

Bonneville Power Administration and the Industrial Technologies Program Leverage Support to Overcome Energy Efficiency Barriers in the Northwest

A Northwest regional wholesale power provider rethinks how to encourage and promote energy efficiency projects through its utilities for industrial facilities.

In the fall of 2009, the Bonneville Power Administration (BPA) redesigned its Energy Smart Industrial (ESI) program. This is a forward-thinking program that comprehensively identifies and implements industrial energy efficiency measures for customers in the Pacific Northwest (Exhibit 1 below displays BPA's service area). This newly revised program helps BPA utilities and their industrial customers capture energy savings by using ESI financial and technical resources.¹ As of May 2010, nearly 95% of BPA's public power utilities with industrial load had signed up for the ESI program.² BPA works both with these utilities and through these utilities to assist their industrial customers. In this capacity, BPA also seeks to familiarize the utilities and the industrial facilities with many of the resources available through the U.S. Department of Energy (DOE) Industrial Technologies Program's (ITP) *Save Energy Now* initiative. For example, BPA has been able to encourage the use of ITP's many training courses to qualify and further educate the engineers that are serving as Energy Project Managers (EPMs) for the ESI program.

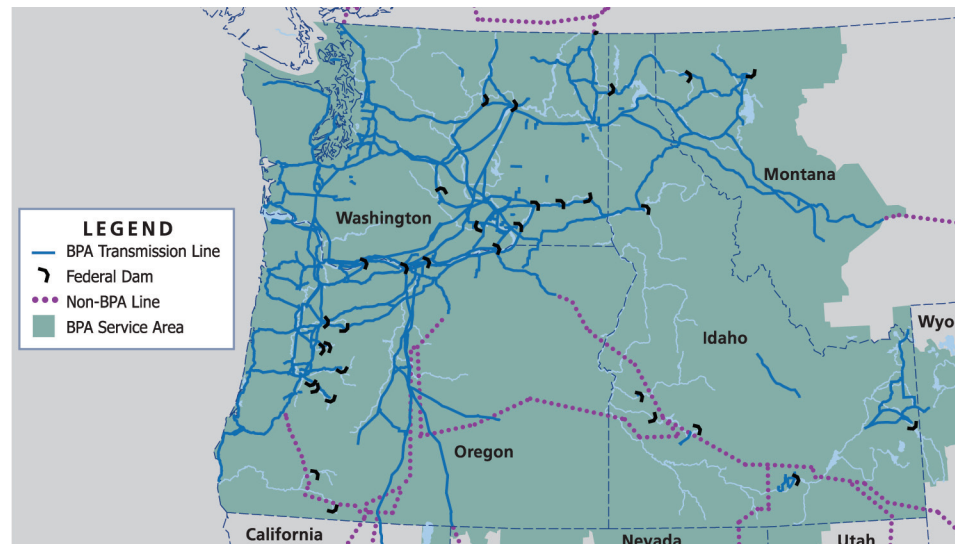


Lost Creek Dam, Rogue River, Oregon

The Organization

BPA is a nonprofit power marketing organization under the U. S. Department of Energy. It was created by Congress in 1937 to sell power coming from 31 federal hydro projects in the Columbia River Basin, one nonfederal nuclear plant and several other small nonfederal power plants. Today, BPA provides approximately 35% of the power consumed in the Pacific Northwest and operates one of the largest transmission systems in the United States.³ BPA is a wholesale power provider to 147 cooperatives, municipalities, public utility districts, investor-owned utilities, and others.⁴ As a wholesaler, BPA recognizes the benefits of working with its utility customers to assist industrial accounts in achieving energy efficiency savings, thereby reducing BPA's operational costs.

Exhibit 1: BPA's Service Area



Source: Bonneville Power Administration, 2008 BPA Facts, http://www.bpa.gov/corporate/about_BPA/Facts/FactDocs/BPA_Facts_2008.pdf.

ITP and Save Energy Now Support

BPA has had a working relationship with ITP for over 10 years.⁵ The collaboration began after Chris Milan, a senior industrial engineer for BPA, brought ITP experts to the BPA service territory to conduct energy assessments in steam, compressed air, and pumping fans. Following those interactions, BPA became more involved in the training opportunities available through ITP. The trainings sessions included compressed air challenge courses, pump systems analysis, fan systems analysis, and steam systems. BPA collaborated with ITP to set up locations in the Northwest, where DOE specialists would conduct the trainings specifically for BPA's utility customers. Because BPA used the trainings so extensively, ITP has taken suggestions from BPA's engineers on ways to further develop and refine many of the training offerings. For instance, in 2009, Mr. Milan participated in an ITP-assembled group, whose goal was to

understand how *Save Energy Now* could improve its assessment and resource delivery process. During that meeting, Milan recommended adding a field assessment test and a pre-assessment tool to the Pumping System Assessment Tool (PSAT). Today, BPA's field measurements course is combined with the PSAT course. This modification allowed course participants to take their own field measurements and use those actual measurements in the later assessment, resulting in a much more inclusive and helpful training course for BPA's utility customers.⁶

The close working relationship with ITP has proven beneficial for BPA, particularly during the recent roll-out of its new ESI program in the fall of 2009. Milan points out that BPA encourages industrial managers to become certified through ITP-sponsored courses.⁷ BPA's familiarity with the quality and usefulness of *Save Energy Now*'s energy audits and training courses is often passed on to the staff of both BPA utilities and their industrial customers through their interactions. Also, BPA incurs a cost for advanced training of EPMS, which can be offset by using ITP training courses and other *Save Energy Now* resources. Through these efforts, industrial facilities in the Northwest have become more aware of the *Save Energy Now* program and the benefits available to industrial facilities that become *Save Energy Now* LEADER Companies.

Energy Efficiency Challenges

Prior to its redesign, BPA offered several components of its ESI program for many years. However, feedback from industrial managers on the program's earlier version, indicated a lack of technical ability and available engineering staff to push energy-saving projects through to completion. The industries often cited that they did not want to lose sight of their primary goal, to manufacture a product, in exchange for efficiency improvements.⁸ BPA faced three primary barriers in achieving a strong interest within industry on energy efficiency:

Save Energy Now is an ITP initiative with the goal of reducing national industrial energy intensity by 25% in 10 years. To achieve this goal, ITP is partnering with *Save Energy Now* LEADER Companies, companies that sign a voluntary pledge to reduce their facilities' energy intensity by 25% in 10 years. ITP provides direct technical and financial resources to help LEADER Companies achieve their energy-reduction targets. ITP also connects these companies to resources offered by ITP partners, such as BPA.

BPA currently works through its utilities with the following LEADER Companies: Grays Harbor Paper, CalPortland, and JR Simplot.

Additional information on *Save Energy Now* is available at <http://www1.eere.energy.gov/industry/saveenergynow>.

Industrial Energy Efficiency Implementation Barriers	
1	<i>Lack of technical understanding.</i> The industrial managers did not always know about efficiency technologies or how to measure and verify the energy usage and savings of their equipment or processes.
2	<i>Lack of available staff to work with energy management.</i> Even if the technical expertise existed within the company, the manufacturers did not think they could afford to have an engineering staff working fulltime to determine energy savings through an energy management plan.
3	<i>Making the business case for energy management.</i> In order for projects to actually get implemented, there needed to be support throughout the facility's management, as well as with the staff on the ground.

To overcome these challenges, BPA drew from previous successes in project implementation. In 2006, BPA began a project with the Northwest Energy Efficiency Alliance (NEEA) to cost-share an engineering position at Grays Harbor Paper (GHP), a pulp and paper company in Washington state and a *Save Energy Now* LEADER Company. The engineer was employed by BPA and NEEA's Continuous Energy Improvement Program, which concentrated on corporate buy-in to influence energy management business practices.⁹ This experience helped BPA understand the impact that one energy engineer could have on improving energy efficiency in an industrial facility.

BPA had also been working directly with the North Pacific Paper Corporation (NORPAC), a paper manufacturer in Washington, to improve the company’s energy efficiency by providing engineering support in identifying areas, systems, and processes. A few years ago, with BPA’s assistance, NORPAC hired a chemical engineer to promote energy efficiency projects by removing barriers and pushing the projects through the various stages of approval within the company.¹⁰ The engineer successfully maneuvered a particularly large energy efficiency project through approval to implementation.

These two paper companies’ successes helped shape some of the most progressive aspects of BPA’s new ESI program. To capitalize on these accomplishments, BPA decided to include a pilot component that would use these success stories by organizing, enhancing, and expanding the concepts behind them.

Redesign: Energy Smart Industrial Program

In October 2009, BPA initiated its newly redesigned program for incentivizing industrial energy efficiency: the ESI program. This comprehensive program emphasizes creating and maintaining good relationships among BPA, utilities and industrial customers, in addition to providing technical expertise.¹¹

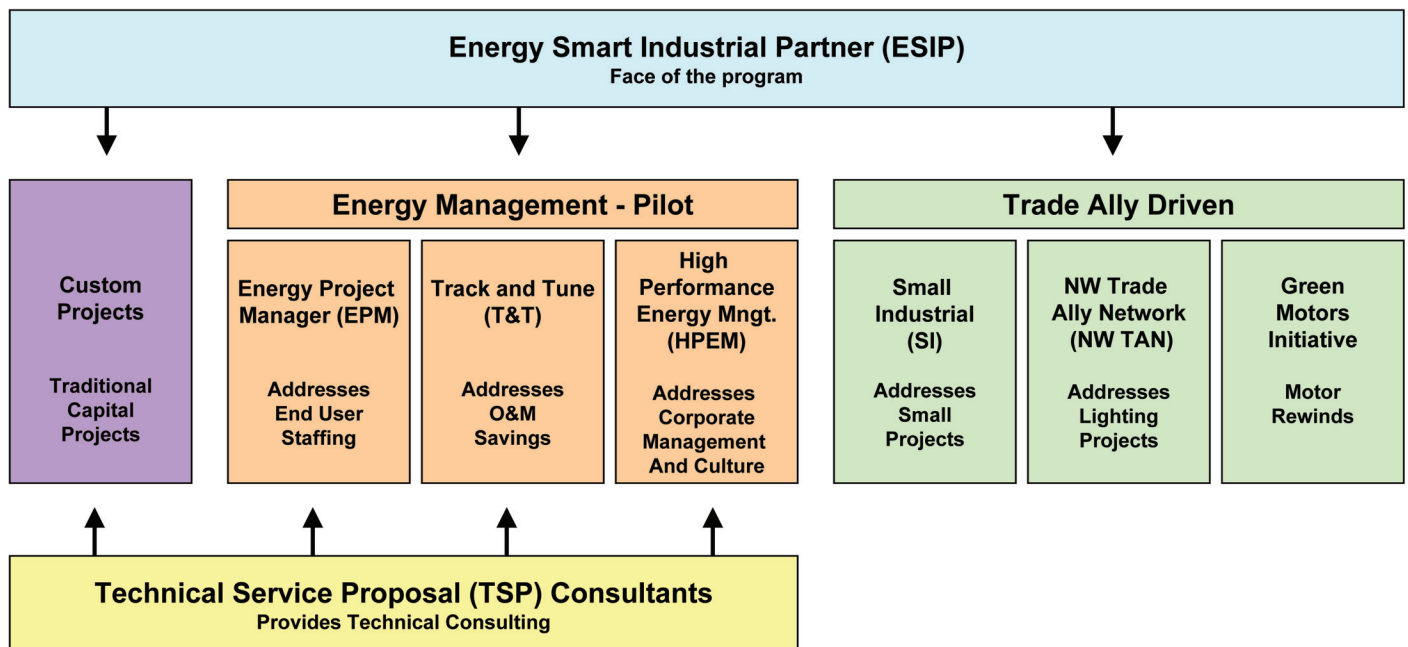
As displayed in Exhibit 2, the point of contact for the program is an Energy Smart Industrial Partner (ESIP) who works with utilities or industrial end users to implement energy efficiency projects. The ESIP is an individual working for BPA that develops and maintains relationships, while also facilitating the use of the various features in the ESI program by utilities and industrial customers.¹²

The ESIP oversees the three primary components of the ESI program. One component is the Custom Projects program, which works with industries in a traditional fashion to undertake capital improvement projects. Another is the Trade Ally Driven component, which contains three elements:

- A Green Motors initiative, which works to qualify shops in the correct way of rewinding techniques of motors;
- The Trade Ally Network, where experts install energy efficient lighting; and
- The Small Industrial program, which focuses on working with vendors to implement smaller projects, such as developing calculator tools.¹³

Exhibit 2: BPA’s Energy Smart Industrial Program Structure

Energy Smart Industrial Program Components



Source: Bonneville Power Administration, http://www.bpa.gov/energy/n/industrial/pdf/2010-02-01_ESI-Program-Components_overview.pdf.

The most comprehensive, progressive, and exciting component of the ESI program is the Energy Management Program Pilot. This facet shows the innovative ways BPA is incorporating what it learned from its two previous success stories with GHP and NORPAC. The three elements in this component are:

- The High Performance Energy Management Program, which addresses the higher-level business practices of energy management. Taken from the NEEA's Continuous Energy Improvement Plan, used in the GHP project, this program's goal is to make energy efficiency and management part of corporate culture.
- Track and Tune, which addresses some of the technical barriers industries face. This program tracks the use of certain equipment or systems and focuses on the operation and maintenance types of savings that might be available through proper tuning.¹⁴
- The Energy Project Manager (EPM) program, which evolved from BPA's past experiences. In this program, BPA will fund a position for an engineer at

an industrial facility. This individual can be an existing staff engineer or someone specifically hired for the EPM position. Regardless of where the EPM comes from, BPA's contract stipulates that the individual must have experience and knowledge of the specific industry and its processes. In addition, if an EPM wants to learn more about a specific technology, BPA provides for costs incurred for advanced training of EPMs.¹⁵

ESI Impacts

BPA's ESI program has established a goal of achieving 12 annual megawatts (aMW) in industrial load energy savings in its first year, which is through fiscal year (FY) 2010. For FY 2011, BPA has set a goal of 15 aMW in energy savings.¹⁶ BPA experienced an incredible initial participation rate for the ESI program, *with almost 95% of Northwest public power utilities with industrial load already signed up*. Jennifer Eskil, the ESI Program Manager, notes that BPA is well on its way to meeting the FY 2010 goal, having already achieved 4.6 aMW in energy savings half way through the fiscal year.¹⁷

Within the Energy Management Program Pilot, there are already approximately 10 EPMs in industrial facilities throughout BPA's service territory. One of the primary requirements to qualify for BPA to fund an EPM is that the industrial facility has the potential to produce annual energy savings of 1 million kilowatt hours (kWh) through efficiency projects. There is no limit to the project potential, and Milan points out that some facilities are already bringing project ideas that exceed an annual average of 1 MW (8,760,000 kWh) per year.¹⁸ Although there is no limit to the number of industrial facilities that can participate in the EPM program, participation could be limited by its initial budget because it is a pilot program. Nevertheless, that level of expenditure has yet to be reached.



Conclusions

BPA has crafted a creative approach to overcome the barriers it had previously encountered in the industrial sector by leveraging its existing technical capabilities and strategic partnerships. The ESI program is structured to be a comprehensive source of energy efficiency and management resources for its utility customers and their industrial accounts. Through the ESI program, BPA is informing and assisting these utilities and industries to have a better understanding of the feasibility and benefits that come from participating in energy savings programs. In addition, BPA has been able to offer an additional set of resources to its customers through its partnership with ITP and the *Save Energy Now* LEADER program. With these two sets of resources, BPA is on track to achieve and surpass the goals of their established energy management plan.

Endnotes

- ¹ Bonneville Power Administration, Energy Smart Industrial, <http://www.bpa.gov/energy/n/industrial/index.cfm>.
- ² Discussion with Jennifer Eskil on May 14, 2010.
- ³ Bonneville Power Administration, About BPA: History, http://www.bpa.gov/corporate/About_BPA/history.cfm.
- ⁴ Bonneville Power Administration, BPA Facts, http://www.bpa.gov/corporate/about_BPA/Facts/FactDocs/BPA_Facts_2008.pdf.
- ⁵ Discussion with Chris Milan on May 21, 2010.
- ⁶ Ibid.
- ⁷ Ibid.
- ⁸ Discussion with Jennifer Eskil on May 14, 2010.
- ⁹ Ibid.
- ¹⁰ Ibid.
- ¹¹ Ibid.
- ¹² Ibid.
- ¹³ Ibid.
- ¹⁴ Ibid.
- ¹⁵ Discussion with Chris Milan on May 21, 2010.
- ¹⁶ Bonneville Power Administration, Energy Smart Industrial Frequently Asked Questions, October 2009, http://www.bpa.gov/energy/n/industrial/pdf/ESI_Program_FAQ_101909.pdf.
- ¹⁷ Discussion with Jennifer Eskil on May 14, 2010.
- ¹⁸ Discussion with Chris Milan on May 21, 2010.

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