model established clear responsibilities to manage on-going projects (e.g., deliberate project follow-up) from cradle to grave; and featured a unified mission and integration of goals into performance targets. The need for increased accountability of staff was addressed by tying an incentive to meet and/or exceeding set performance targets. It should be noted that BPA staff do not receive financial incentives for hitting annual targets. The biggest challenge was accountability, where the target solely resided with the industrial sector lead, written directly into her performance appraisal. She then had to rely on the multiple functions/staff to help achieve the target. There was no accountability to do the work necessary to meet the target.

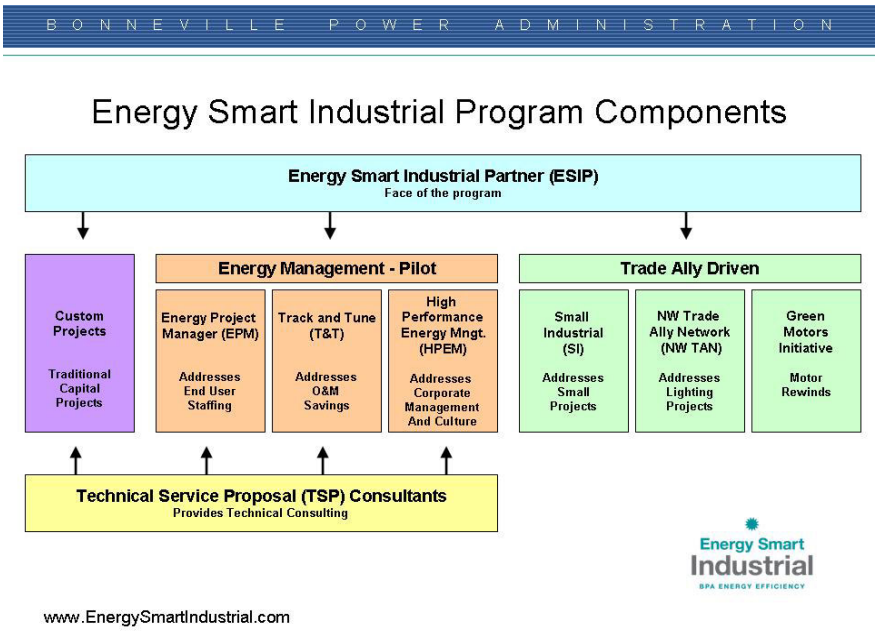
Therefore, BPA focused on executing a contract with a third-party (e.g., through a time and materials contract). BPA did include a performance incentive for FY11 and FY12 in the contract terms – outlining specific milestones (aMW targets specific to program components) and ensuring the program is kept cost-effective; so, if the program partner meets the aMW targets for the two years (combined) and then exceeds the aMW target. Industrial technical expertise would provide utilities the necessary support along with facility outreach.

Energy Smart Industrial Partner (ESIP) - The "Boots on the Ground"

After an extensive RFP process, BPA selected Cascade Energy Engineering (third-party program partner) to work with the BPA Industrial team to design the new Energy Smart Industrial (ESI) program. Another barrier Cadmus identified in their 2008 report was substantial confusion by utilities and industries on who to contact and the lack of accountability amongst BPA staff. BPA used a Customer Service Team approach where each utility worked with an assigned BPA Energy Efficiency Representative and BPA Engineer that would contact the utility and/or industry.

The ESI program design (see Figure 3) consolidated that position into one – the Energy Smart Industrial Partner (ESIP). There was no direct analysis performed regarding the consolidation saving BPA man-hours. When the program shifted the Technical Service contracting role to the program partner, BPA's supply chain had estimated a saving of 2.0 FTE. The new model was more directed at clarity of roles and responsibilities for all things industrial, the utility and industry had one point-of-contact to coordinate and market the program and that would address their needs and help them meet their conservation goals. Each utility and industry would have an ESIP assigned to him or her.

Figure 3: ESI Program Components



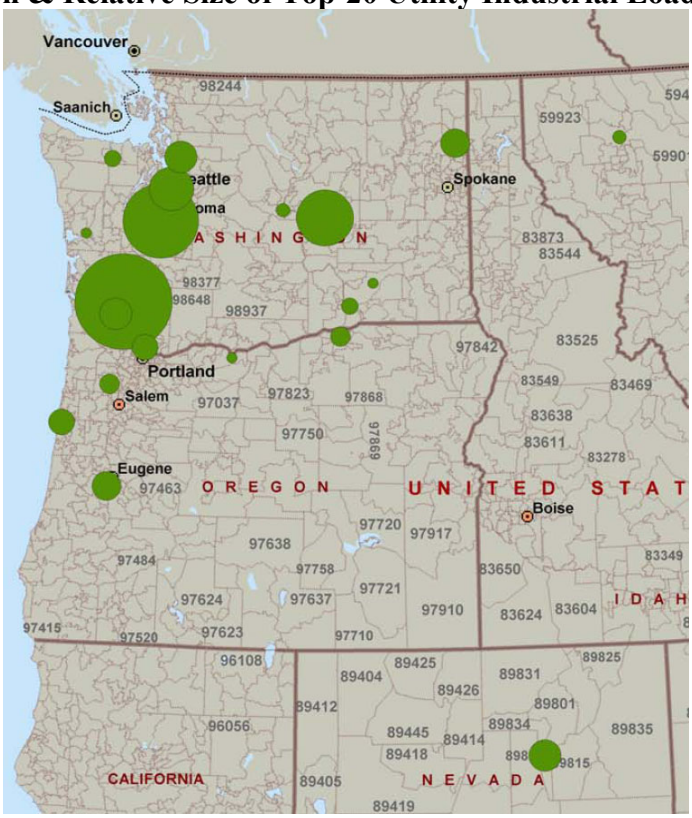
Source: Energy Smart Industrial Marketing Materials [April 2010]

The program currently [May 2011] has 103 public power utilities that have opted into the program, which represents approximately 99% of the public power's share of industrial load for BPA. The ESI program had to develop systems and processes quickly for the newly hired staff to operate under; thus serving as momentum for the program to acquire its first year's target of 12 aMW (or 105,120,000 kWh).

The ESIP position provides an enhanced industrial service to utilities by assisting them in reaching their goals in the industrial sector. The ESIP is the industrial technical resource for each utility and their industrial end users; and to often be called the "face of the ESI program." Currently, of the program partner's 27 FTE, 13 are ESIPs; with offices located throughout BPA's service area: Boise, ID; Kalispell, MT; Portland, OR; Salt Lake City, UT; Seattle, Spokane, and Walla Walla, WA. (See Appendix 1)

Although most of the FTE is dedicated to the ESI program, there are some minor roles and small or remote utility assignments that simply do not require fully dedicated FTE. [Note: this is another advantage to the third-party model). Since utilities and their industries are spread over BPA's six-state regional area, these locations helped ensure full-coverage and quick access to industrial experts and program resources. Although, this created a substantial challenge, as nearly 80% of the total industrial load is located in just 20 utility service territories (see Figure 4).

Figure 4: Location & Relative Size of Top-20 Utility Industrial Loads Served by BPA



Required Skill Sets for ESIPs

The industrial sector is greatly based on relationships; therefore, the ESIP must have excellent communication skills and the ability to develop trusting relationships with utilities.

They also need to have a strong industrial technical background to serve as valued resources to each industry – it was also critical that they be accountable for delivering projects that acquire energy savings. These skills would enable ESIPs to identify project opportunities, manage and review technical work products, and likewise develop custom project proposals and completion reports. They also need to be able to be excellent facilitators, with the confidence to interview both utility and facility staff with the intent of helping the industry decide which ESI program component(s) to implement, that would make them successful in achieving their overall goals.

The ESI program realized the need to hire ESIPs with key sector specialties; in order to provide specific technical and/or market sector expertise. The key sectors include water/wastewater, pulp and paper, energy management, food processing and mining.

BPA developed a budget and staffing model in the program partner's contract to allow for staff ramp-up based on a number of different triggers/steps (e.g., the number of utilities enrolled in the ESI program, potential industrial load and energy savings, etc.).

The program partner quickly realized one major challenge, having to juggle the simultaneous launch of a regional program while administering ESIP resources. As utilities 'opted in' to the program, a regional map of opportunities and needs began to evolve. Before the program partner composed the ESIP job description and embarked on conducting interviews, the following questions were addressed:

- What are the primary industries in each utility's service territory?
- How is the overall industrial load distributed throughout BPA's service area?
- How to best cluster adjacent utilities with shared ESIP resources?
- What is the ideal base location of an ESIP, relative to their assigned utilities?
- What is the magnitude and experience of existing utility conservation staff?
- What type and magnitude of support would utilities request (e.g., technical, programmatic, marketing, relationship management, etc.)?
- What are the utility's annual conservation goals for the industrial sector?
- What would the practical limitations be regarding travel and partial FTE requirements, particularly in remote regions

Once utilities signed up and their initial account plans were established, the program partner began ESIP interviews. ESIP selections and assignments were based on a number of criteria
(see Figure 5), such as pre-existing utility program experience, relationship management and outreach skills or whether a primary industrial sector (e.g., pulp and paper, food processing or wood products) existed within a cluster of utilities. In all cases, excellent communication skills, understanding and adherence to communications protocols, comprehension of program design, and understanding of BPA and utility roles within the region were critical.

Figure 5: Summary of ESIP Assignments & Characteristics

ESIP No.	Assignment	Range	Individual Key Strength	Previous Work Experience
ESIP #1	Sector	Expansive	Food Processing	Food Processing Engineer
ESIP #2	Sector	Expansive	Water/Waste Water	W/WW Design Engineer
ESIP #3	Utilities	Expansive	Industrial Energy Engineering	Utility Industrial DSM Program
ESIP #4	Utilities	Expansive	Wood Products	Wood Products and HVAC Engineer
ESIP #5	Technical Rover	Expansive	Industrial Energy Engineering	Energy Efficiency Project Engineer
ESIP #6	Utilities	Compact	Industrial Energy Engineering	Energy Efficiency Project Engineer
ESIP #7	Utilities	Compact	Industrial Energy Engineering	Energy Efficiency Project Engineer
ESIP #8	Utilities	Expansive	Pulp & Paper	Former Mill General Manager
ESIP #9	Utilities	Compact	Pulp & Paper	Former Mill Project Engineer
ESIP #10	Utilities	Compact	Industrial Energy Engineering	Control System Sales & Engineering
ESIP #11	Utilities	Expansive	Industrial Energy Engineering	Utility Industrial DSM Program
ESIP #12	Energy Manag.	Expansive	Engineering Management	Silicon Industry Engineering
ESIP #13	Utilities	Expansive	Relationship Management	Industrial Sales
ESIP #14	Utilities	Compact	Project Development & Management	High Tech Manufacturing Engineer

Educating and training newly hired ESIPs. In designing and implementing the new ESI program, the team needed to develop systems and processes to guide newly hired staff in understanding what their role would be and how they would interact with the other parts of the program (see Figure 3). Process flows were developed during the design of the program to ensure consistency, accountability and timely management of marketing, account planning, project discovery, the tracking of milestones and progress, and the ultimate closeout of projects through comprehensive measurement and verification (M&V). An ESI Program Delivery Manual was developed, during the design phase, and became the foundational document that outlined *how* the program would be implemented, the roles and responsibilities of all ESI program staff (both BPA, Cascade, etc.); in particular, the ESIPs.

As the ESI program rolled out, ESIPs were trained in ESI processes, utility and industry characteristics, appropriate marketing and communication messaging, M&V requirements, BPA internal processes, and BPA project tracking systems. Frequent and continuous technical training in the common industrial sub-systems such as refrigeration, pumps, fans, compressed air, lighting, and motor systems has taken place. ESIPs meet together weekly to share best practices and new program developments.

BPA and the program partner decided to schedule bi-annual meetings for the entire ESI team to get together to share program updates, best practices and lessons learned; along with inviting guests such as BPA EE management – allowing them to share the direction and vision of the agency. The BPA ESI core team that oversees the program partner's performance is comprised of the Industrial Sector Lead who also serves as the Contracting Officer's Technical Representative (COTR) to the Contracting Officer for the Program. Due to the size of this regional program, the COTR is assisted by ESI core team, as they serve as Field Representatives. They are organized around

- program analysis,
- oversight of Technical Services,
- two senior mechanical engineers are assigned specific geographic area (West vs. East) and accounts, and a third mechanical engineer is overseeing every part of the Energy Management pilot; however several are not full-time to these responsibilities.

What is the Result?

Industrial energy saving targets for the ESI program in FY2010 was 12 aMW (or 105,120,000 kWh) and in FY2011 it is 15 aMW (or 131,400,000 kWh). However, the program has seen a surprising (and somewhat unprecedented) level of utility enrollment and participation. At the completion of FY2010 (e.g., September 30, 2010) the ESI program actually exceeded the aMW goal; and by all intentions it looks like the program will also exceed FY2011's aMW target! The ESIP model has contributed substantially to the ESI program's success through utility enrollment and participation; utility and industry overall satisfaction; in addition, having the ability to track and deliver the savings. This "boots on the ground" model has been a resounding success.

Appendix 1 - BPA Public Utilities and ESIP Assignments